TEST REPORT

Report No:	TWN2511790-03E
Applicant:	Eastern Times Technology Co.,Ltd
Product:	3-MODE WIRELESS GAMING MOUSE
Model No:	M998-STD-1K, DS-4108
Trademark:	REDRAGON
Test Standards:	ETSI EN 301 489-1 v 2.2.3 (2019-11) ETSI EN301 489-3 v 2.3.2 (2023-01) ETSI EN 301 489-17 v 3.3.1 (2024-09)
Test Result:	The EMC testing has been performed on the submitted samples and found in compliance with council Radio Equipment Directive (RED) 2014/53/EU

Approved By

Terry Tang

Terry Tang

EMC Manager

Dated: December 22, 2025

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES.

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (+86 755)8344 8688 Fax (+86 755)8344 2996 Email:info@timeway-lab.com

Special Statement:

FCC-Registration No.: 744189

The 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 No.: 744189.

ISED —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

CAB identifier: CN0033

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1. General Information

1.1 Notes

The test results of this report relate exclusively to the test item specified in 1.5. The TIMEWAY Lab does not assume Responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the TIMEWAY Lab.

1.2 Testing Laboratory

SHENZHEN TIMEWAY TESTING LABORATORIES.
Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Tel: +86 755 83448688 Fax: +86 755 83442996
Internet: www.timeway-lab.com

Site on File With the Federal Communications and Commission – United States
Registration Number: 744189
For 3m Anechoic Chamber

Site Listed with ISED of Ottawa, Canada
Registration Number: IC: 5205A
For 3m Anechoic Chamber

1.3 Details of Applicant

Name: Eastern Times Technology Co.,Ltd
Address: Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China.

1.4 Application Details

Date of Receipt of Application: November 26, 2025
Date of Receipt of Test Item: November 26, 2025
Date of Test: November 26, 2025 ~ December 22, 2025

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1.5 Test Item

Manufacturer: Eastern Times Technology Co.,Ltd
Address: Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China.
Trademark: REDRAGON
Model No.: M998-STD-1K
Additional Model: DS-4108
Description: 3-MODE WIRELESS GAMING MOUSE

Additional Information

Frequency 1: 2405MHz-2475MHz for Mouse/dongle Part
Channel Number: 16
Channel List (unit: MHz): 2405, 2463, 2441, 2426, 2408, 2466, 2445, 2422, 2414, 2471, 2459, 2436, 2419, 2475, 2453, 2439
Modulation Type: GFSK

Frequency 2: 2402-2480MHz for Mouse (Bluetooth Low Energy)
Channel Number: 40
Channel Separation: 2MHz
Modulation Type: GFSK

Antenna Designation: PCB antenna with maximum gain 2.34dBi for Mouse part and 1.66dBi for USB dongle part
Rating: DC5V hosted from PC for USB dongle part; DC5V, 300mA or DC3.7V, 8mA for Mouse Part
Battery: DC3.7V, 400mAh Li-ion battery or Mouse part (Li-ion battery)
Operation Distance: N/A
Resolution: N/A
Extreme Temp. Tolerance: -20℃ to 55℃

Note: Classification according to CEPT/ERC Recommendation 70-03 & ETSI EN301 489-3 v 2.3.2 (2023-01) and ETSI EN 301 489-17 v 3.3.1 (2024-09)

1.6 Equipment Classification

Equipment Category: 3

1.7 List of Ports

Port	Description	Classification[1]	Maximum cable Length	Cable Type
N/A				

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Note [1]prots shall be classified as ac power, dc power or signal/control port.
[2]Maximum cable length corresponding to the appropriate ports shall be classified as ≤3m or >3m.

1.8 Ancillary and Peripheral Devices

Description	Designation	Serial No.	Manufacturer
N/A			

List of Peripheral Devices Used for Testing

Description	Designation	Serial No.	Manufacturer
N/A			

Note: An Equipment (apparatus) used in connection with a receiver or transmitter is considered as an ancillary Equipment (apparatus) if:

a. The equipment is intended for use in conjunction with a receiver or transmitter to provide additional operational and/or control features to the radio equipment. (e.g. to extend control to another position or location); and

b. The equipment cannot be used on a stand alone basis to provide user functions independently of a receiver or transmitter; and

c. The receiver or transmitter to which it is connected, is capable of providing some intended operation such as transmitting and/or receiving without the ancillary equipment (i.e. it is not a sub-unit of the main equipment essential to the main equipment basic functions).

1.9 Test Standards

ETSI EN 301 489-1 v 2.2.3 (2019-11)
Electromagnetic Compatibility (EMC) standard for radio equipment and services;
Part 1: Common technical requirements
Harmonised Standard for ElectroMagnetic Compatibility
ETSI EN301 489-3 v 2.3.2 (2023-01)
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services
Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz;
Harmonised Standard for ElectroMagnetic Compatibility
ETSI EN 301 489-17 v 3.3.1 (2024-09)

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ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 17: Specific conditions for Broadband Data Transmission Systems;
Harmonised Standard for ElectroMagnetic Compatibility

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

1.10 Test or Witness Test Engineering

Test By: Andy Xu

Printing Name: Andy Xing

2. Technical Test

2.1 Summary of Test Results

No deviations from the technical specification(s) were ascertained in the course of the tests Performed	
Final Verdict: (Only “Passed” if all Measurements are “Passed”)	**Pass**

2.2 Test Report

Emission (EMI)

EMI Phenomenon	Port	Requirement		EUT Setup	Result	Applicability
		Standard	Basic Standard			
Conducted Interference Voltage	AC Mains	ETSI EN 301489-1: 2019-11 Clause 8.4	EN 55032:2015 +A11:2020 +A1:2020	Refer to Section 4	Complies	Applicable
Radiated Interference Field Strength 30~6000MHz	Enclosure	ETSI EN 301489-1: 2019-11 Clause 8.2	EN 55032:2015 +A11:2020 +A1:2020	Refer to Section 4	Complies	Applicable
Harmonic Current Emissions	AC Mains Input Port	ETSI EN 301489-1: 2019-11 Clause 8.5	EN IEC 61000-3-2: 2019/A2:2024	Refer to Section 4	Complies	Not Applicable
Flicker & Voltage Fluctuation	AC Mains Input Port	ETSI EN 301489-1: 2019-11Clause 8.6	EN 61000-3-3: 2013+A2:2021 +AC:2022-01	Refer to Section 4	Complies	Not Applicable

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Immunity (EMS)

EM3 Phenomenon	Port	Requirement		EUT Setup	Result	Applicability
		Standard	Basic Standard			
Electronic Discharge (ESD)	Enclosure	ETSI EN 301489-1: 2019-11Clause 9.3	EN 61000-4-2: 2009	Refer to Section 4	Complies	Applicable
RF-Electro-Magnetic Field (80-6000MHz)	Enclosure	ETSI EN 301489-1: 2019-11Clause 9.2	EN IEC 61000-4-3:2020	Refer to Section 4	Complies	Applicable
Fast Transients, Burst	Power Line AC/DC	ETSI EN 301489-1: 2019-11Clause 9.4	EN 61000-4-4: 2012	Refer to Section 4	Complies	Applicable
Surge	Power Line (1 phase)	ETSI EN 301489-1: 2019-11Clause 9.8	EN 61000-4-5: 2014	Refer to Section 4	Complies	Applicable
Transients & Surge Vehicular Environment	Power Line (Car Charge)	ETSI EN 301489-1: 2019-11Clause 9.6	ISO 7637-1/2 (12/24VDC)	Refer to Section 4	Complies	Not Applicable
RF Common Mode (0.15-80MHz)	Power Line AC/DC signal Lines	ETSI EN 301489-1: 2019-11Clause 9.5	EN 61000-4-6: 2014	Refer to Section 4	Complies	Applicable
Vol. Dips, Interruptions& Fluctuations (AC Power)	Input& Output AC Ports only	ETSI EN 301489-1: 2019-11Clause 9.7	EN IEC 61000-4-11: 2020	Refer to Section 4	Complies	Applicable

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N/A=Not Applicable

-Performance criteria A for immunity tests with phenomena of a continuous nature;

Communication between the Tx and Rx or other BT device in the front of pings should not drop during the test.

-Performance criteria B for immunity tests with phenomena of a transient nature;

N/A

-Performance criteria C for immunity tests with power interruptions exceeding a certain time.

N/A

Note: For details see subclause 6.1 ETSI EN 301 489-3

2.3 Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Uncertainty
Conducted Emissions	3.6dB
Radiated Emissions	4.7dB (Below 1GHz); 5.0dB (above 1GHz)
Harmonic Current Emission	1.2%
Voltage Fluctuations and Flicker	1.5%
Electrostatic Discharge	The waveform of voltage: 1.6%; Time: 3.1%
RF Electromagnetic Field	3.1dB
Electrical Fast Transients	The waveform of voltage: 1.5%; Time: 2.9%
Surge	The waveform of voltage: 1.5%; Time: 2.9%
RF Common Mode	3.9dB
Voltage Dips and Interruptions	The waveform of voltage: 1.5%; Time: 2.9%

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Clause 8.2 Emission Test – Radiated Emission

This test assesses that ability of ancillary equipment to limit their internal noise from being radiated from the enclosure.

According to EMC basic standard (EN 55032)

Measurement according to EMC basic standard, The test results correspond to the 3m Semi-Anechoic Chamber results.

The EUT and it simulators are placed on a turntable which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission, all of The interface cables must be manipulated according to EN55032: 2015 on radiated measurement.

Radiated emissions were invested over the frequency range from 30MHz to 1 GHz using a receiver bandwidth of 120kHz.

