

RADIO TEST REPORT

For

Mid Ocean Brands B.V.

Wireless USB Mouse

Test Model: MO8827

Prepared for : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon,
Hong Kong

Prepared by : Shenzhen SIT Testing Technology Co., Ltd.
Address : Room 401, Building A2, The 2nd Industrial Zone of Zhu'ao, Gushu,
Xixiang, Bao'an District, Shenzhen, Guangdong, China

Date of receipt of test sample : March 14, 2025
Number of tested samples : 1
Serial number : Prototype
Date of Test : March 14, 2025 -March 25, 2025
Date of Report : March 25, 2025



RADIO TEST REPORT**ETSI EN 300 440 V2.2.1 (2018-07)**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the CE-RED Directive

Report Reference No. : **SIT250314161301ER-1**

Date of Issue : March 25, 2025

Testing Laboratory Name : **Shenzhen SIT Testing Technology Co., Ltd.**

Address : Room 401, Building A2, The 2nd Industrial Zone of Zhu'ao, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure : Full application of Harmonised standards ☒
 Partial application of Harmonised standards ☐
 Other standard testing method ☐

Applicant's Name : **Mid Ocean Brands B.V.**

Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Test Specification

Standard : ETSI EN 300 440 V2.2.1 (2018-07)

Test Report Form No. : SITEMC-1.0

TRF Originator : Shenzhen SIT Testing Technology Co., Ltd.

Master TRF : Dated 2016-04

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Test Item Description. : **Wireless USB Mouse**

Trade Mark : N/A

Model/ Type Reference : MO8827

Ratings : Mouse: 3V $\frac{---}{---}$ by AAA battery*2
 USB dongle: 5V $\frac{---}{---}$

Result : **Positive**

Tested By:

Tom / Test Engineer

Reviewed By:

Leon Li / Project Engineer

Approved By:

Kevin Sun / Manager

2 Test Summary

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Duty Cycle	EN 300 440 V2.2.1	EN 300 440 V2.2.1 clause 4.2.5.3	EN 300 440 V2.2.1 clause 4.2.5.4	Pass
Equivalent isotropically radiated power		EN 300 440 V2.2.1 clause 4.2.2.3	EN 300 440 V2.2.1 clause 4.2.2	Pass
Permitted range of operating frequencies		EN 300 440 V2.2.1 clause 4.2.3.3	EN 300 440 V2.2.1 clause 4.2.3	Pass
Unwanted emissions in the spurious domain (Radiated)		EN 300 440 V2.2.1 clause 4.2.4.3	EN 300 440 V2.2.1 clause 4.2.4	Pass
Spurious radiations		EN 300 440 V2.2.1 clause 4.3.5.3	EN 300 440 V2.2.1 clause 4.3.5	Pass
Blocking or desensitization		EN 300 440 V2.2.1 clause 4.3.4.3	EN 300 440 V2.2.1 clause 4.3.4	Pass

3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents.....	4
4 General Information	6
4.1 Details E.U.T	6
4.2 Environment Parameter.....	7
4.3 Description Support Units <i>Tof</i>	
4.4 Measurement Uncertainty	7
4.5 Test Location	8
4.6 Deviation From Standards	8
4.7 Abnormalities From Standard Conditions	8
5 Equipment List	9
6 Radio Spectrum Matter Test Results	11
6.1 Duty Cycle	11
6.1.1 Measurement Procedure and Data	11
6.2 Equivalent isotropically radiated power	12
6.2.1 E.U.T. Operation	12
6.2.2 Test Mode Description	12
6.2.3 Test Setup Diagram	13
6.2.4 Measurement Procedure and Data	13
6.3 Permitted range of operating frequency.....	14
6.3.1 E.U.T. Operation	14
6.3.2 Test Mode Description	14
6.3.3 Test Setup Diagram	14
6.3.4 Measurement Procedure and Data	14
6.4 Unwanted emissions in the spurious domain (Radiated)	15
6.4.1 E.U.T. Operation	15
6.4.2 Test Mode Description	15
6.4.3 Test Setup Diagram	16
6.4.4 Measurement Procedure and Data	16
6.5 Spurious radiations.....	23
6.5.1 E.U.T. Operation	23
6.5.2 Test Mode Description	23
6.5.3 Test Setup Diagram	24
6.5.4 Measurement Procedure and Data	24
6.6 Blocking or desensitization	31
6.6.1 E.U.T. Operation	31
6.6.2 Test Mode Description	31
6.6.3 Test Setup Diagram	32

6.6.4 Measurement Procedure and Data 32

7 Test Setup Photo..... 33

8 EUT Constructional Details (EUT Photos) 34

9 Appendix..... 35

4 General Information

4.1 Details of E.U.T.

Power supply:	Mouse: 3V $\frac{1}{2}$ by AAA battery*2 USB dongle: 5V $\frac{1}{2}$
Operating Frequency:	2408MHz to 2469MHz
Channel number:	17
Modulation Type:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	2dBi
The highest working frequency (except RF modulator):	Less than 108MHz

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2408	11	2443
2	2409	12	2445
3	2411	13	2447
4	2413	14	2461
5	2415	15	2465
6	2417	16	2467
7	2419	17	2469
8	2421		
9	2439		
10	2441		

Remark: The information in this section is provided by the applicant or manufacturer, SIT is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Environment Parameter

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Voltage(V)	Temperature(°C)
VNTN	4.5	25
VLTL	3.825	0
VLTH	3.825	45
VHTL	5.175	0
VHTH	5.175	45
Note: VN:Normal Voltage VL:Low Extreme Test Voltage VH:High Extreme Test Voltage TN:Normal Temperature TL:Low Extreme Test Temperature TH:High Extreme Test Temperature		

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--
The EUT has been tested as an independent unit.			

