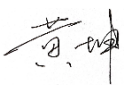
TEST REPORT

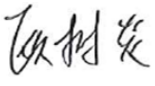
Applicant:	Micro-Star INT'L Co., LTD.
EUT Description:	Wireless Charging Dock
Model:	MDWC
Brand:	msi
FCC ID:	I4L-MDWC
Standards:	FCC 47 CFR Part 15 Subpart C
Date of Receipt:	2024/11/21
Date of Test:	2024/11/21 to 2025/02/05
Date of Issue:	2025/02/06

TOWE. The EUT is tested for Radiated Spurious Emissions in accordance with the requirements of the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.



Huang Kun
Approved By:



Ou Shuyan
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2024/11/27	Original	Ou Shuyan
02	2025/02/06	Update sections 1.3, 2.5, 3, 4 and Appendix	Ou Shuyan

Summary of Test Results

Clause	FCC Part	Test Items	Result
4.1	§15.209	Radiated Spurious Emissions	PASS
4.2	§15.215 (c)	20dB Bandwidth	PASS
Test Method: ANSI C63.10-2020. Remark: Pass is EUT meets standard requirements.			

Table of Contents

1 General Description

1.1 Lab Information

1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014
Tel.: +86-755-27212361
Contact Email: info@towewireless.com

1.1.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

ISED CAB identifier: CN0152
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0152
Company Number: 31000

1.2 Client Information

1.2.1 Applicant

Applicant:	Micro-Star INT'L Co., LTD.
Address:	No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)

1.2.2 Manufacturer

Manufacturer:	Micro-Star INT'L Co., LTD.
Address:	No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)

1.3 Product Information

EUT Description:	Wireless Charging Dock
Model:	MDWC
Brand:	msi
Hardware Version:	V1.0
Software Version:	N/A
Sample No.:	TCEA241100331M01
Modulation Type:	ASK
Frequency Range:	110~205KHz
Wireless Output:	5V, 1A
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user manual for more detailed description.	

2 Test Configuration

2.1 Worst-case configuration and Mode

Test mode:	
Wireless charging mode	Keep the EUT in Wireless charging(transmitting) mode

2.2 Support Unit used in test

Description	Manufacturer	Model	Serial Number
Mouse*	MSI	MS-8ZB7	-
Adapter	XiaoMi	AD652	30770/00235750
Remark *: all above the information of table are provided by client.			