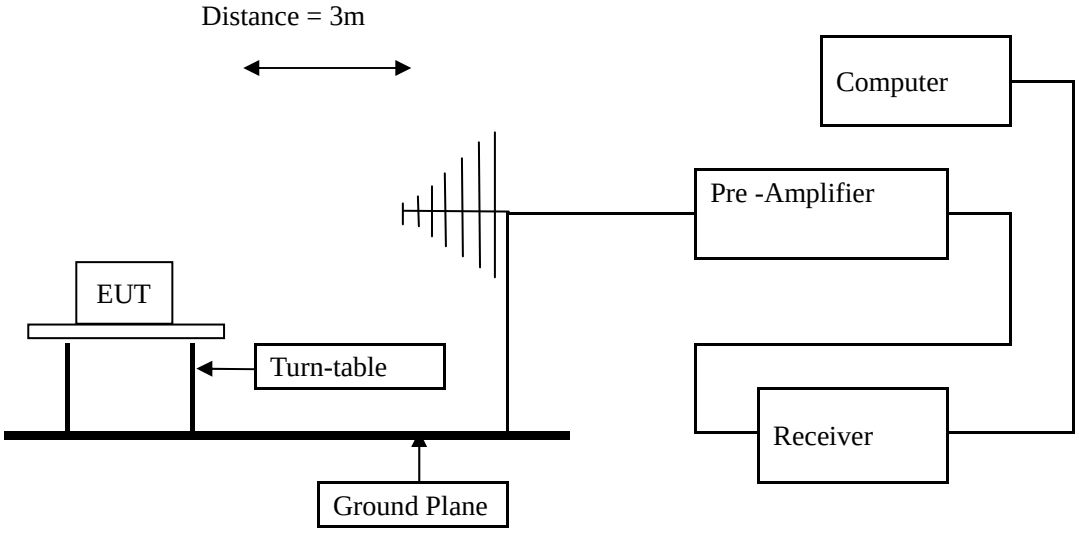
Radiated emissions were invested over the frequency range from 30MHz to 6 GHz

Radiated Emission was performed at an antenna to EUT distance of 3 meters.

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Radiated Emission Test

Block diagram of Test setup



Power line conducted Emission Limit

Frequency Range (MHz)	Distance (m)	Quasi-Peak limits (dB μ V/m)
30-230	10/3	30.0/40.0
230-1000	10/3	37.0/47.0
1000-3000	3	50 （AV）/70（PK）
3000-6000	3	54 （AV）/74（PK）

Note: The lower limit shall apply at the transition frequencies

Test result

Please refer to following table

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A: Radiated Disturbance (30MHz----1000MHz)

EUT Operating Environment

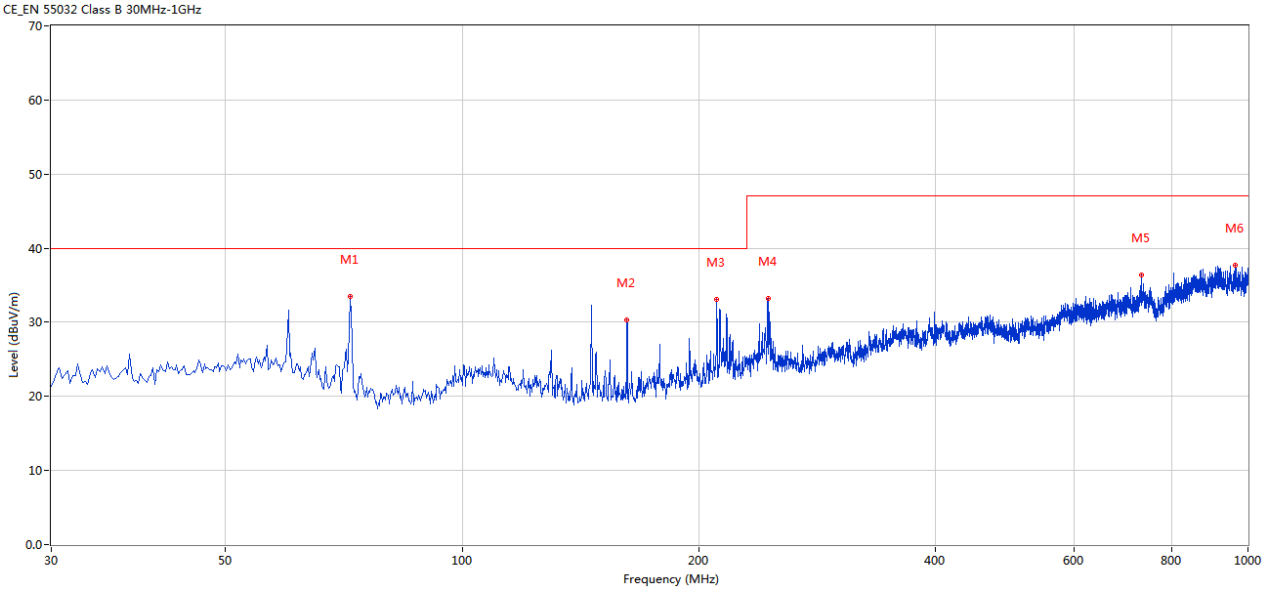
Temperature: 25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Bluetooth Mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	71.942	33.55	-11.20	40.0	6.45	Peak	349.00	100	Horizontal	Pass
2	162.129	30.31	-12.63	40.0	9.69	Peak	31.00	100	Horizontal	Pass
3	210.860	33.14	-10.26	40.0	6.86	Peak	318.00	100	Horizontal	Pass
4	245.044	33.18	-8.84	47.0	13.82	Peak	266.00	100	Horizontal	Pass
5	731.135	36.33	0.15	47.0	10.67	Peak	16.00	100	Horizontal	Pass
6	964.846	37.73	2.47	47.0	9.27	Peak	184.00	100	Horizontal	Pass

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B: Radiated Disturbance (30MHz----1000MHz)

EUT Operating Environment

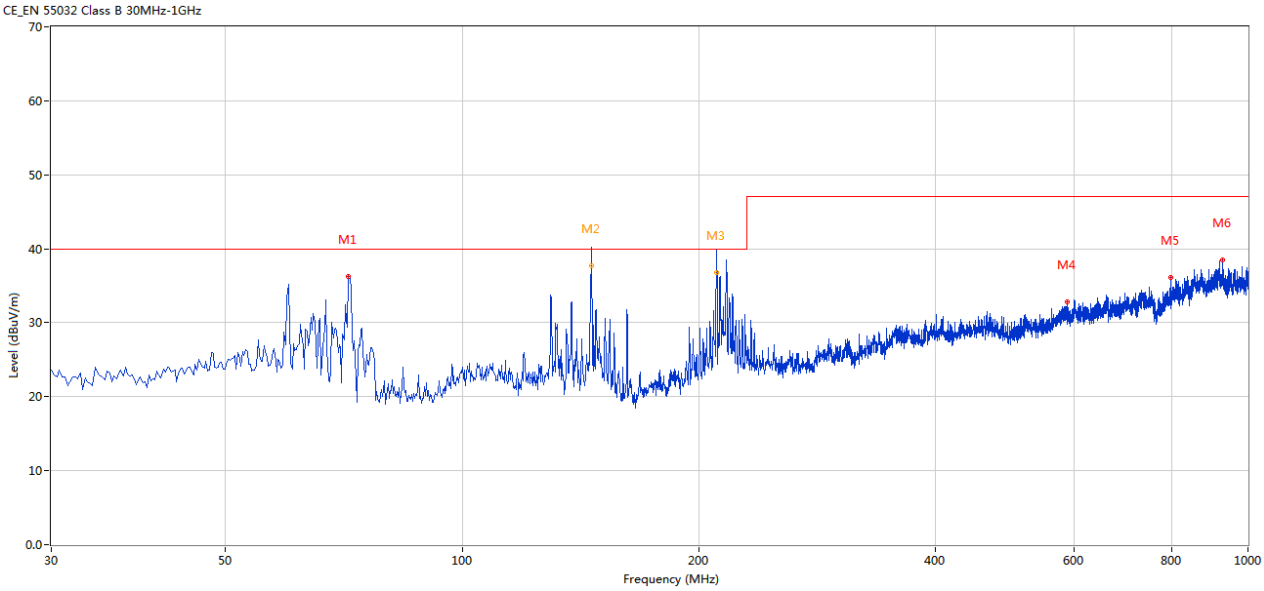
Temperature:25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Bluetooth Mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	71.700	36.23	-11.22	40.0	3.77	Peak	132.00	100	Vertical	Pass
2*	145.886	37.74	-13.00	40.0	2.26	QP	76.00	100	Vertical	Pass
3*	210.860	36.74	-10.26	40.0	3.26	QP	97.00	100	Vertical	Pass
4	588.095	32.78	-2.00	47.0	14.22	Peak	42.00	100	Vertical	Pass
5	798.048	36.18	0.23	47.0	10.82	Peak	245.00	100	Vertical	Pass
6	927.996	38.48	2.55	47.0	8.52	Peak	50.00	100	Vertical	Pass

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C: Radiated Disturbance (1000MHz----6000MHz) --- Horizontal