4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
Duty Cycle	$\pm 0.37\%$
Equivalent isotropically radiated power	$\pm 0.75\text{dB}$
Permitted range of operating frequencies	$\pm 7.25 \times 10^{-8}$
Unwanted emissions in the spurious domain (Radiated)	$\pm 4.5\text{dB}$ (Below 1GHz) / $\pm 4.8\text{dB}$ (Above 1GHz)
Spurious radiations	$\pm 4.5\text{dB}$ (Below 1GHz) / $\pm 4.8\text{dB}$ (Above 1GHz)
Blocking or desensitization	$\pm 7.25 \times 10^{-8}$
Remark: The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

4.5 Test Location

All tests were performed at:

Shenzhen SIT Testing Technology Co., Ltd.

Room 401, Building A2, The 2nd Industrial Zone of Zhu'ao, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Equivalent isotropically radiated power					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-09-20	2025-09-19
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-09-21	2025-09-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-09-07	2025-09-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-09-31	2025-09-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-09-21	2025-09-20

Permitted range of operating frequencies					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-09-20	2025-09-19
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-09-21	2025-09-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-09-07	2025-09-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-09-31	2025-09-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-09-21	2025-09-20

Unwanted emissions in the spurious domain (Radiated)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Fully-Anechoic Chamber 1	SAEMC	MFAC	SEM001-04	2024-09-11	2025-09-10
Spectrum Analyzer	Rohde&Schwarz	FSU43	SEM004-08	2024-09-20	2025-09-19
BiConiLog Antenna	Schwarzbeck	VULB9163	SEM003-05	2024-09-17	2025-09-16
Horn Antenna	Rohde&Schwarz	HF907	SEM003-06	2024-09-07	2025-09-06
Amplifier	Shanghai Steed Automation Instrument Co.,Ltd	YX28980935	SEM005-26	2024-09-21	2025-09-20
Pre-Amplifier	Rohde & Schwarz	CH14-H052	SEM005-17	2024-09-20	2025-09-19
Measurement Software	Rohde&Schwarz	EMC32 V9.25.00	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM027-01	2024-09-07	2025-09-06

Spurious radiations					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Fully-Anechoic Chamber 1	SAEMC	MFAC	SEM001-04	2024-09-11	2025-09-10
Spectrum Analyzer	Rohde&Schwarz	FSU43	SEM004-08	2024-09-20	2025-09-19
BiConiLog Antenna	Schwarzbeck	VULB9163	SEM003-05	2024-09-17	2025-09-16
Horn Antenna	Rohde&Schwarz	HF907	SEM003-06	2024-09-07	2025-09-06
Amplifier	Shanghai Steed Automation Instrument Co.,Ltd	YX28980935	SEM005-26	2024-09-21	2025-09-20
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2024-09-20	2025-09-19
Measurement Software	Rohde&Schwarz	EMC32 V9.25.00	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM027-01	2024-09-07	2025-09-06

Blocking or desensitization					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-09-20	2025-09-19
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-09-21	2025-09-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2024-09-29	2025-09-28
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-09-07	2025-09-06
Attenuator	Huber+Suhner	6620_SMA-50- 1	SEM021-09	2024-09-31	2025-09-30

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2024-09-28	2025-09-27
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2024-09-28	2025-09-27
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024-09-23	2025-09-22

6 Radio Spectrum Matter Test Results

6.1 Duty Cycle

Test Requirement EN 300 440 V2.2.1 clause 4.2.5.4

Test Method: EN 300 440 V2.2.1 clause 4.2.5.3

Limit:

Table 4: Duty cycle limits

Frequency Band	Duty cycle	Application	Notes
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use	
2 400 MHz to 2 483,5 MHz	No Restriction	Radiodetermination	
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID	Limits shown in
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID	Limits shown in Annex G shall apply
5 725 MHz to 5 875 MHz	No Restriction	Generic use	
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination	
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination	
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination	
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination	
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination, limited to GBSAR detecting and movement and alert applications	Limits shown in Annex I shall apply
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for radiodetermination	

NOTE: The spectrum ranges in some entries are not harmonised throughout all EU territory, specifically entries 4, 9, and 11 have been identified as such. Implementers are cautioned to refer to CEPT/ERC Recommendation 70-03 [i.2] as well as current National Radio plans to verify acceptance within intended regions of use.

6.1.1 Measurement Procedure and Data

Standard Requirement:

For automatic operated devices, either software controlled or pre-programmed devices, the provider shall declare the duty cycle for the equipment under test, see table 6.

For manual operated or event dependant devices, with or without software controlled functions, the provider shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmitter remains on until the trigger is released or the device is manually reset. The provider shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the provider shall be used to determine the duty cycle and compare to the limit in table 6. Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the provider.

For devices with a 100 % duty cycle transmitting an unmodulated carrier most of the time, a time-out shut-off facility shall be implemented in order to improve the efficient use of spectrum. The method of implementation shall be declared by the provider.

Duty cycle is the ratio expressed as a percentage, of the cumulative duration of transmissions T_{on_cum} within an observation interval T_{obs} on an observation bandwidth F_{obs} .

T_{obs} is 1 hour, also equal to 3600s.

Duty Cycle= T_{on_cum} / T_{obs}

Please Refer to Appendix for Details

6.2 Equivalent isotropically radiated power

Test Requirement EN 300 440 V2.2.1 clause 4.2.2

Test Method: EN 300 440 V2.2.1 clause 4.2.2.3

Limit:

Table 2: Maximum radiated power (e.i.r.p.)

