

FCC - TEST REPORT

Report Number : **68.950.24.0479.01** Date of Issue: **2024-05-20**

Model : **MDY-14-EN**

Product Type : **Xiaomi 50W Wireless Charging Stand Pro**

Brand name : **Xiaomi**

Applicant : **Xiaomi Communications Co.,Ltd**

Address : **#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District,
Beijing, China**

Manufacturer : **Xiaomi Communications Co.,Ltd**

Address : **#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District,
Beijing, China**

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : **20**

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

1 Table of Contents

1	Table of Contents.....	2
2	Details about the Test Laboratory.....	3
3	Description of the Equipment Under Test.....	4
4	Summary of Test Standards.....	5
5	Summary of Test Results.....	6
6	General Remarks	7
7	Test Setups	8
8	Systems test configuration.....	9
9	Technical Requirement	10
9.1	Conducted Emission Test	10
9.2	20 dB Bandwidth	13
9.3	Radiated Emission Test.....	14
10	Test Equipment List.....	19
11	System Measurement Uncertainty	20

2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu,
Nantou, Nanshan District, Shenzhen, Guangdong, China

Telephone: +86 755 8828 6998

Fax: +86 755 8828 5299

FCC Registration No.: 514049

FCC Designation Number: CN5009

3 Description of the Equipment Under Test

Product:	Xiaomi 50W Wireless Charging Stand Pro
Model no.:	MDY-14-EN
FCC ID:	2AFZZ-MDY14EN
Rating:	Input 12/20V $\overline{\text{---}}$ 3.25A Max (Supplied by an external adapter) Output: 12V/20V $\overline{\text{---}}$ 10W/50W Max
RF Transmission Frequency:	126-148KHz
Antenna Type:	Coil Antenna
Modulation Type:	FSK/ASK
WPT Type:	Magnetic Induction
Description of the EUT:	The Equipment Under Test (EUT) is a Wireless Charger which operated at 126-148kHz.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to ANSI C63.10 (2020).

5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition		Test Site	Test Result		
			Pass	Fail	N/A
§15.207	Conducted emission AC power port	Site 1	☒	☐	☐
§15.215(c)	20dB bandwidth	Site 1	☒	☐	☐
§15.209	Radiated emission	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1	☒	☐	☐

Note 1: The EUT uses an integrated coil antenna. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AFZZ-MDY14EN complies with Section 15.207, 15.209, 15.205 of the FCC Part 15, Subpart C rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

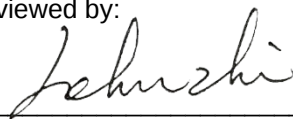
Sample Received Date: 2024-04-24

Testing Start Date: 2024-04-24

Testing End Date: 2024-05-14

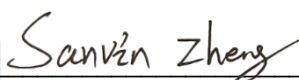
- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:



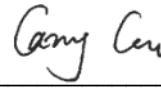
John Zhi
Project Manager

Prepared by:



Sanvin Zheng
Project Engineer

Tested by:

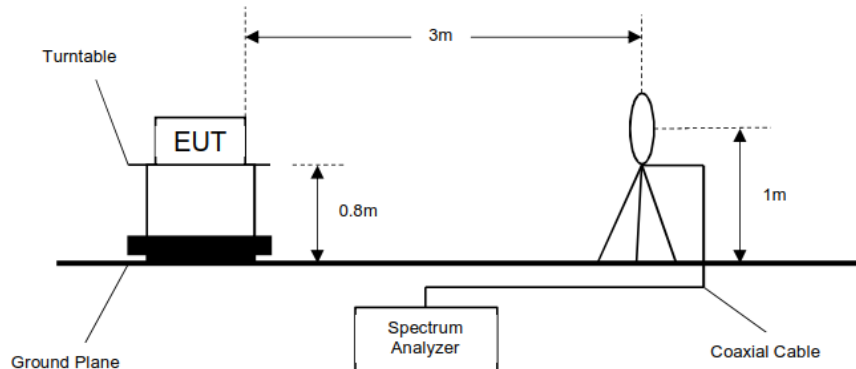


Carry Cai
Test Engineer

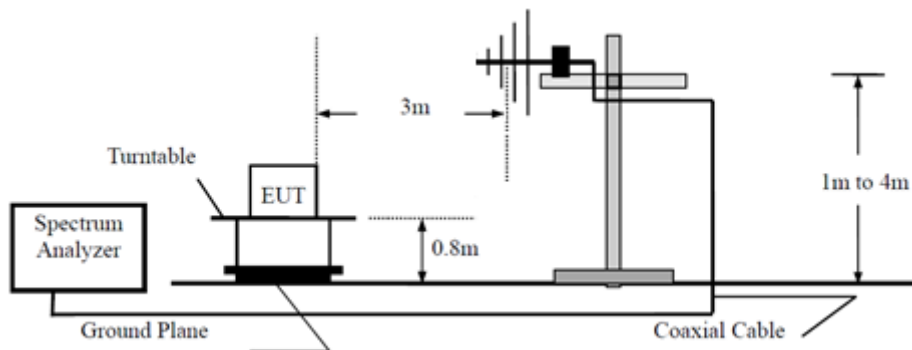
7 Test Setups

7.1 Radiated test setups

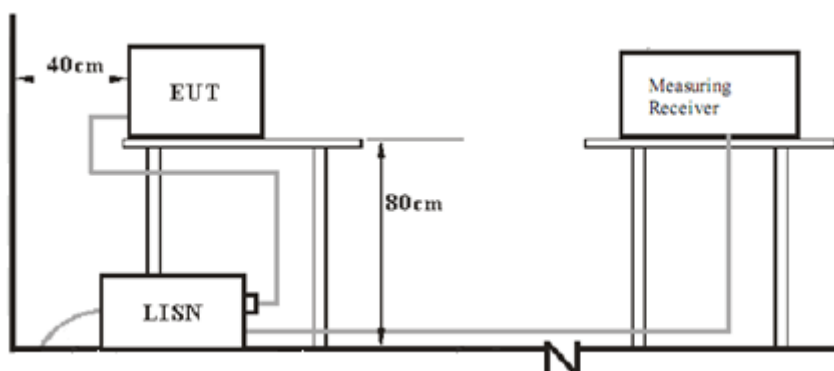
Below 30MHz



30MHz-1GHz



7.2 AC Power Conducted test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Adapter	Xiaomi	MDY-14-EY	---
Millet smart wireless full function test module	Xiaomi	WL999	---

9 Technical Requirement

9.1 Conducted Emission Test

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

Limit

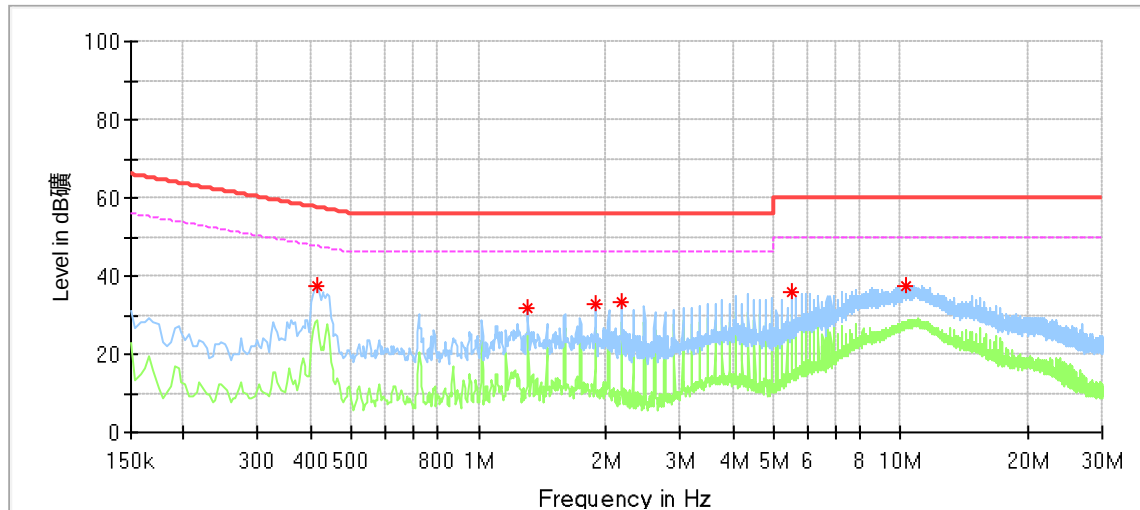
According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