EUT Operating Environment

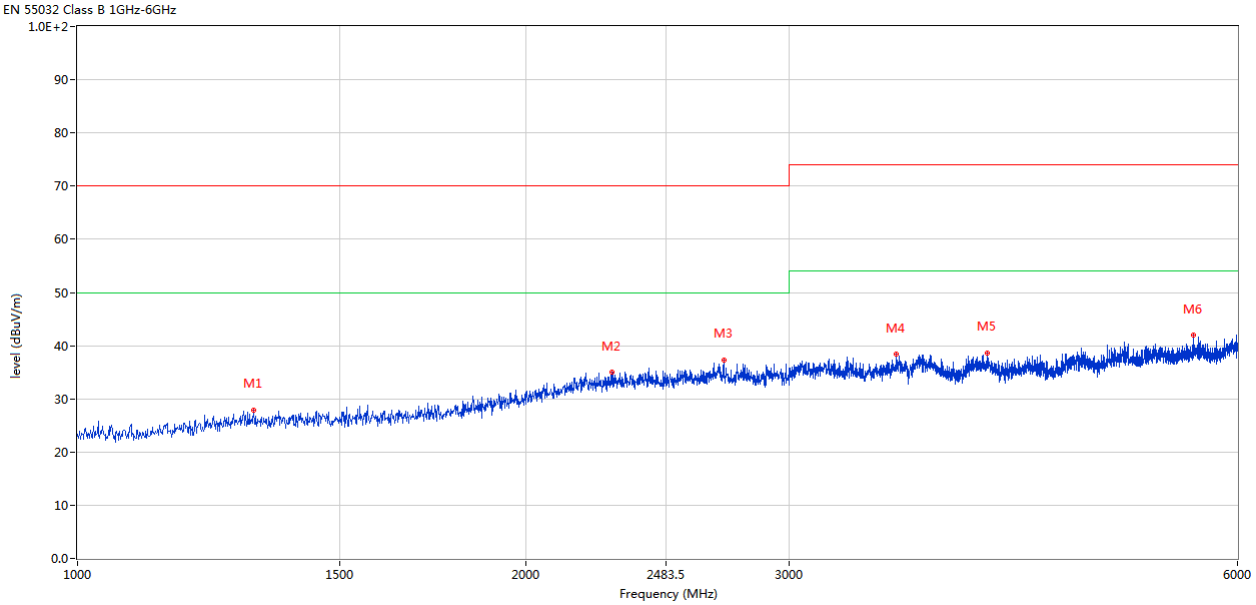
Temperature: 25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Bluetooth Mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1312.500	27.88	-8.23	70.0	-42.12	Peak	15.00	100	Horizontal	Pass
2	2283.750	34.94	-3.20	70.0	-35.06	Peak	15.00	100	Horizontal	Pass
3	2713.750	37.31	-2.92	70.0	-32.69	Peak	12.00	100	Horizontal	Pass
4	3541.250	38.38	-0.88	74.0	-35.62	Peak	15.00	100	Horizontal	Pass
5	4077.500	38.67	1.35	74.0	-35.33	Peak	10.00	100	Horizontal	Pass
6	5608.750	41.97	3.92	74.0	-32.03	Peak	2.00	100	Horizontal	Pass

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D: Radiated Disturbance (1000MHz----6000MHz) --- Vertical

EUT Operating Environment

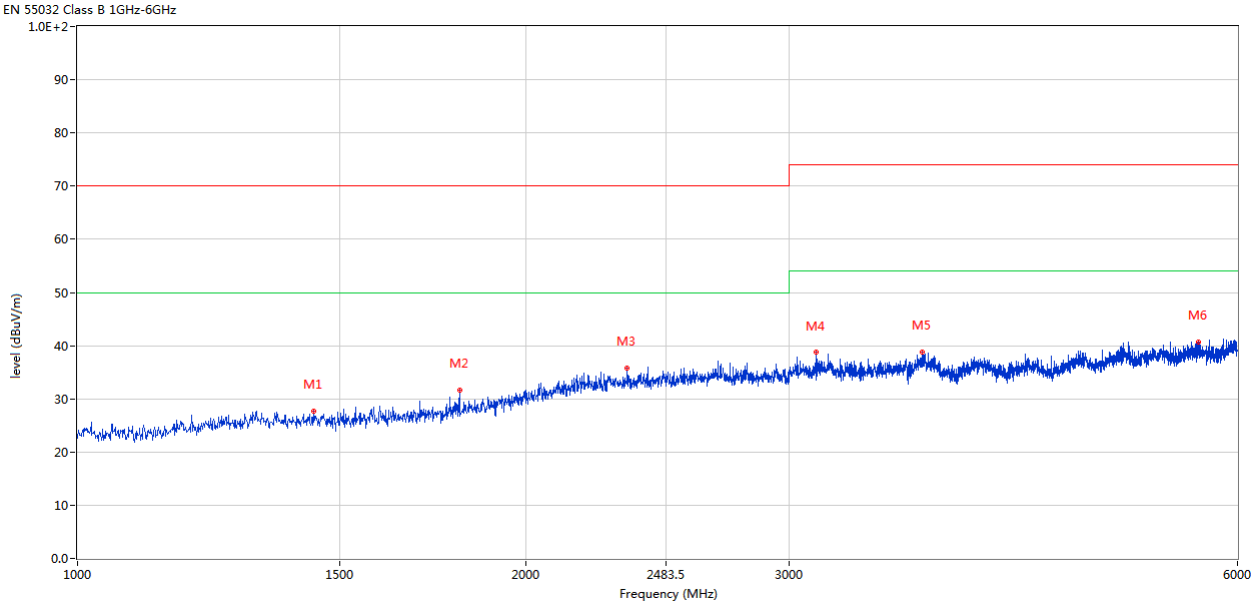
Temperature:25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Bluetooth Mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1441.250	27.77	-8.16	70.0	-42.23	Peak	15.00	100	Vertical	Pass
2	1803.750	31.64	-6.79	70.0	-38.36	Peak	9.00	100	Vertical	Pass
3	2337.500	35.77	-3.33	70.0	-34.23	Peak	2.00	100	Vertical	Pass
4	3127.500	38.77	-2.13	74.0	-35.23	Peak	2.00	100	Vertical	Pass
5	3687.500	38.86	-0.27	74.0	-35.14	Peak	15.00	100	Vertical	Pass
6	5645.000	40.76	3.88	74.0	-33.24	Peak	7.00	100	Vertical	Pass

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E: Radiated Disturbance (30MHz----1000MHz)

EUT Operating Environment

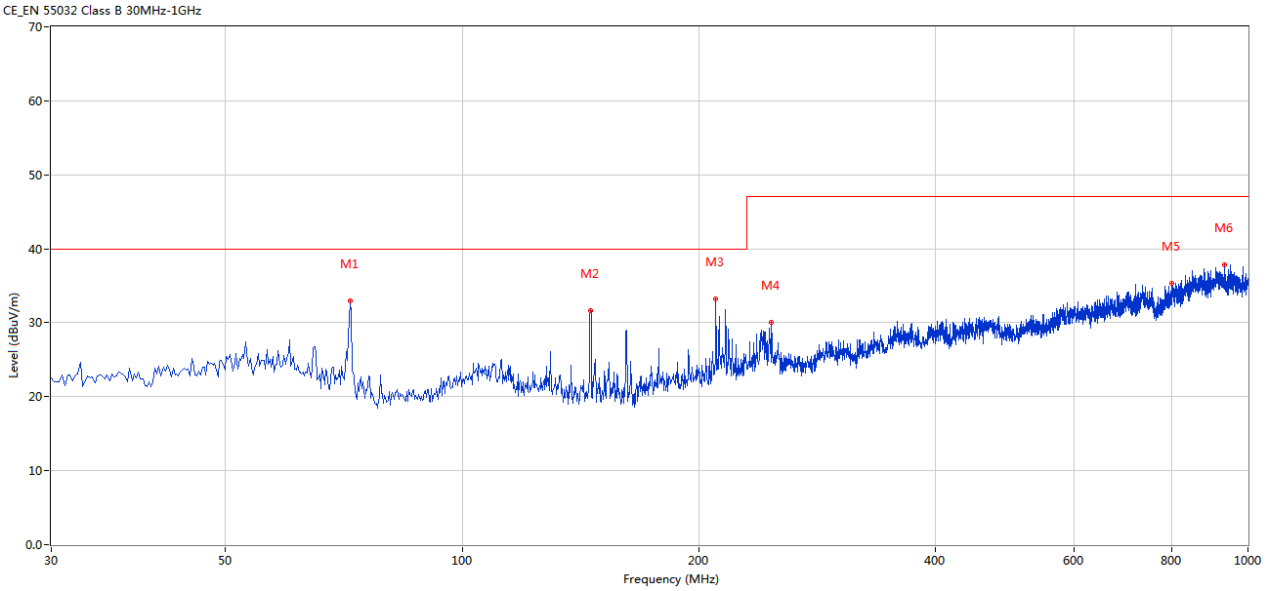
Temperature: 25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: 2.4G Mode (Mouse communication with dongle)

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	71.942	32.96	-11.20	40.0	7.04	Peak	159.00	100	Horizontal	Pass
2	145.644	31.65	-13.02	40.0	8.35	Peak	16.00	100	Horizontal	Pass
3	210.375	33.20	-10.30	40.0	6.80	Peak	305.00	100	Horizontal	Pass
4	247.711	30.00	-8.73	47.0	17.00	Peak	250.00	100	Horizontal	Pass
5	799.745	35.36	0.40	47.0	11.64	Peak	107.00	100	Horizontal	Pass
6	933.814	37.80	2.21	47.0	9.20	Peak	173.00	100	Horizontal	Pass

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F: Radiated Disturbance (30MHz----1000MHz)

EUT Operating Environment

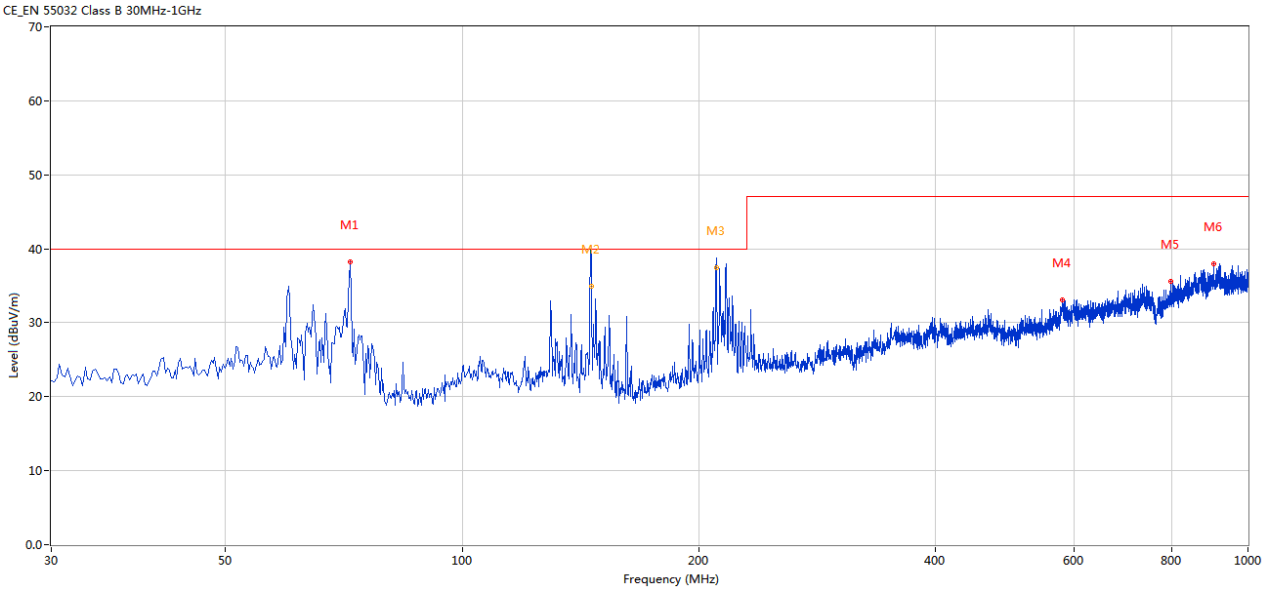
Temperature:25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: 2.4G Mode (Mouse communication with dongle)