2.3 Test Environment

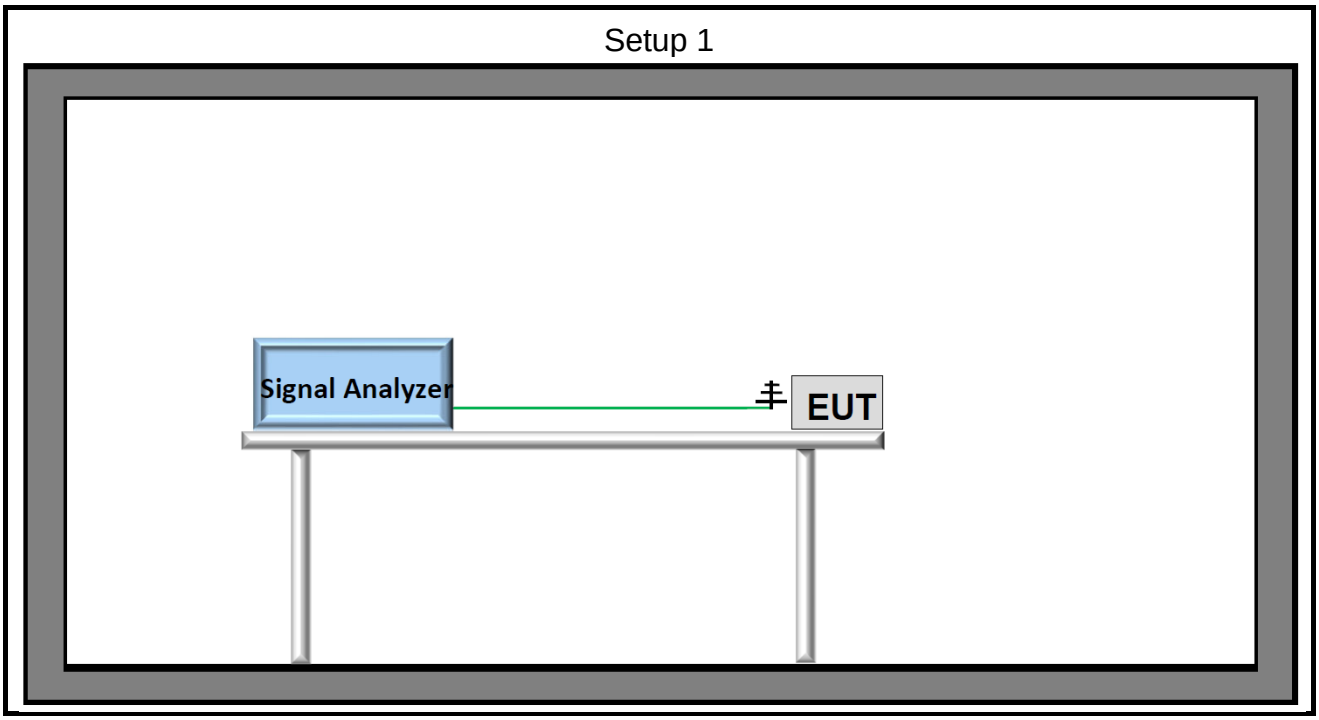
Temperature:	Normal: 22℃ ~ 27℃
Humidity:	40-75 % RH Ambient
AC Voltage:	120V/60Hz
Remark: The testing environment is within the scope of the EUT user manual and meets the requirements of the standard testing environment.	

2.4 Modifications

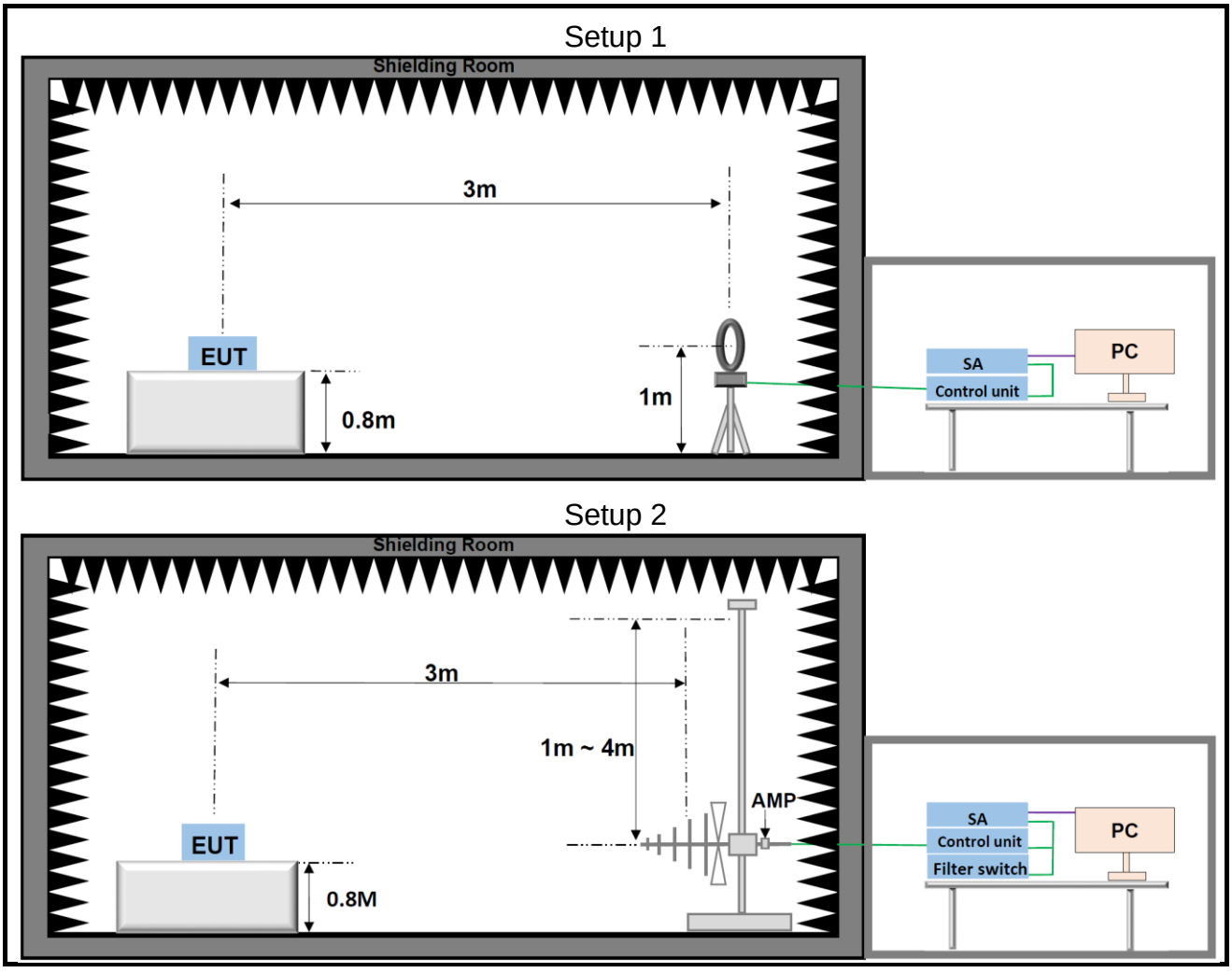
No modifications were made during testing.