Entry	Frequency Bands	Power	Application	Notes
1	2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2	2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radiodetermination devices	
3	(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and Annex G
4	(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and Annex G
5	5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
6	9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radiodetermination devices	
7	9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radiodetermination devices	
8	10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radiodetermination devices	
9	13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radiodetermination devices	
10	17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radiodetermination devices	See Annex H
11	24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and radiodetermination devices	
NOTE: The spectrum ranges in some entries are not harmonised throughout all EU territory, specifically entries 4, 9, and 11 have been identified as such. Implementers are cautioned to refer to CEPT/ERC Recommendation 70-03 [i.2] as well as current National Radio plans to verify acceptance within intended regions of use.				

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.2 °C

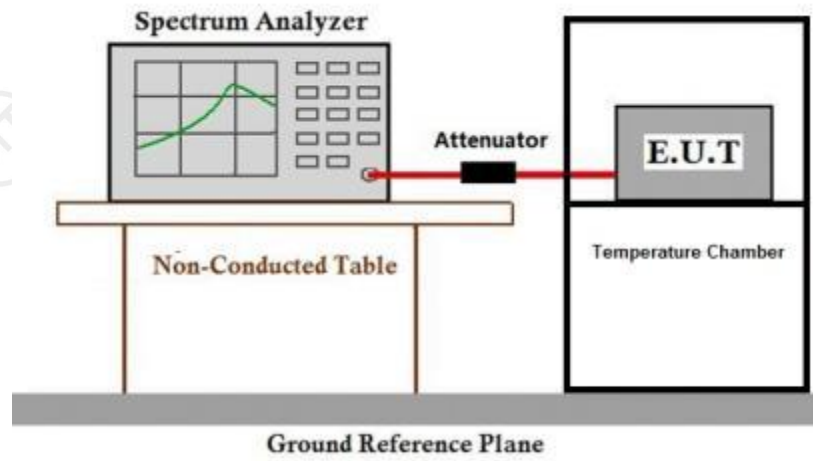
Humidity: 47.4 % RH

Atmospheric Pressure: 1005 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in transmitting mode.

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

Please Refer to Appendix for Details

6.3 Permitted range of operating frequencies

Test Requirement EN 300 440 V2.2.1 clause 4.2.3
Test Method: EN 300 440 V2.2.1 clause 4.2.3.3

Limit:

The width of the power spectrum envelope is $f_H - f_L$ for a given operating frequency. In equipment that allows adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allowed band. The frequency range is determined by the lowest value of f_L and the highest value of f_H resulting from the adjustment of the equipment to the lowest and highest operating frequencies. The occupied bandwidth (i.e. the bandwidth in which 99 % of the wanted emission is contained) and the necessary bandwidth of the transmitter shall fall within the assigned frequency band.

For all equipment the frequency range shall lie within the frequency band. For non-harmonized frequency bands the available frequency range may differ between national administrations.

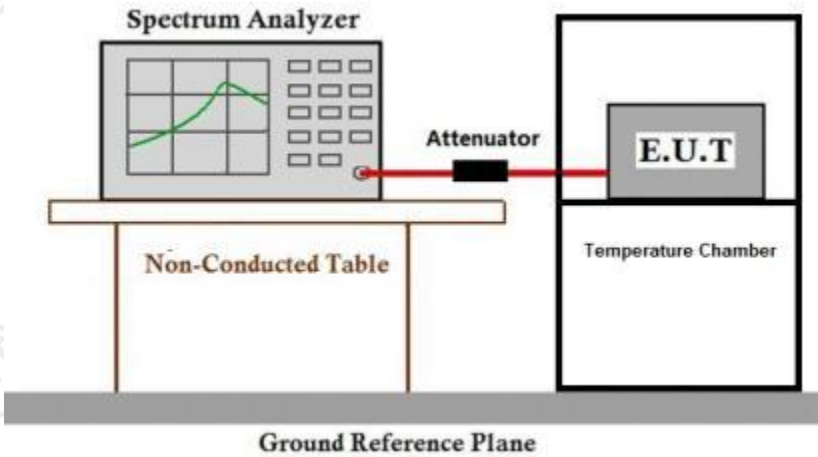
6.3.1 E.U.T. Operation

Operating Environment:
Temperature: 24.2 . C Humidity: 47.4 % RH Atmospheric Pressure: 1005 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in transmitting mode.

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details

6.4 Unwanted emissions in the spurious domain (Radiated)

Test Requirement EN 300 440 V2.2.1 clause 4.2.4

Test Method: EN 300 440 V2.2.1 clause 4.2.4.3

Limit:

Table 3: Spurious emissions

Frequency ranges	47 MHz to 74 MHz 87,5 MHz to 108 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤1 000 MHz	Frequencies >1 000 MHz
Operating	4nW (-54dBm)	250nW (-36dBm)	1uW (-30dBm)
Standby	2nW (-57dBm)	2nW (-57dBm)	20nW (-47dBm)

The bandwidth of the measuring receiver:

Frequency Range: (f)	Receiver reference bandwidth BWref
30MHz≤f≤1000MHz	100KHz to 120KHz
f>1000MHz	1MHz