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	71.942	38.28	-11.20	40.0	1.72	Peak	146.00	100	Vertical	Pass
2*	145.886	35.00	-13.00	40.0	5.00	QP	112.00	100	Vertical	Pass
3*	210.617	37.49	-10.28	40.0	2.51	QP	73.00	100	Vertical	Pass
4	580.337	33.14	-1.57	47.0	13.86	Peak	82.00	100	Vertical	Pass
5	796.836	35.59	0.11	47.0	11.41	Peak	94.00	100	Vertical	Pass
6	904.964	38.01	2.50	47.0	8.99	Peak	258.00	100	Vertical	Pass

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G: Radiated Disturbance (1000MHz----6000MHz) --- Horizontal

EUT Operating Environment

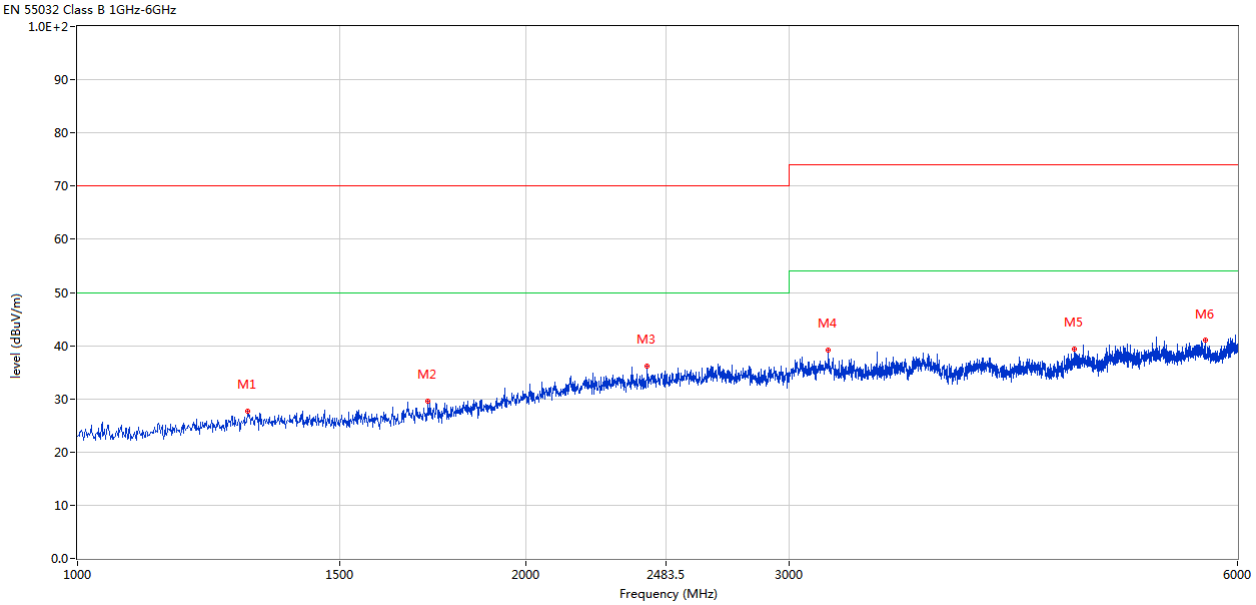
Temperature: 25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: 2.4G Mode (Mouse communication with dongle)

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1301.250	27.68	-8.24	70.0	-42.32	Peak	2.00	100	Horizontal	Pass
2	1718.750	29.64	-7.41	70.0	-40.36	Peak	15.00	100	Horizontal	Pass
3	2410.000	36.19	-3.57	70.0	-33.81	Peak	8.00	100	Horizontal	Pass
4	3190.000	39.18	-1.99	74.0	-34.82	Peak	11.00	100	Horizontal	Pass
5	4666.250	39.33	2.77	74.0	-34.67	Peak	1.00	100	Horizontal	Pass
6	5707.500	41.10	3.83	74.0	-32.90	Peak	10.00	100	Horizontal	Pass

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H: Radiated Disturbance (1000MHz----6000MHz) --- Vertical

EUT Operating Environment

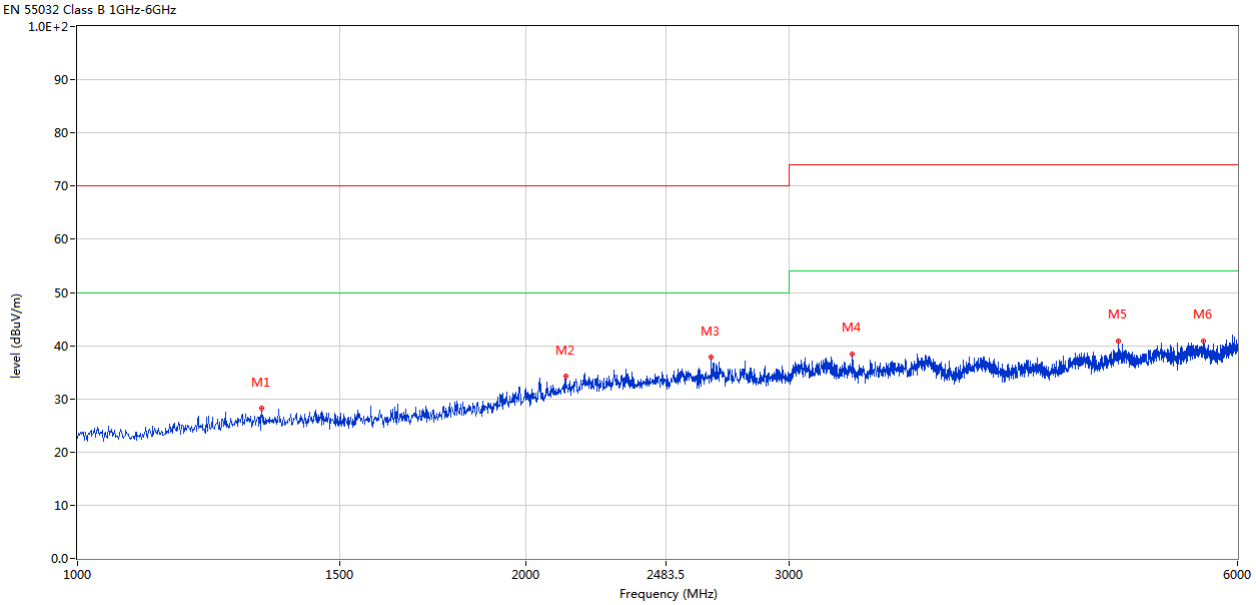
Temperature:25℃ Humidity: 55%RH Atmospheric Pressure: 101 kPa

EUT set Condition: 2.4G Mode (Mouse communication with dongle)

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1330.000	28.23	-8.22	70.0	-41.77	Peak	11.00	100	Vertical	Pass
2	2125.000	34.24	-4.00	70.0	-35.76	Peak	5.00	100	Vertical	Pass
3	2662.500	37.77	-3.10	70.0	-32.23	Peak	15.00	100	Vertical	Pass
4	3311.250	38.51	-2.08	74.0	-35.49	Peak	13.00	100	Vertical	Pass
5	4995.000	40.93	3.44	74.0	-33.07	Peak	12.00	100	Vertical	Pass
6	5695.000	40.88	3.83	74.0	-33.12	Peak	9.00	100	Vertical	Pass

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Clause 8.4 AC Line Conducted Emissions

According to EMC Basic Standard (EN 55032 Class-B)

1. For the table top EUT the distance to the reference ground plane (wall) should be 40 cm.
2. AC input line plugged into LISN.

EUT Operating Mode

USB Dongle part under normal operation/ Mouse under charging mode

Results

Power Line (L, N)	EUT Operating mode or operating mode no.	Detector (Peak, AV, QP)	Additional (scan-) Information (e.g. Pre-test Fast scan, Maxhold, Final measurement.)	Result (Passed / Failed)
L=>GND	USB Dongle part under normal operation/ Mouse under charging mode	QP & AV	--	Pass
N=>GND		QP & AV	--	Pass

The frequency spectrum from 0.15MHz to 30MHz was investigated. All readings are quasi -peak values with a resolution bandwidth of 9 kHz

Temperature: 25℃

Humidity: 53% RH

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A: **Conducted Emission on Live Terminal (150kHz to 30MHz)**