2.5 Test Setup Diagram

2.5.1 Conducted Configuration



2.5.2 Radiated Configuration



3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable to recognized national standards.

3.1 Test Equipment List

Radiated Emission					
Description	**Manufacturer**	**Model**	**S.N.**	**Last Due**	**Cal Due**
Loop Antenna	Schwarzbeck	FMZB 1519C	1519C-028	2023/06/29	2025/06/28
Biconic Logarithmic Periodic Antennas	Schwarzbeck	VULB9163	1643	2023/06/25	2025/06/24
EMI Tester Receiver	Rohde & Schwarz	ESR7	102719	2024/05/31	2025/05/30
Low Noise Amplifier	Tonscend	TAP9K3G40	AP23A8060273	2023/04/08	2025/04/07
Band Reject Filter Group	Townshend	JS0806-F	23A806F0652	N/A	N/A
Test Software	Tonscend	TS+	Version: 5.0.0	N/A	N/A
N/A: Not applicable, confirmed internally by the laboratory					

RF 07					
Description	**Manufacturer**	**Model**	**SN**	**Last Due**	**Cal Due**
Signal Analyzer	Keysight	N9020A	US46470468	2024/03/25	2025/03/24

3.2 Measurement Uncertainty

Parameter	U_{lab}
Frequency Error	679.98Hz
Output Power	0.76dB
Radiated Emissions(9kHz~30MHz)	2.40dB
Radiated Emissions(30MHz~1000MHz)	4.66dB

Uncertainty figures are valid to a confidence level of 95%

4 Test Results

4.1 Radiated Spurious Emissions

Limits

The General radiated emission limits in § 15.209.

Frequency	Field strength (μV/m)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3

Test Procedure

ANSI C63.10:2020 Section 6.3,6.4,6.5.

Test Settings

1. For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the reference ground plane.
2. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1m to 4m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e, field strength or received power), when orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25cm.
3. For each suspected emission, the EUT was ranged its worst case and then tune the antenna tower(from 1~4m) and turntable(from 0~360°) find the maximum reading. Preamplifier and a high pass filter are used for the test in order get better signal level comply with the guidelines.
4. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. spectrum analyzer setting:
   Measurements 9 ~ 150kHz: RBW = 200Hz; VBW = 600 Hz; Detector = Peak
   Measurements 150 ~ 30MHz: RBW = 9 kHz; VBW ≥ 30 kHz; Detector = Peak
   Measurements 30 ~ 1000MHz: RBW = 120 kHz; VBW ≥ 300 kHz; Detector = Peak
7. The field strength is calculated by adding the Antenna Factor, Cable Factor. The basic equation with a sample calculation is as follows:
   Level = Reading(dBμV) + Factor(dB):
   Factor = Cable Factor(dB) + Antenna Factor(dB/m) - Preamplifier gain(dB)
   Margin = Limit(dBμV/m) – Level(dBμV/m)
8. Measure and record the results in the test report.