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

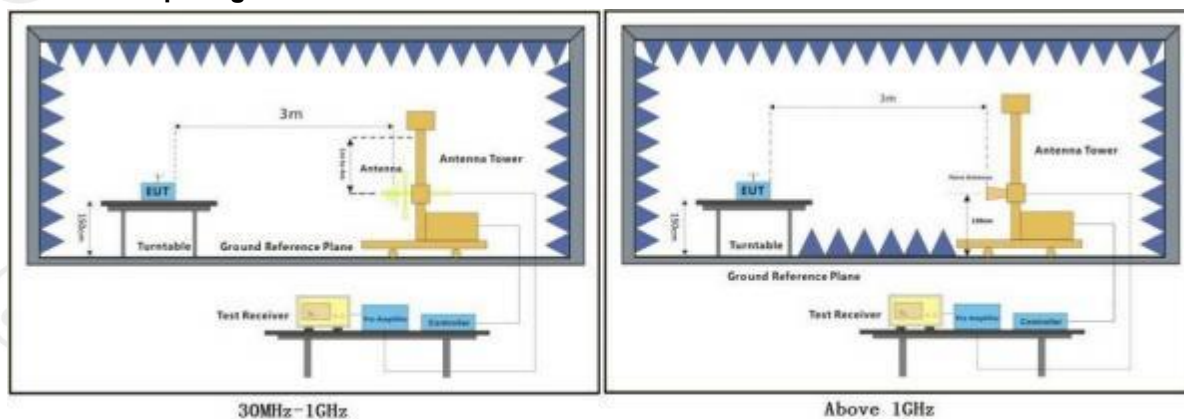
Humidity: 50.3 % RH

Atmospheric Pressure: 995 mbar

6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in transmitting mode.
Pre-scan	02	Standby mode_Keep the EUT in standby mode.

6.4.3 Test Setup Diagram



6.4.4 Measurement Procedure and Data

1. Using test software to set up the lowest channel, the middle channel and the highest channel.
2. Scan from 25MHz to 25GHz, find the maximum radiation frequency to measure.
3. The technique used to find the Spurious Emissions of the transmitter was a pre-calibration method which is measure the path loss from the measurement antenna to the substitution antenna and subtract this from the signal generator level to reach the measurement result. The method was performed to determine the actual ERP/EIRP emission levels of the EUT.

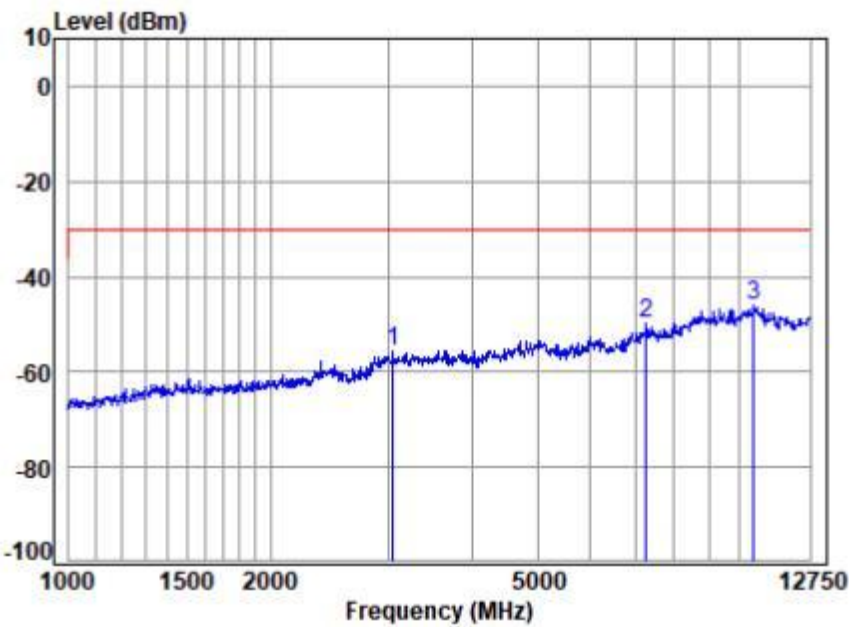
Test procedure as below:

- 1) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length. Receiver mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 2) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3) The test antenna shall be raised or lowered again, if necessary, through the specified height range until a maximum is obtained. This level shall be recorded.
- 4) This measurement shall be repeated for horizontal and vertical polarization.

Remark:

- 1) For measurements above 1 000 MHz ,the peak detector has been used.
 . For measurements 30MHz to 1 000 MHz ,the quasi-peak detector has been used.
- 2) all tests were conducted from 25MHz to 25GHz. The emissions for 25MHz to 1GHz and above 12.75GHz have a margins of more than 10 dB, so it is deemed to comply with the requirement without reporting the test data.
- 3) For Standby Mode , the emission was very low and have a margins of more than 10dB, so it is deemed to comply with the requirement without reporting the test data.

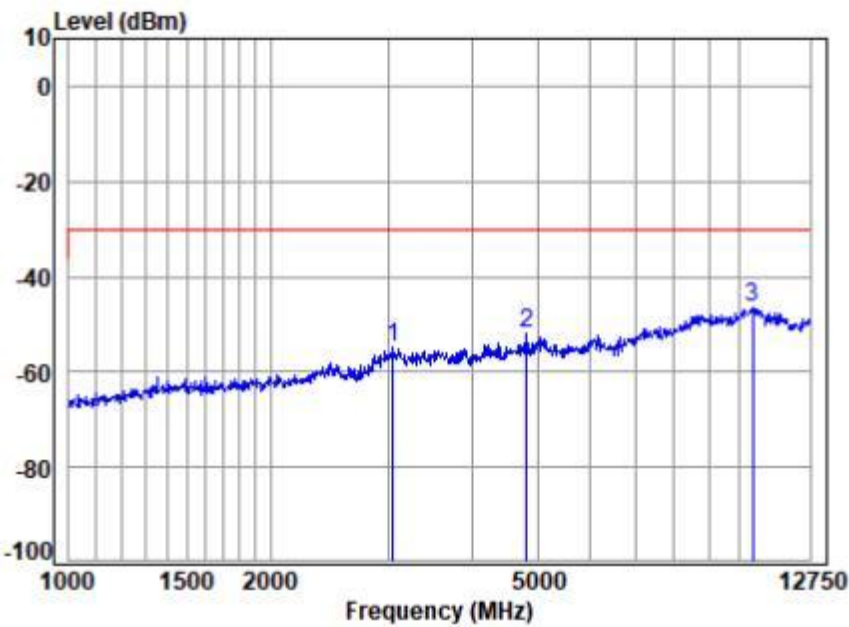
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 02517AT
Test mode: 2408 TX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3049.39	-55.64	-30.00	-25.64
2	7245.81	-49.90	-30.00	-19.90
3	10480.59	-46.05	-30.00	-16.05