EUT Operating Environment

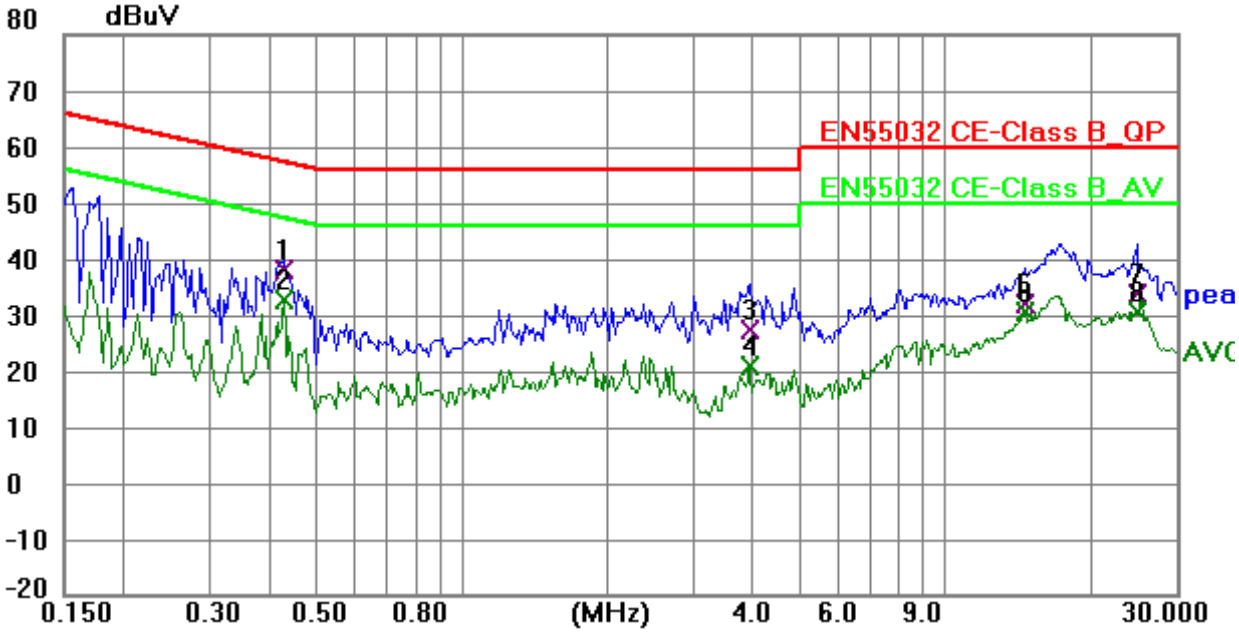
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Dongle under Normal operation mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4269	27.78	10.38	38.16	57.31	-19.15	QP	P
2	0.4269	22.30	10.38	32.68	47.31	-14.63	AVG	P
3	3.9282	15.35	12.00	27.35	56.00	-28.65	QP	P
4	3.9282	8.72	12.00	20.72	46.00	-25.28	AVG	P
5	14.5908	17.10	15.02	32.12	60.00	-27.88	QP	P
6	14.5908	15.40	15.02	30.42	50.00	-19.58	AVG	P
7	24.8868	18.50	15.37	33.87	60.00	-26.13	QP	P
8	24.8868	15.07	15.37	30.44	50.00	-19.56	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

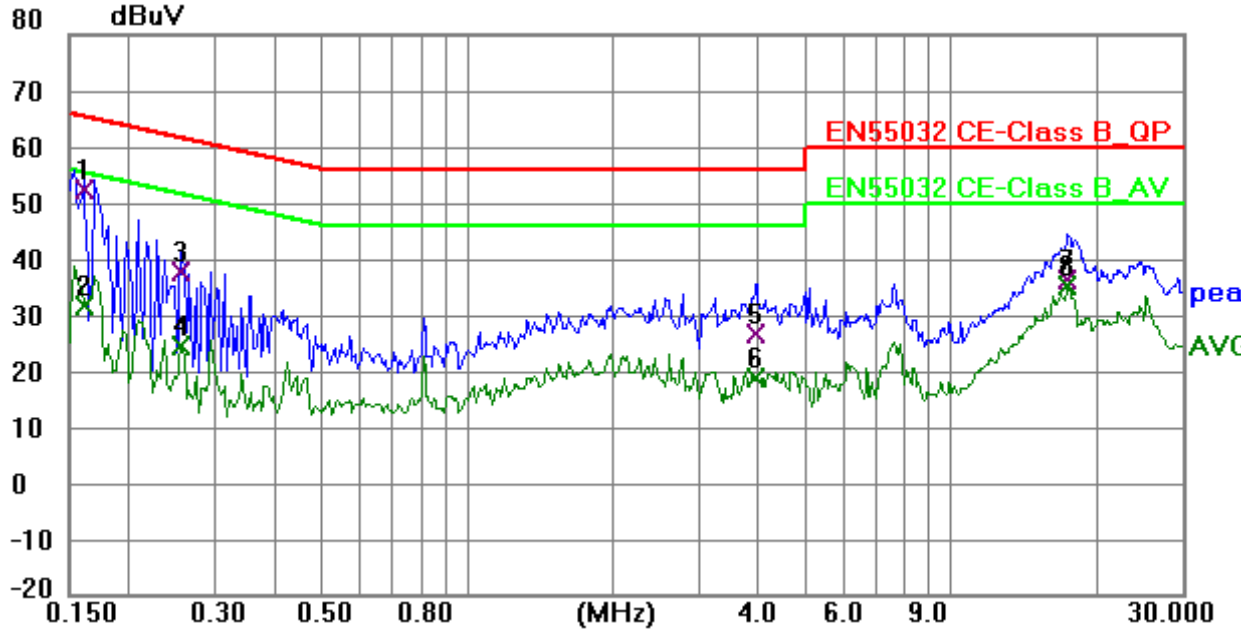
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Dongle under Normal operation mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1617	41.91	10.34	52.25	65.38	-13.13	QP	P
2	0.1617	21.21	10.34	31.55	55.38	-23.83	AVG	P
3	0.2553	27.38	10.33	37.71	61.58	-23.87	QP	P
4	0.2553	14.22	10.33	24.55	51.58	-27.03	AVG	P
5	3.9633	14.71	12.02	26.73	56.00	-29.27	QP	P
6	3.9633	6.58	12.02	18.60	46.00	-27.40	AVG	P
7	17.4338	20.39	15.77	36.16	60.00	-23.84	QP	P
8	17.4338	19.32	15.77	35.09	50.00	-14.91	AVG	P

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C: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

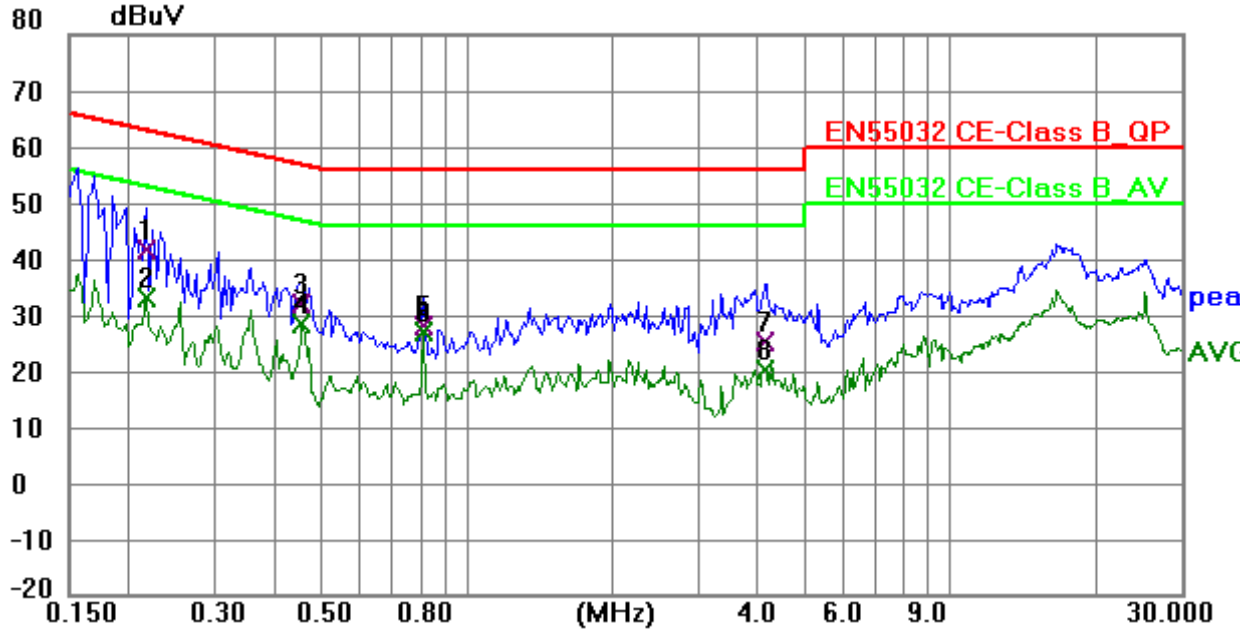
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Mouse under charging mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2163	31.15	10.32	41.47	62.96	-21.49	QP	P
2	0.2163	22.86	10.32	33.18	52.96	-19.78	AVG	P
3	0.4542	21.53	10.39	31.92	56.80	-24.88	QP	P
4	0.4542	17.84	10.39	28.23	46.80	-18.57	AVG	P
5	0.8130	17.60	10.48	28.08	56.00	-27.92	QP	P
6	0.8130	16.32	10.48	26.80	46.00	-19.20	AVG	P
7	4.1544	12.94	12.07	25.01	56.00	-30.99	QP	P
8	4.1544	8.04	12.07	20.11	46.00	-25.89	AVG	P

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D: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