Note: The data list of Radiated Emissions, These frequencies which near “-” should be ignored because they are Fundamental frequency.

Test Setup

Refer to section 2.5 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix.**

4.2 20dB Bandwidth

Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, 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 Procedure

ANSI C63.10:2020 and 6.9.3

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
   RBW = 1~5% of the 20dB bandwidth.
   VBW = 3 times the RBW.
   Span = Approximately 2 to 5times the 20dB bandwidth.
   Sweep = Auto.
   Detector = Peak.
   Trace = Max hold.
3. Measure and record the results in the test report.

Test Notes

Because the measured signal is CW-like, adjusting the RBW per C63.10would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

Test Setup

Refer to section 2.6.1- Setup 1 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix.**

5 Test Setup Photos

The detailed test data see: **Test Setup Photos**

Appendix

Radiated Spurious Emissions

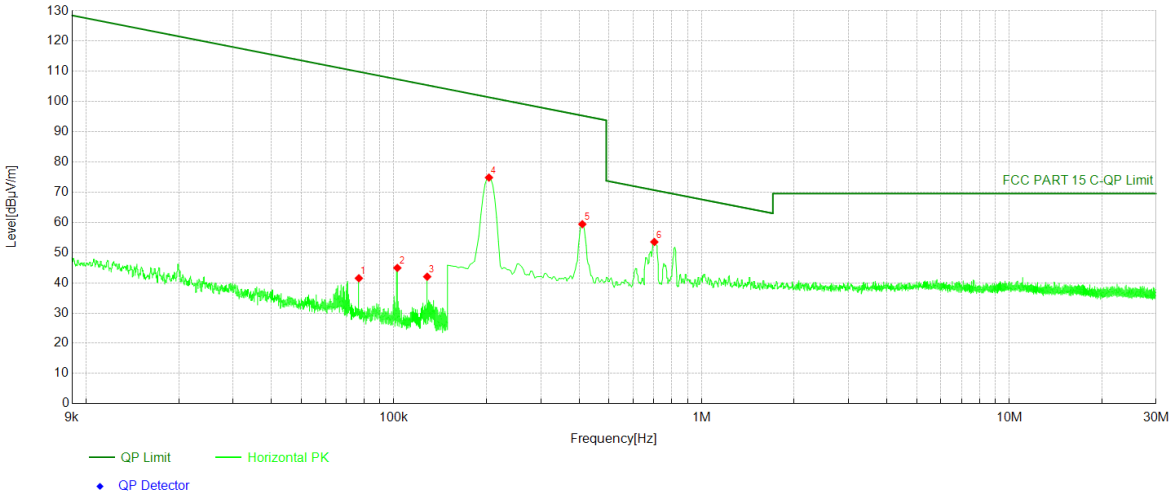
Test Result

9kHz ~ 30MHz

Project Information			
Mode:	Wireless charging	Voltage:	120V 60Hz
Sample No.	TCEA241100331M01	Engineer:	申状
Remark:	/		