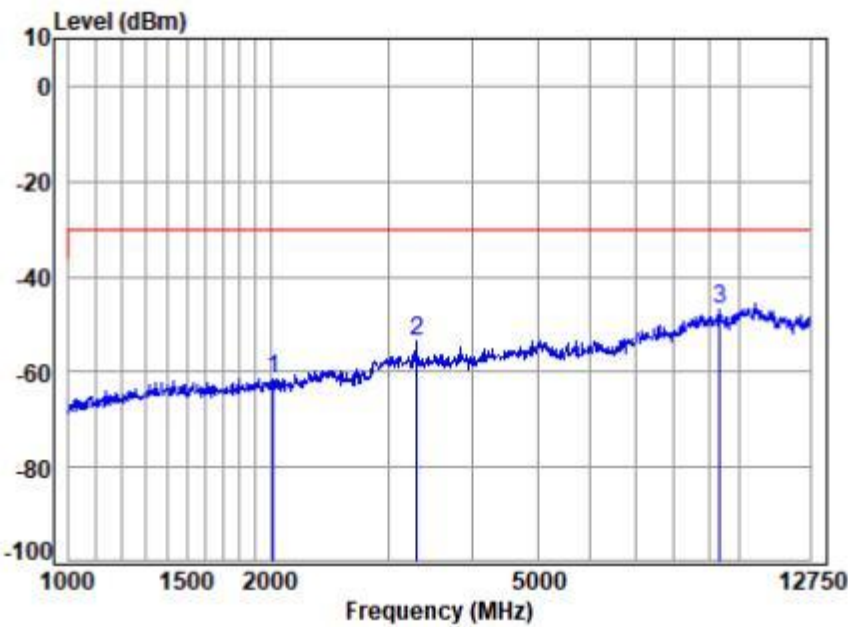
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL
Job No.: 02517AT
Test mode: 2408 TX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3049.39	-54.83	-30.00	-24.83
2	4821.76	-51.89	-30.00	-21.89
3	10453.95	-46.39	-30.00	-16.39

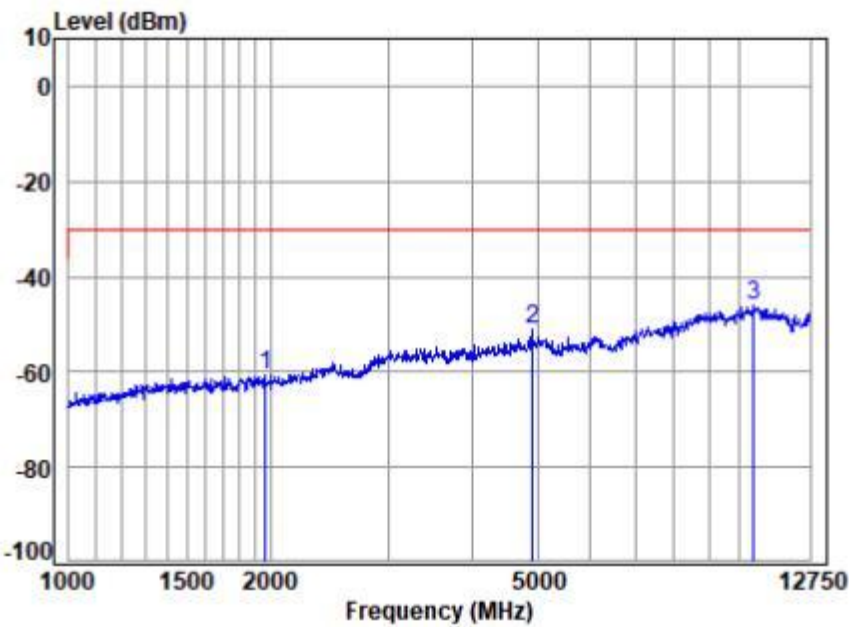
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Condition: 3m HORIZONTAL
Job No.: 02517AT
Test mode: 2447 TX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	2013.80	-61.37	-30.00	-31.37
2	3291.39	-53.72	-30.00	-23.72
3	9322.50	-46.82	-30.00	-16.82

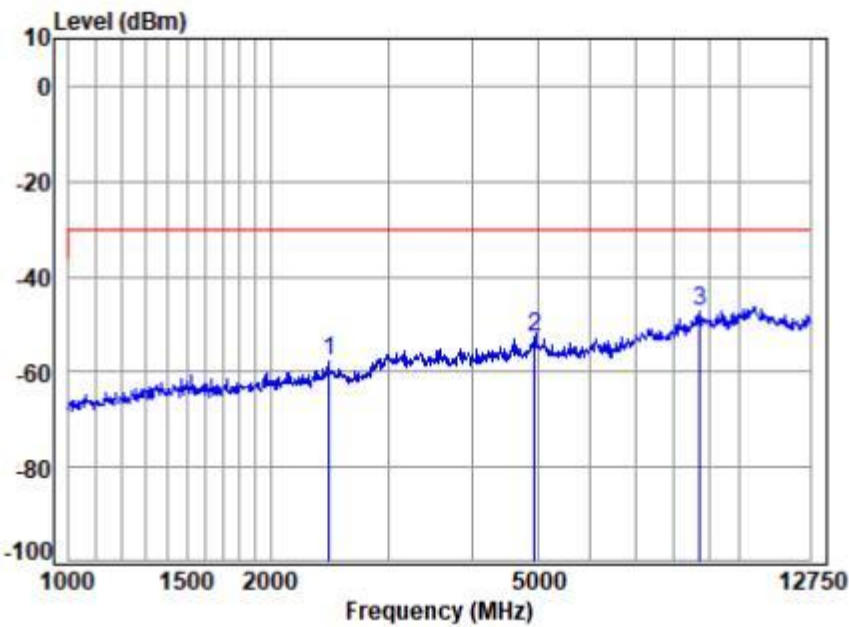
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:middle