Conducted Emission

Model: MDY-14-EN
 Operating Condition: Wireless Power Transfer
 Test Specification: Power Line, Live
 Remark: 50W(maximum output power)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.414000	37.19	---	57.57	20.37	L1	9.58
1.306000	31.76	---	56.00	24.24	L1	9.61
1.890000	32.74	---	56.00	23.26	L1	9.61
2.178000	33.50	---	56.00	22.50	L1	9.62
5.518000	35.99	---	60.00	24.01	L1	9.77
10.314000	37.58	---	60.00	22.42	L1	9.96

Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
---	---	---	---	---	---	---

Remark:

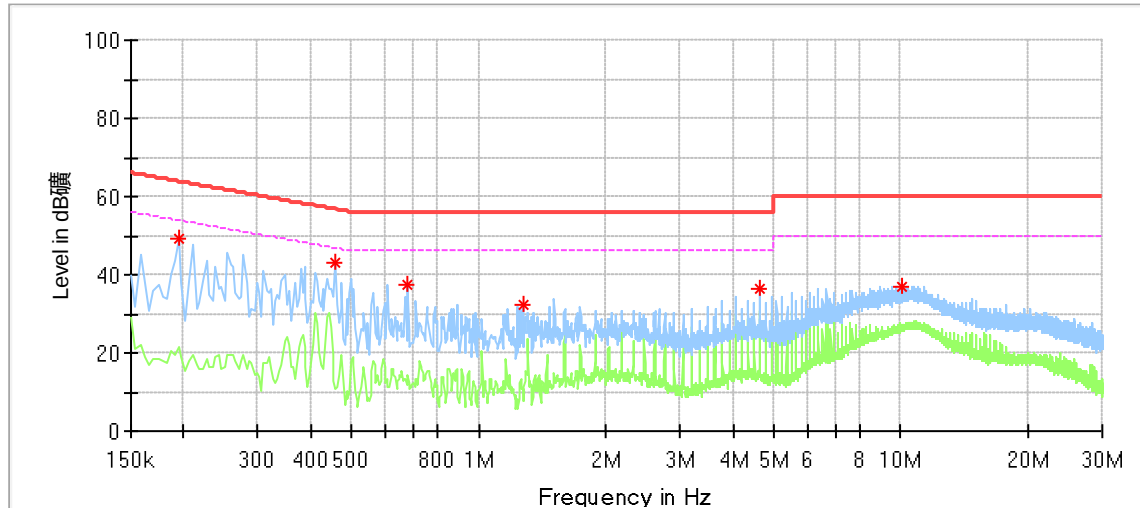
Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Conducted Emission

Model: MDY-14-EN
 Operating Condition: Wireless Power Transfer
 Test Specification: Power Line, Neutral
 Remark: 50W(maximum output power)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.194000	49.47	---	63.86	14.39	N	9.57
0.458000	43.17	---	56.73	13.56	N	9.61
0.678000	37.63	---	56.00	18.37	N	9.63
1.270000	32.53	---	56.00	23.47	N	9.63
4.646000	36.21	---	56.00	19.79	N	9.76
10.082000	37.17	---	60.00	22.83	N	9.96

Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
---	---	---	---	---		---

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

9.2 20 dB Bandwidth

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW $\geq$ 1% to 5% of the 20 dB bandwidth, VBW $\geq$ 3RBW, Sweep = auto,
Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.

Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Result

Frequency	20dB bandwidth	Result		Result
		F _L (kHz)	F _H (kHz)	
126kHz	1.592	126.858	--	Pass
148kHz	2.026	--	145.961	Pass

The device didn't operate in the 90-110 kHz band.