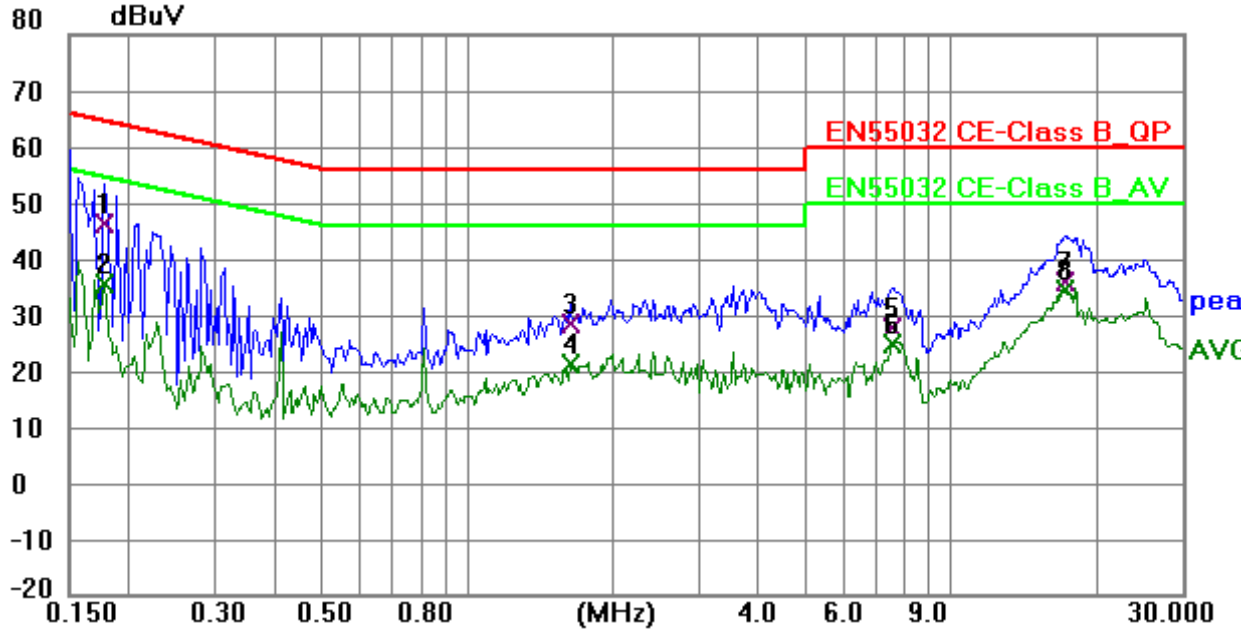
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Mouse under charging mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1773	35.83	10.33	46.16	64.61	-18.45	QP	P
2	0.1773	25.25	10.33	35.58	54.61	-19.03	AVG	P
3	1.6281	17.26	11.02	28.28	56.00	-27.72	QP	P
4	1.6281	10.19	11.02	21.21	46.00	-24.79	AVG	P
5	7.5591	14.64	13.02	27.66	60.00	-32.34	QP	P
6	7.5591	11.93	13.02	24.95	50.00	-25.05	AVG	P
7	17.1453	20.38	15.69	36.07	60.00	-23.93	QP	P
8	17.1453	18.61	15.69	34.30	50.00	-15.70	AVG	P

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Clause 8.5 Harmonic Current Emissions

This test was performed as per EMC Basic Standard EN IEC 61000-3-2:2019/A2:2024

EUT Operating Mode

Normal Operation

Results: **N/A**

Port	EUT Operating mode or operating mode no.	Result (Passed / Failed)
AC Input	Normal Operation	N/A

Please see the following test figure:

Table 1 - Limit of Harmonics Current Measurement	
Limits for Class A equipment	
Harmonics order (n)	**Max. permissible harmonics current (A)**
Odd harmonics	
3	2.3
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15<=n<=39	0.15 x 15/n
Even harmonics	
2	1.08
4	0.43
6	0.30
8<=n<=40	0.23 x 8/n

Note:

1. For Class A equipment, the harmonics of the input current shall not exceed the absolute values given in table 1.
2. For Class B equipment, the harmonics of the input current shall not exceed the values given in table 1 multiplied by factor of 1, 5.

Table 2 - Limit of Harmonics Current Measurement	
Limits for Class C equipment	
Harmonics order (n)	**Max. permissible harmonics current expressed as a percentage of the input current at the fundamental frequency (A)**

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Odd harmonics only	
2	2
3	30× λ *
5	10
7	7
9	5
11<= n<=39	3

Note: The harmonic current limits of lighting equipment shall not exceed the relative limits given in table 2.

Table 3 - Limit of Harmonics Current Measurement		
Limits for Class D equipment		
Harmonics order (n)	**Maximum permissible harmonic current per watt mA/W**	**Maximum permissible harmonic current A**
Odd harmonics only		
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13<=n<=39	3.85/n	See table 1
11<= n<=39	3	

Note: The harmonic of the input current shall not exceed the values that can be derived form table 3.

Test Equipment

Please refer to Section 6 this report.

Test Procedure

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

b. The EUT is classified as follows:

Class A Balanced three-phase equipment and all other equipment, except that stated in one of the following classes.

Class B Portable tools.

Class C Lighting equipment, including dimming devices.

Class D Equipment having an input current with “special wave shape” and an active input power, P≤600W

Note: Due to the input power less than 75W. This test item not applicable.

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Clause 8.6 Flicker and Voltage Fluctuation

This test was performed as per EMC Basic Standard EN 61000-3-3:2013+A2:2021+AC:2022-01

Environmental conditions: Temperature: 25°C; Humidity: 50%RH

EUT Operating Mode

Normal Operation

Results

Port	EUT Operating mode or operating mode no.	Result (Passed / Failed)
AC Input	Normal Operation	**N/A**

Please refer to the following test figure

Test Equipment

Please refer to Section 6 this report.

Test Procedure

a.. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

b. During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT 10 minutes and the observation period for long- term flicker indicator is 2 hours.

Note: Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker.

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Clause 9.2 Immunity Test – Radiated, RF Electromagnetic Field

According to EMC Basic Standard (EN 61000-4-3[9])

USB Dongle part at Operating Mode and Mouse at Operating Mode
Environmental conditions: Temperature: 25°C; Humidity: 50%RH
Type of Port: Enclosure
Performance Criterion: CT/CR
The distance between the turn-table axis and Tx&Rx-antenna is 3m.
Field strength = 3V/m
Start Frequency = 80MHz Stop Frequency = 6000MHz
Frequency Step = lin 1MHz
Modulation = AM, 400Hz,1kHz, 80%

Results

Frequency (MHz)	Antenna Polarity	Radiation to	Reaction of the EUT During and after test	Result
80-6000	Horizontal	Front	No reactions recognized	Passed
80-6000	Vertical	Front	No reactions recognized	Passed
80-6000	Horizontal	Rear	No reactions recognized	Passed
80-6000	Vertical	Rear	No reactions recognized	Passed
80-6000	Horizontal	Left	No reactions recognized	Passed
80-6000	Vertical	Left	No reactions recognized	Passed
80-6000	Horizontal	Right	No reactions recognized	Passed
80-6000	Vertical	Right	No reactions recognized	Passed

Note: Performance criteria A observed.

Test Equipment

Please refer to Section 6 this report.

Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with
The calibration plane such that the distance from antenna to the EUT was 3 meters.
Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.
In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

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Clause 9.3 Electrostatic Discharge

According to EMC basic standard (EN61000-4-2[10])

USB Dongle part at Operating Mode and Mouse at Operating Mode

Environmental conditions: Temperature: 24°C; Humidity: 50%RH

Type of Port:

Mouse: Enclosure, Keys, Type-C Port, USB Port, Gaps, Screws, Switch, Wheel

Donle: Enclosure, Key, Type-C Port, Charging Pins, Screws

Performance Criterion: TT/TR

For the table top EUT the distance to the reference ground plane should be 80 cm.

Direct contact discharge on conducting surfaces of EUT

Indirect air discharge on insulating surfaces of EUT

±2kV, ±4kV direct discharge & ±2kV, ±4kV, ±8kV air discharge

Test Results

Item	**Contact Discharge to conducted surfaces and to coupling planes**		**Air Discharge at insulating surfaces**
	Direct Contact Discharge	**Indirect Contact Discharge**	
Test Voltage	**Reaction of EUT / Result**	**Reaction of EUT / Result**	**Reaction of EUT / Result**
+2kV	n.r.r Passed	n.r.r Passed	**n.r.r Passed**
-2kV	n.r.r Passed	n.r.r Passed	**n.r.r Passed**
+4kV	n.r.r Passed	n.r.r Passed	**n.r.r Passed**
-4kV	n.r.r Passed	n.r.r Passed	**n.r.r Passed**
+8kV	-	-	**n.r.r Passed**
-8kV	-	-	**n.r.r Passed**

Remarks: n.r.r. = no reaction recognized

Performance Criteria A observed and No any function degraded during the tests.

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Clause 9.4 Fast Transients Common Mode

According to EMC basic standard (EN61000-4-4 [11])

USB Dongle part Under Operating Mode/ Mouse under charging mode

Environmental conditions: Temperature: 25°C; Humidity: 51%RH

Type of Port: AC mains power input/output port

Performance Criterion: TT/TR

For the table top EUT the distance to the reference ground plane should be 10 cm.

The test level for ac mains power input ports shall be 1kV open circuit.

Test Setup

Burst on Power Line (direct injection)

Test Results

Adjustment on UCS 500 M4: Trigger “AUTO”, Burst length: 15ms		Test Time:	60s for every voltage and polarity					
			120s for every voltage and polarity					
Testing on power Line (direct injection)		Reaction of The Test Object During and after Test						Result
Test Voltage	Repetition Frequency	L1 =>GND (+=>GND)	L2=> GND	L3=> GND	N=> GND	PE=> GND	L1, N, => GND	
-0.5kV	5kHz	n.r.r	N/A	N/A	n.r.r	N/A	n.r.r	**Pass**
+0.5kV	5kHz	n.r.r	N/A	N/A	n.r.r	N/A	n.r.r	**Pass**
-1.0kV	5kHz	n.r.r	N/A	N/A	n.r.r	N/A	n.r.r	**Pass**
+1.0kV	5kHz	n.r.r	N/A	N/A	n.r.r	N/A	n.r.r	**Pass**

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Clause 9.5 RF Common Mode

According to EMC basic standard (EN61000-4-6 [10])

USB Dongle part Under Operating Mode/ Mouse under charging mode

Environmental conditions: Temperature: 25°C; Humidity: 51%RH

Type of Port: AC mains power input/output port

Performance Criterion: CT/CR

Start Frequency = 150KHz Stop Frequency = 80MHz

Frequency Step = 50kHz in the range of 150kHz-5MHz

1% increment in the range of 5MHz-80MHz

Modulation = AM, 400Hz, 1kHz, 80%

Test Setup

Injection via CDN or BIC clamp

Test Results

Injection On	Injection Via	Reaction of the EUT During and after test	Result
AC input power line	CDN	No reactions recognized	**Pass**

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Clause 9.7 Voltage Dips

According to EMC basic standard (EN61000-4-11 [13])

USB Dongle part Under Operating Mode/ Mouse under charging mode

Environmental conditions: Temperature: 24°C; Humidity: 49%RH

Type of Port: AC mains power input/output port

Performance Criterion: TT/TR

For the table top EUT the distance to the reference ground plane should be 80 cm.