Condition: 3m VERTICAL
Job No.: 02517AT
Test mode: 2447 TX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1958.19	-60.57	-30.00	-30.57
2	4895.97	-51.08	-30.00	-21.08
3	10507.31	-46.16	-30.00	-16.16

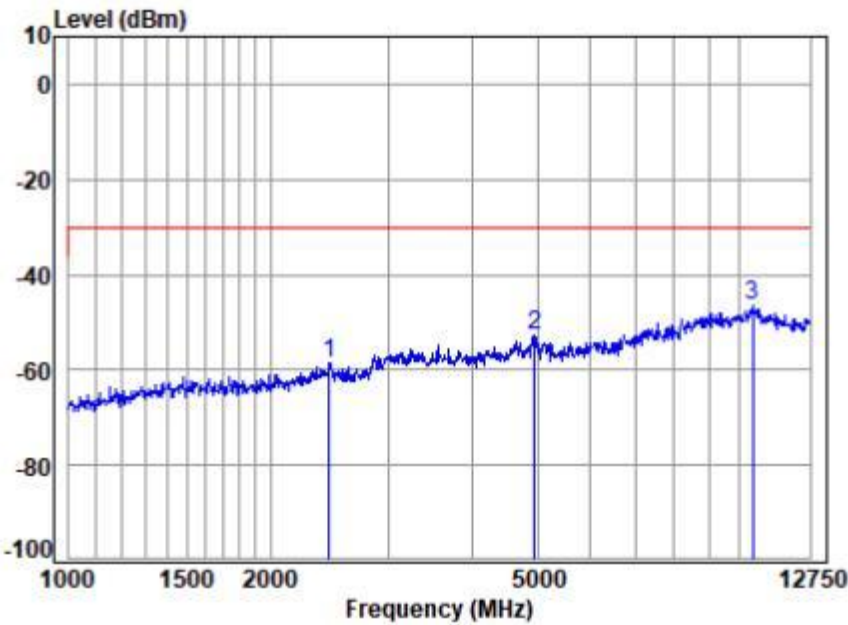
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL
Job No.: 02517AT
Test mode: 2469 TX RSE
 : 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	2437.41	-57.74	-30.00	-27.74
2	4933.50	-52.90	-30.00	-22.90
3	8747.72	-47.23	-30.00	-17.23

Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL
Job No.: 02517AT
Test mode: 2469 TX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	2443.62	-58.43	-30.00	-28.43
2	4933.50	-52.81	-30.00	-22.81
3	10453.95	-46.27	-30.00	-16.27

6.5 Spurious radiations

Test Requirement EN 300 440 V2.2.1 clause 4.3.5

Test Method: EN 300 440 V2.2.1 clause 4.3.5.3

Limit:

The spurious emissions of the receiver shall not exceed the values in tables in the indicated bands:

Frequency Range	Limit
25 MHz to 1 GHz	2nW(-57dBm)
Above 1GHz	20nW(-47dBm)

The bandwidth of the measuring receiver:

Frequency Range: (f)	Receiver reference bandwidth BWref
$30\text{MHz} \leq f \leq 1000\text{MHz}$	100KHz to 120KHz
$f > 1000\text{MHz}$	1MHz

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

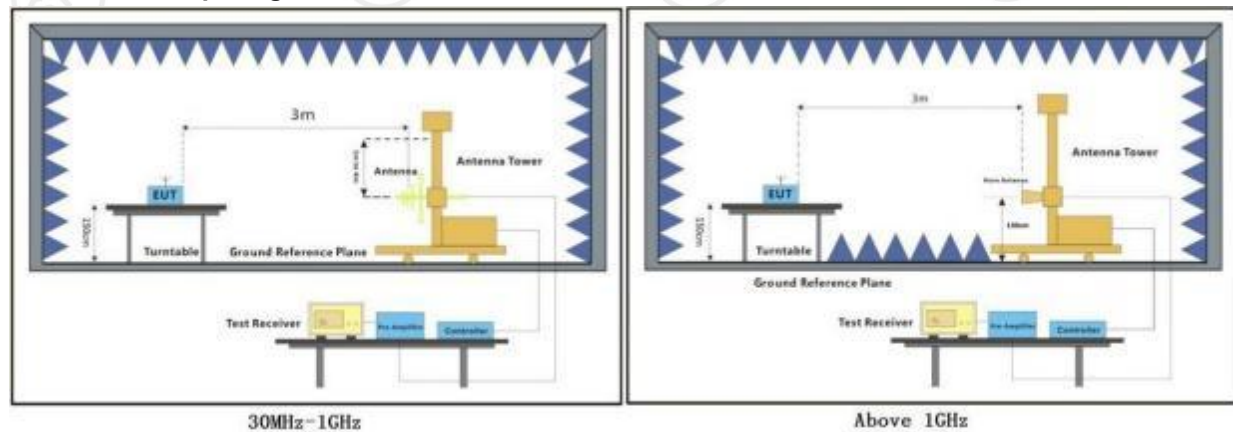
Humidity: 50.3 % RH

Atmospheric Pressure: 995 mbar

6.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	RX mode_Keep the EUT in receiving mode.