9.3 Radiated Emission Test

Test Method

1. The EUT was placed on a turn table which is 0.8m above ground plane. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Use the following test receiver settings According to C63.10:

For Below 9kHz-1GHz, use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious

9kHz -150kHz

RBW = 200Hz, VBW = 600Hz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

150kHz - 30MHz

RBW = 10 kHz, VBW = 30 kHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

30MHz - 1GHz

RBW = 10 kHz, VBW = 30 kHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

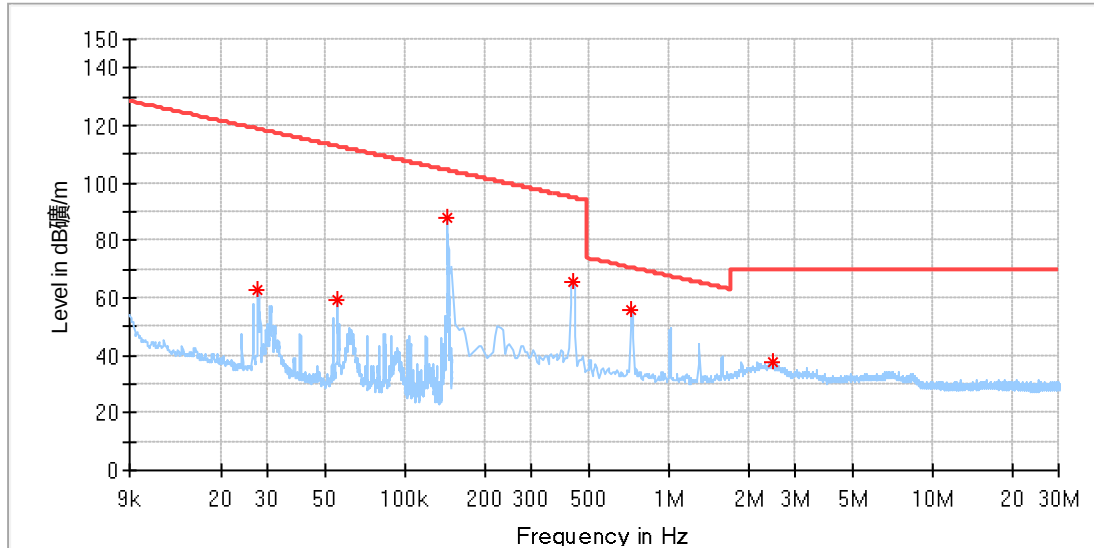
Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength $\text{dB}\mu\text{V/m}$	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	QP	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

Note 1: Limit $3\text{m}(\text{dB}\mu\text{V/m}) = \text{Limit } 300\text{m}(\text{dB}\mu\text{V/m}) + 40\text{Log}(300\text{m}/3\text{m})$ (Below 30MHz)

Note 2: Limit $3\text{m}(\text{dB}\mu\text{V/m}) = \text{Limit } 30\text{m}(\text{dB}\mu\text{V/m}) + 40\text{Log}(30\text{m}/3\text{m})$ (Below 30MHz)

Radiated emissions test (9KHz-30MHz)

Model: MDY-14-EN
 Test Mode: Wireless Power Transfer
 Test Voltage: AC 120V/60Hz
 Remark: 50W(maximum output power)



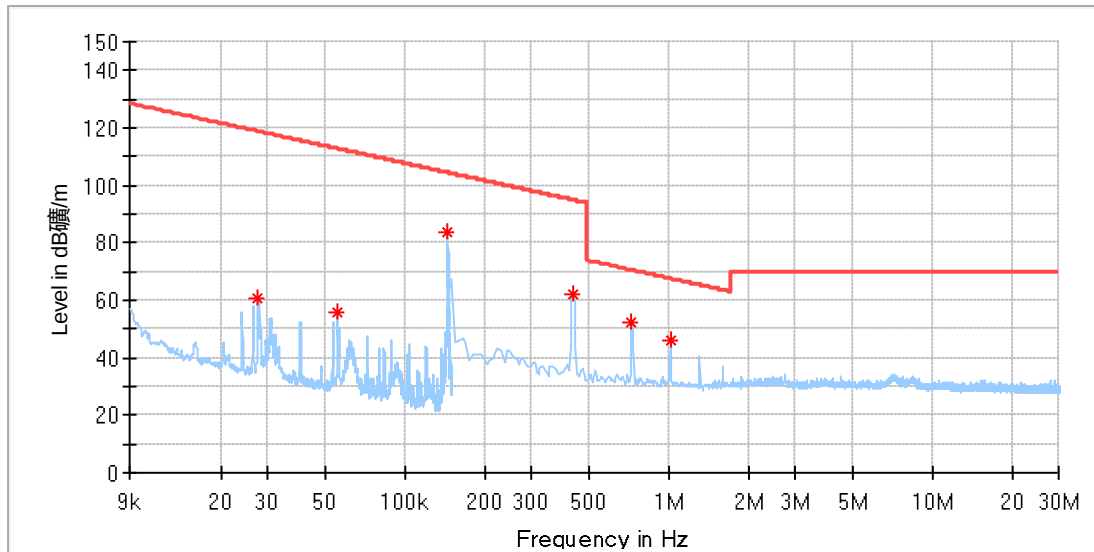
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027706	62.62	118.74	56.12	H	163.0	19.23
0.055436	59.65	112.72	53.07	H	171.0	19.26
0.145206	88.03	104.36	16.33	H	350.0	19.23
0.433575	65.66	94.86	29.20	H	1.0	19.26
0.722125	56.01	70.44	14.43	H	355.0	19.32
2.468350	37.47	69.50	32.03	H	342.0	19.33