The test level shall be- a vol. Reduction of the supply vol. 100% for 10ms, 100% for 20ms , 30% for 500ms And 100% for 5000ms

Test Results

Voltage Dip:

Test Level % Ut	Reduction	Duration (periods)	Phase Angle	Reaction of EUT during and after Test	Result
0	100%	10ms	0° - 360°	n.r.r- performance criteria A observed	**Pass**
0	100%	20ms	0° - 360°	n.r.r- performance criteria A observed	**Pass**
70	30%	500ms	0° - 360°	n.r.r- performance criteria A observed	**Pass**
Voltage Interceptions:					
Test Level % Ut	Reduction	Duration (periods)	Phase Angle	Reaction of EUT during and after Test	Result
0	100%	5000ms	0° - 360°	n.r.r- performance criteria B observed	**Pass**

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Clause 9.8 Surges Common & Differential Mode (1-phase)

According to EMC basic standard (EN61000-4-5 [14])

USB Dongle part Under Operating Mode/ Mouse under charging mode

Environmental conditions: Temperature: 25°C; Humidity: 50%RH

Type of Port: AC mains power input/output port

Performance Criterion: TT/TR

For the table top EUT the distance to the reference ground plane should be 80 cm.

1KV open circuit for common mode & 0.5kV open circuit for differential mode.

Test Results

5 pulses for each polarity and test voltage, alternating and negative/positive, triggered in case of AC- powerline: 0^o, 45^o, 90^o 180^o, 270^o, referred to the line frequency. (L1)

Repetition rate is 1 per min.

Test Voltage	Reaction of the test object during and after test by trigger angle/pulse no.(coupling on DC-lines =>trigger angle not relevant).					Result
	0^o/pulse no1, 2	45^0/pulse, no.3, 4	90^o/pulse, no. 5, 6	180^o/pulse, no. 7, 8	270^o/pulse, no. 9, 10	
Capacitive coupling on AC line: L1=>N or DC lines lines +=>- (Ri=2Ω/C =18uF)						
-0.5kV +0.5kV	No reaction Recognized	No reaction Recognized	No reaction Recognized	No reaction Recognized	No reaction Recognized	**Pass**
-1.0kV +1.0kV	No reaction Recognized	No reaction Recognized	No reaction Recognized	No reaction Recognized	No reaction Recognized	**Pass**
-2.0kV +2.0kV	N/A	N/A	N/A	N/A	N/A	**N/A**
- kV +kV	N/A	N/A	N/A	N/A	N/A	**N/A**

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3.0 CE Mark label specification

Text of the mark is black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.

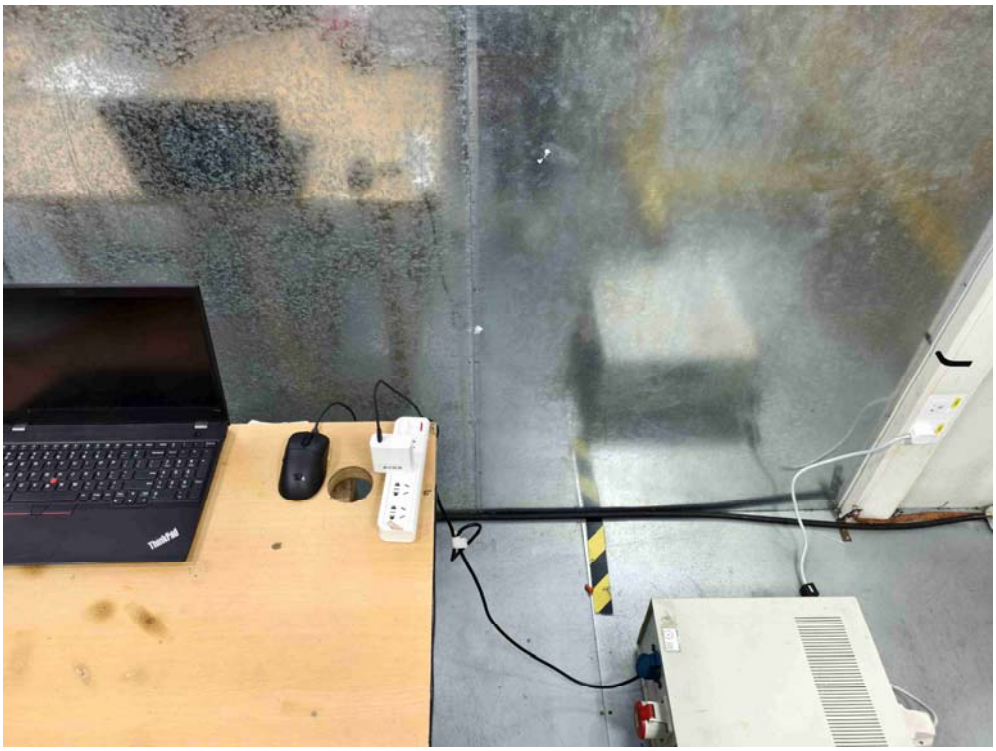


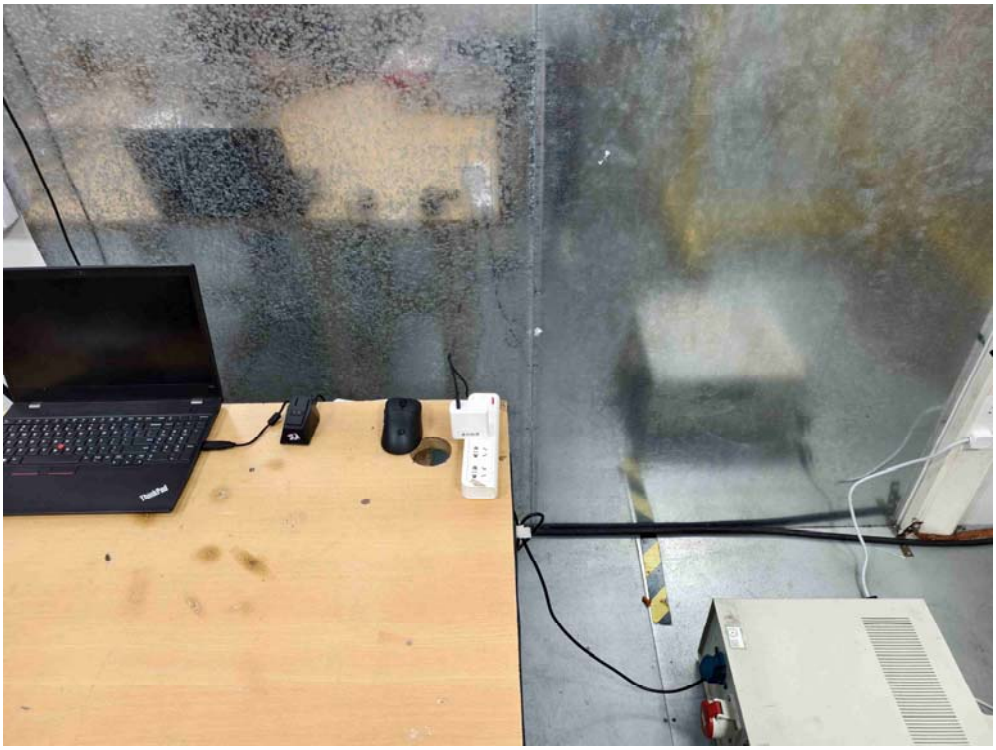
Mark Location: Rear enclosure

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4.0 Photographs – Test Setup

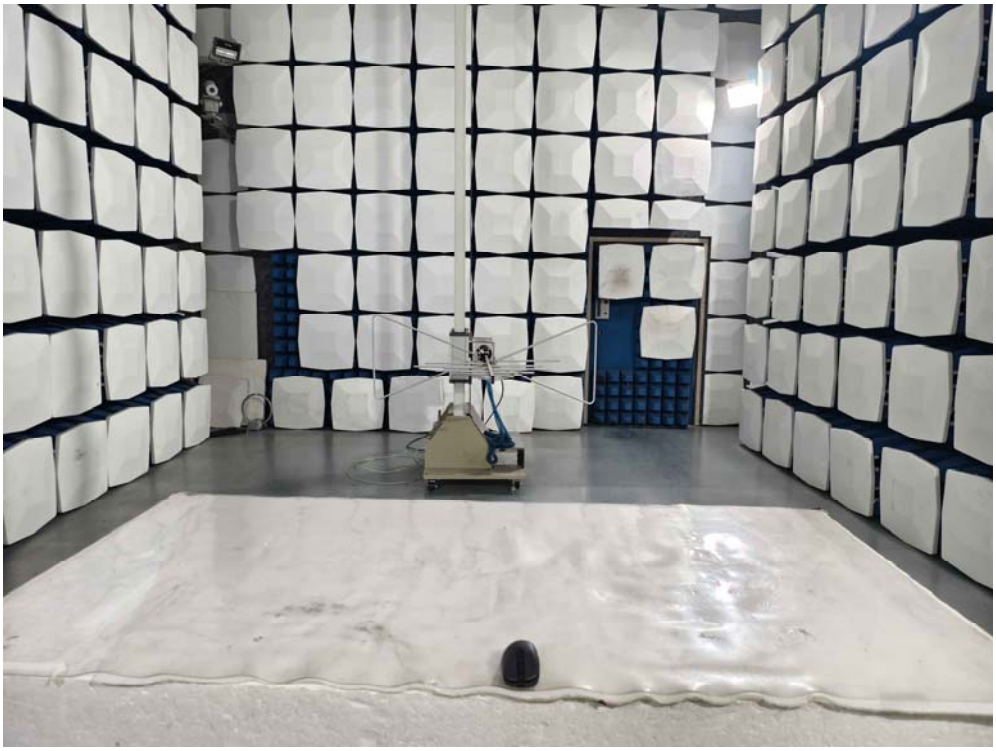
4.1 Photograph – Conducted Test Setup:

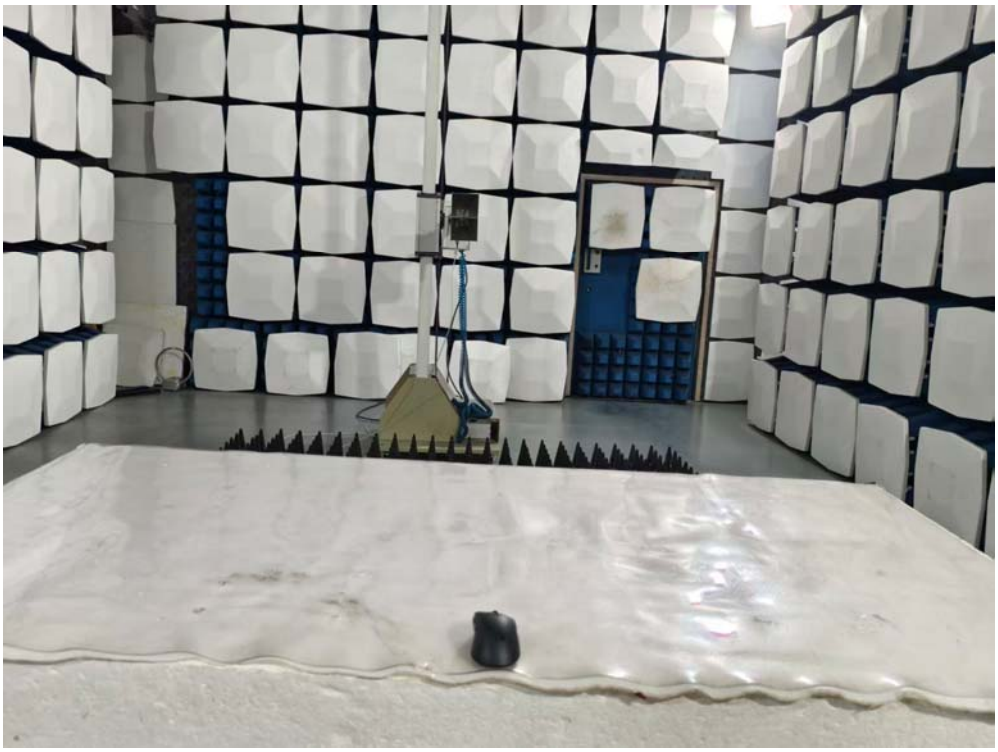




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4.2 Photograph – Radiated Emission Test Setup:





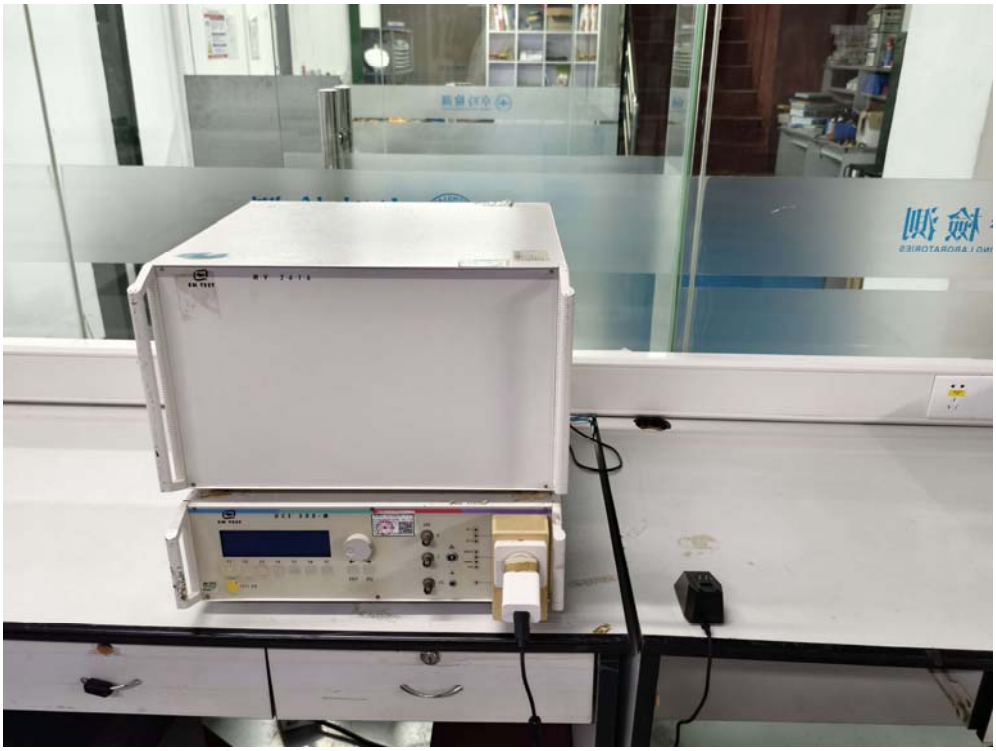
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4.3 Photograph –ESD Test Setup

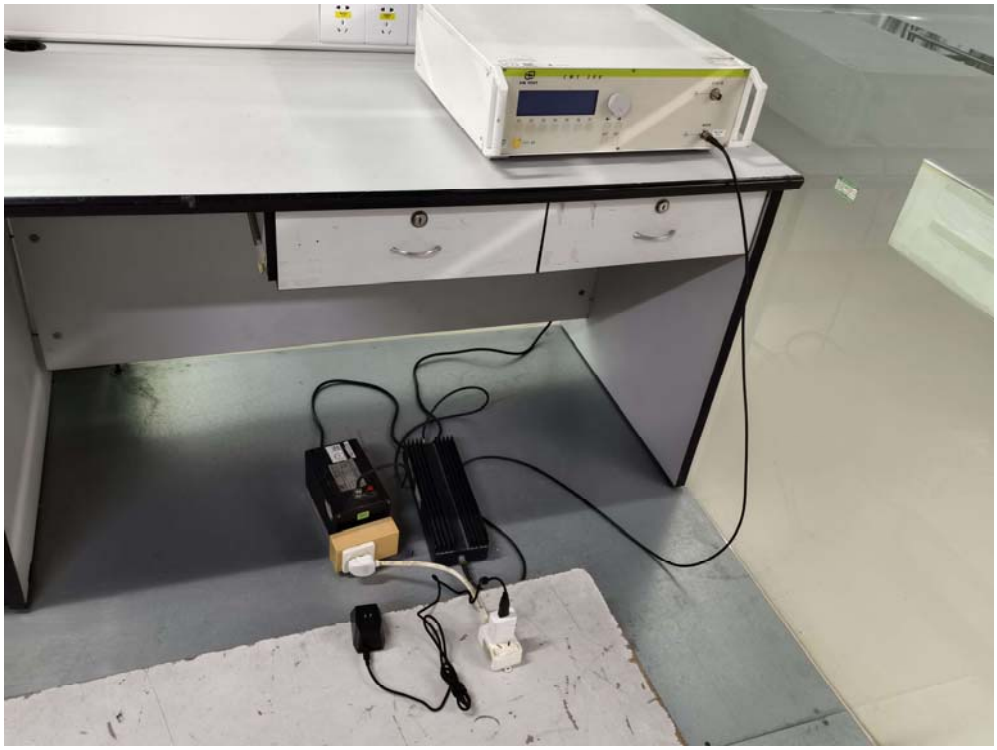


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4.4 Photograph –EFT/B, Surge, Voltage Dips Test Setup



4.5 Photograph – CS Test Setup:



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5.0 Photographs – EUT

Please refer test report TWN2511790-01E

6.0 List of Measurement Equipment

6.1 Conducted Emission Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS 30	834115/006	RS	2025.07.11	1Year
LISN	NNB42	00012	SCHFFNER	2025.07.11	1Year

6.2 Radiated Disturbance Test

Name	Model No	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESPI 3	100379	RS	2025.07.11	1Year
Spectrum Analyzer	E4407B	MY50441392	HP/Agilent	2025.07.11	1Year
Amplifier	BBV9743	#218	HP/Agilent	2025.07.11	1Year
Bilog Antenna	VULB9163	9163/340	Schwarebeck	2025.07.17	3Year
Horn Antenna	BBHA 9120D	9120D-631	RS	2025.07.17	3Year
Amplifier	8449B	3008A00160	HP/Agilent	2025.07.11	1Year

6.3 Harmonic & Flicker Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Harmonics Flicker Test System	PACS-1	72305	CI	2025.07.11	1Year
5K VA AC Power Source	5001iX	56060	CI	2025.07.11	N/A

6.4 ESD Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
ESD Simulator	DITO	0404-24	EM TEST	2025.07.11	1Year

6.5 RF field Strength Susceptibility

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Signal Generator	SMT03	100059	RS	2025.07.11	1Year

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Power Meter	NRVS	---	RS	2025.07.11	1Year
Voltage Probe	URV5-Z2	100012	RS	2025.07.11	1Year
Voltage Probe	URV5-Z2	100013	RS	2025.07.11	1Year
Power Amplifier	150W1000	300999	AR	2025.07.11	1Year
Power Amplifier	25S1G4AM1	305993	AR	2025.07.11	1Year
Field Probe	CBL6111C	2576	Holaday	2025.07.11	1Year
Bilog Antenna	MCDC	---	Chase	2025.07.11	1Year

6.6 Electrical Fast Transient/Burst (EFT/B) Immunity test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EFT Generator	UCS 500 M4	0304-42	EM TEST	2025.07.11	1Year
Power Source	MV2616	0104-14	EM TEST	2025.07.11	1Year

6.7 Surge Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Ultra Compact Simulator	UCS 500 M4	0304-42	EM TEST	2025.07.11	1Year
Power Source	MV2616	0104-14	EM TEST	2025.07.11	1Year

6.8 Conducted Immunity Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Continuous Wave Simulator	CWS 500C	0407-05	EM TEST	2025.07.11	1 Year

6.9 Voltage Dips/Interruption Immunity Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Ultra Compact Simulator	UCS 500 M4	0304-42	EM TEST	2025.07.11	1 Year
Power Source	MV2616	0104-14	EM TEST	2025.07.11	1 Year

End of the report

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