Start of test:2024-11-25 18:38:55

Test Graph

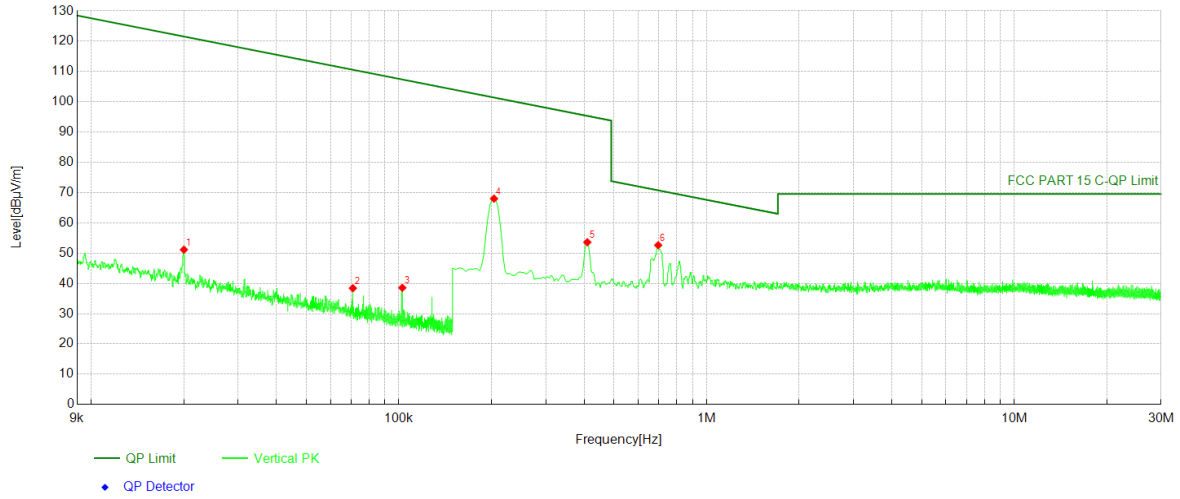


Data List								
NO.	Freq. [MHz]	Reading [dBuV]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	0.08	20.79	20.74	41.53	109.88	68.35	Horizontal	PASS
2	0.10	24.00	20.94	44.94	107.38	62.44	Horizontal	PASS
3	0.13	21.18	20.86	42.04	105.44	63.40	Horizontal	PASS
4	0.20	53.95	20.90	74.85	-	-	Horizontal	-
5	0.41	38.50	20.92	59.42	95.35	35.93	Horizontal	PASS
6	0.70	32.59	20.95	53.54	70.68	17.14	Horizontal	PASS

Project Information			
Mode:	Wireless charging	Voltage:	120V 60Hz
SN:	TCEA241100331M01	Engineer:	申状
Remark:	/		

Start of test:2024-11-25 18:31:15

Test Graph



Data List

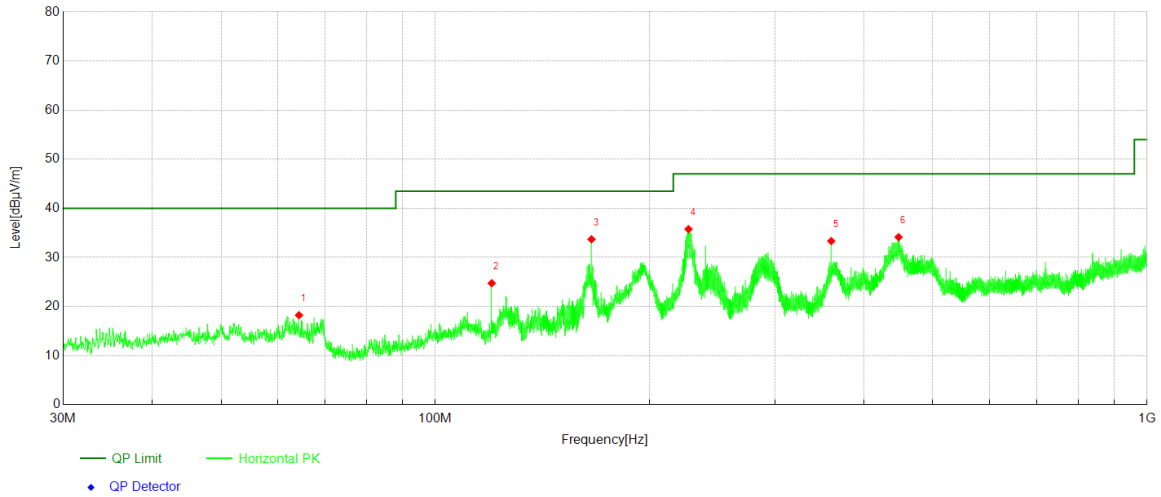
NO.	Freq. [MHz]	Reading [dBuV]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	0.02	30.48	20.67	51.15	121.58	70.43	Vertical	PASS
2	0.07	17.78	20.64	38.42	110.60	72.18	Vertical	PASS
3	0.10	17.61	20.94	38.55	107.38	68.83	Vertical	PASS
4	0.20	47.11	20.90	68.01	-	-	Vertical	-
5	0.41	32.69	20.92	53.61	95.35	41.74	Vertical	PASS
6	0.70	31.67	20.95	52.62	70.76	18.14	Vertical	PASS