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---		---	---

Model: MDY-14-EN
 Test Mode: Wireless Power Transfer
 Test Voltage: AC 120V/60Hz
 Remark: 50W(maximum output power)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027706	60.80	118.74	57.94	V	85.0	19.23
0.055436	55.96	112.72	56.76	V	141.0	19.26
0.145253	83.70	104.36	20.65	V	69.0	19.23
0.433575	61.77	94.86	33.09	V	87.0	19.26
0.722125	52.25	70.44	18.19	V	78.0	19.32
1.015650	45.92	67.49	21.57	V	87.0	19.34

Final_Result

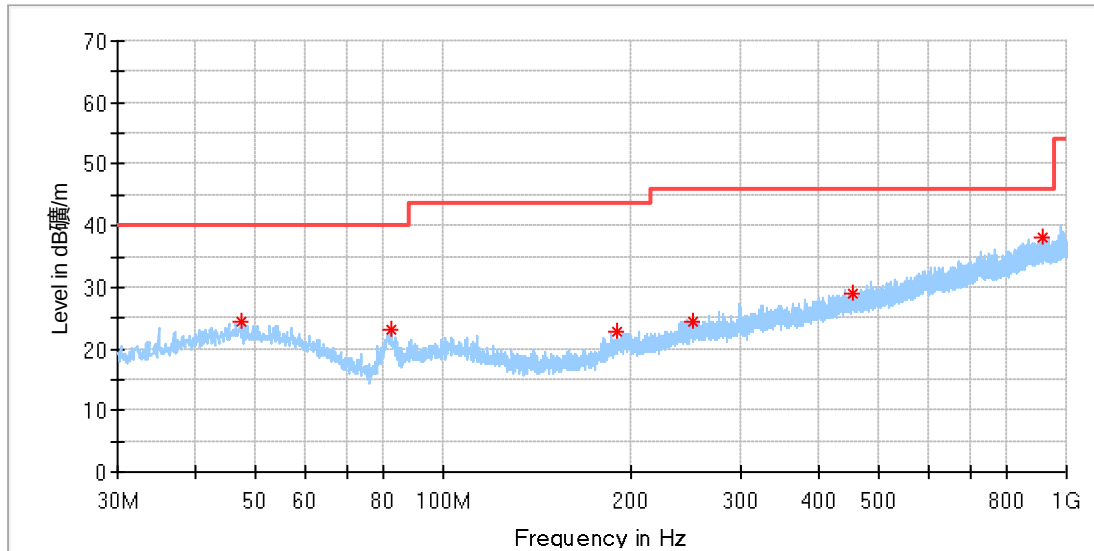
Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---		---	---

Remark:

- (1) within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Below 1GHz: Corrector factor = Antenna Factor + Cable Loss.