6.5.3 Test Setup Diagram



6.5.4 Measurement Procedure and Data

1. Using test software to set up the lowest channel, the middle channel and the highest channel.
2. Scan from 25MHz to 25GHz, find the maximum radiation frequency to measure.
3. The technique used to find the Spurious Emissions of the transmitter was a pre-calibration method which is measure the path loss from the measurement antenna to the substitution antenna and subtract this from the signal generator level to reach the measurement result. The method was performed to determine the actual ERP/EIRP emission levels of the EUT.

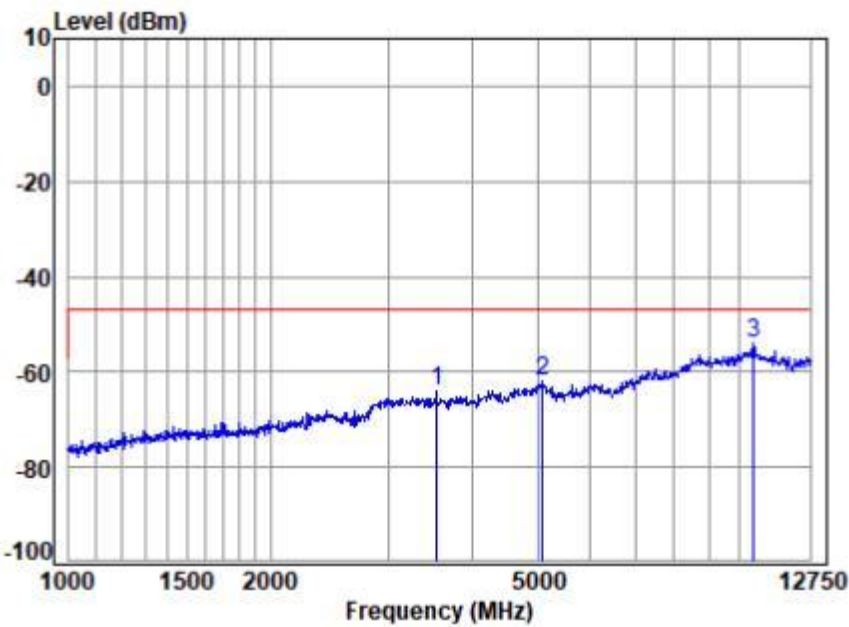
Test procedure as below:

- 1) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length. Receiver mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 2) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3) The test antenna shall be raised or lowered again, if necessary, through the specified height range until a maximum is obtained. This level shall be recorded.
- 4) This measurement shall be repeated for horizontal and vertical polarization.

Remark:

- 1) For measurements above 1 000 MHz ,the peak detector has been used.
 . For measurements 30MHz to 1 000 MHz ,the quasi-peak detector has been used.
- 2) For emission test, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 3) all tests were conducted from 25MHz to 25GHz. The emissions for 25MHz to 1GHz and above 12.75GHz have a margins of more than 10 dB, so it is deemed to comply with the requirement without reporting the test data

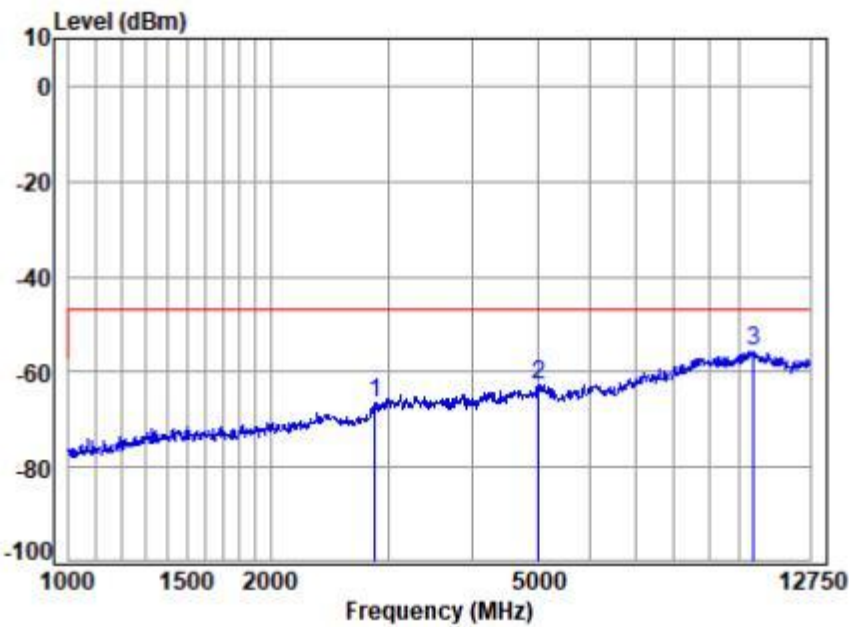
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 02517AT
Test mode: 2408 RX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3534.54	-64.21	-47.00	-17.21
2	5073.59	-62.11	-47.00	-15.11
3	10507.31	-54.19	-47.00	-7.19