30MHz ~ 1000MHz

Project Information			
Mode:	Wireless charging	Voltage:	120V 60Hz
Sample No.	TCEA241100331M01	Engineer:	申状
Remark:	/		

Start of test:2024-11-25 14:24:19

Test Graph



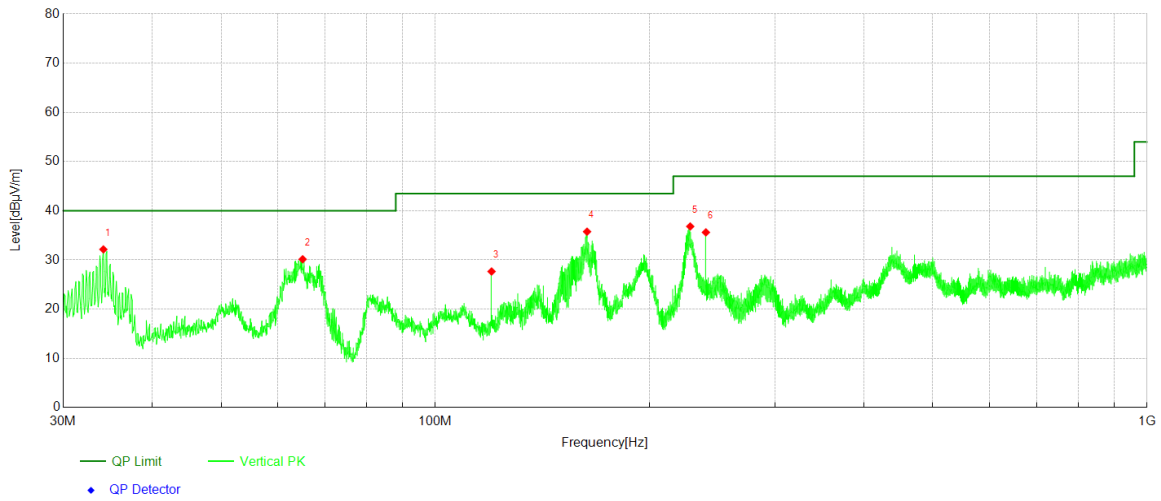
Data List

NO.	Freq. [MHz]	Reading [dBuV]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	64.34	41.92	-23.69	18.23	40.00	21.77	Horizontal	PASS
2	120.02	49.66	-24.92	24.74	43.50	18.76	Horizontal	PASS
3	165.75	58.46	-24.77	33.69	43.50	9.81	Horizontal	PASS
4	226.86	58.41	-22.65	35.76	47.00	11.24	Horizontal	PASS
5	359.99	49.44	-16.11	33.33	47.00	13.67	Horizontal	PASS
6	447.63	42.84	-8.70	34.14	47.00	12.86	Horizontal	PASS

Project Information			
Mode:	Wireless charging	Voltage:	120V 60Hz
Sample No.	TCEA241100331M01	Engineer:	申状
Remark:	/		