Radiated emissions test (30MHz-1000MHz)

Model: MDY-14-EN
 Test Mode: Wireless Power Transfer
 Test Voltage: AC 120V/60Hz
 Remark: 50W(maximum output power)



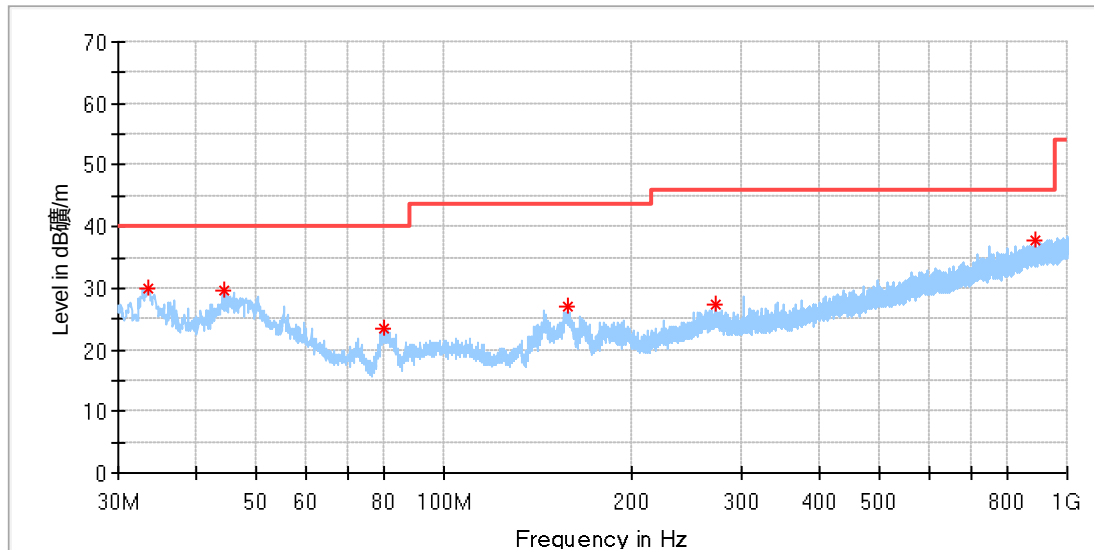
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
47.520625	24.51	40.00	15.49	200.0	H	0.0	21.05
82.440625	23.04	40.00	16.96	200.0	H	10.0	14.16
189.746875	22.77	43.50	20.73	200.0	H	134.0	18.04
252.372500	24.50	46.00	21.50	200.0	H	125.0	20.54
453.829375	29.03	46.00	16.97	200.0	H	288.0	24.75
918.520000	38.10	46.00	7.90	200.0	H	0.0	32.43

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

Model: MDY-14-EN
 Test Mode: Wireless Power Transfer
 Test Voltage: AC 120V/60Hz
 Remark: 50W(maximum output power)



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.395000	29.96	40.00	10.04	100.0	V	73.0	17.25
44.246875	29.56	40.00	10.44	100.0	V	167.0	20.76
79.894375	23.32	40.00	16.68	100.0	V	227.0	13.62
157.736875	27.05	43.50	16.45	100.0	V	0.0	15.71
271.954375	27.45	46.00	18.55	100.0	V	124.0	20.45
888.874375	37.79	46.00	8.21	100.0	V	227.0	32.02

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---

Remark:

- (3) within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) Below 1GHz: Corrector factor = Antenna Factor + Cable Loss.

10 Test Equipment List

List of Test Instruments

Radiated Spurious Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2024-5-20
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	68-4-80-14-002	707	1	2024-7-18
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	1	2024-8-7
Pre-amplifier	Rohde & Schwarz	SCU 18	68-4-29-14-001	102230	1	2024-5-19
Attenuator	Agilent	8491A	68-4-81-16-001	MY39264334	1	2024-5-19
Cable	HUBER-SUHNER	RG214	68-4-90-14-001-A20	----	----	----
Cable	HUBER-SUHNER	RG214	68-4-90-14-001-A21	----	----	----
Cable	JUNFLON	MWX221	68-4-90-14-001-A22	----	----	----
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	3	2024-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version10.35.02	N/A	N/A

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	68-4-74-14-001	101782	1	2024-5-20
LISN	Rohde & Schwarz	ENV4200	68-4-87-14-001	100249	1	2024-5-20
Attenuator	Shanghai Huaxiang	TS2-26-3	68-4-81-16-003	080928189	1	2024-5-19
Test software	Rohde & Schwarz	EMC32	68-4-90-14-003-A10	Version9.15.00	N/A	N/A

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV432 or ENV4200)	3.15dB
Uncertainty for Radiated Emission in 3m chamber 9KHz-30MHz	4.70dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.64dB Vertical: 4.79dB

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.

---END OF TEST REPORT---