Start of test:2024-11-25 14:27:10

Test Graph



Data List

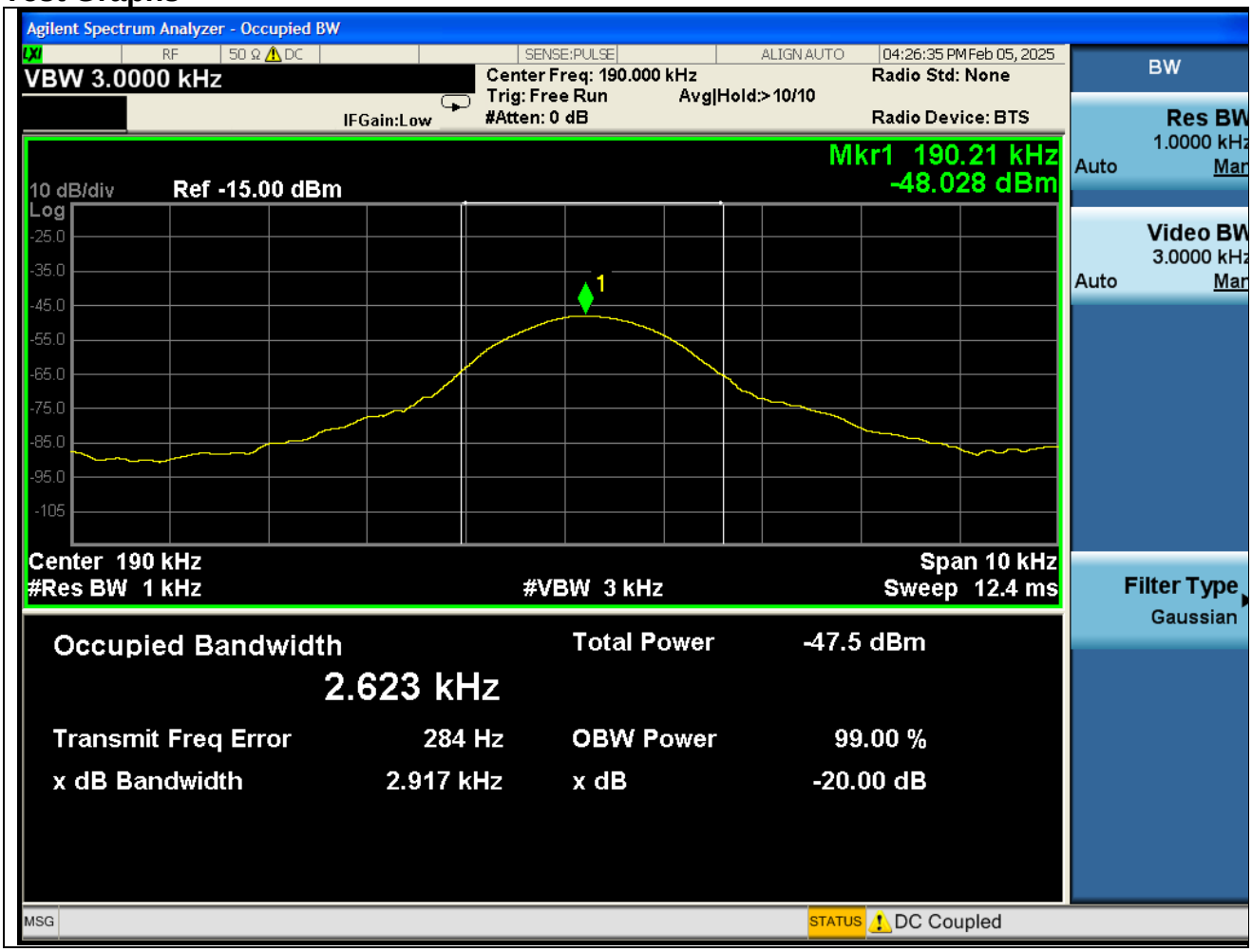
NO.	Freq. [MHz]	Reading [dBuV]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	34.17	57.01	-24.87	32.14	40.00	7.86	Vertical	PASS
2	65.11	53.42	-23.28	30.14	40.00	9.86	Vertical	PASS
3	119.97	51.69	-24.04	27.65	43.50	15.85	Vertical	PASS
4	163.38	60.85	-25.10	35.75	43.50	7.75	Vertical	PASS
5	228.12	59.14	-22.33	36.81	47.00	10.19	Vertical	PASS
6	240.01	57.44	-21.83	35.61	47.00	11.39	Vertical	PASS

20dB Bandwidth

Test Result

20dB bandwidth (kHz)	Limits
2.623	N/A
Remark: For report purpose only.	

Test Graphs



~The End~