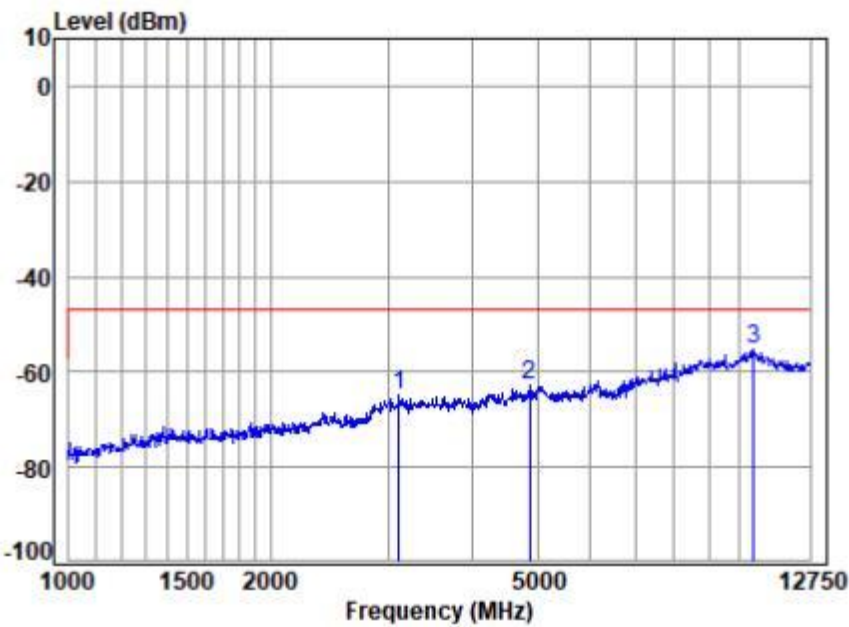
Test Mode: 01; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL
Job No.: 02517AT
Test mode: 2408 RX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	2861.38	-66.50	-47.00	-19.50
2	4996.69	-62.68	-47.00	-15.68
3	10480.59	-55.62	-47.00	-8.62

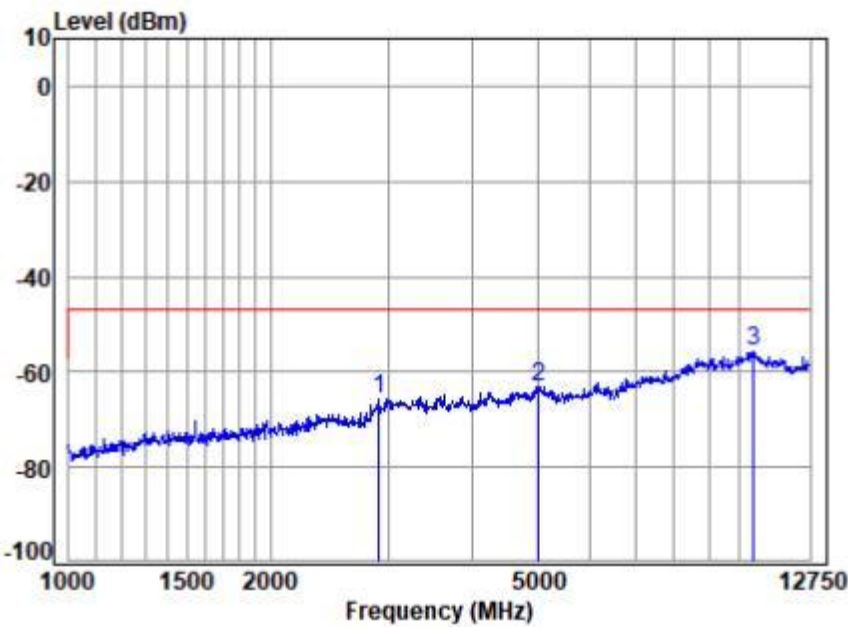
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Condition: 3m HORIZONTAL
Job No.: 02517AT
Test mode: 2447 RX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3112.13	-65.03	-47.00	-18.03
2	4858.72	-62.66	-47.00	-15.66
3	10480.59	-55.26	-47.00	-8.26

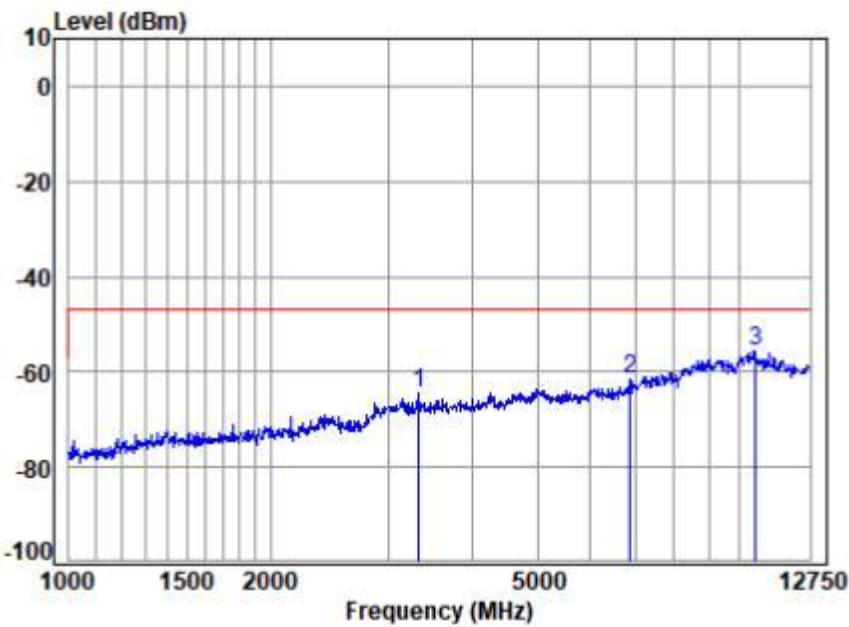
Test Mode: 01; Polarity: Vertical; Modulation:GFSK; Channel:middle



Condition: 3m VERTICAL
Job No.: 02517AT
Test mode: 2447 RX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	2905.42	-65.60	-47.00	-18.60
2	5022.19	-63.11	-47.00	-16.11
3	10507.31	-55.61	-47.00	-8.61

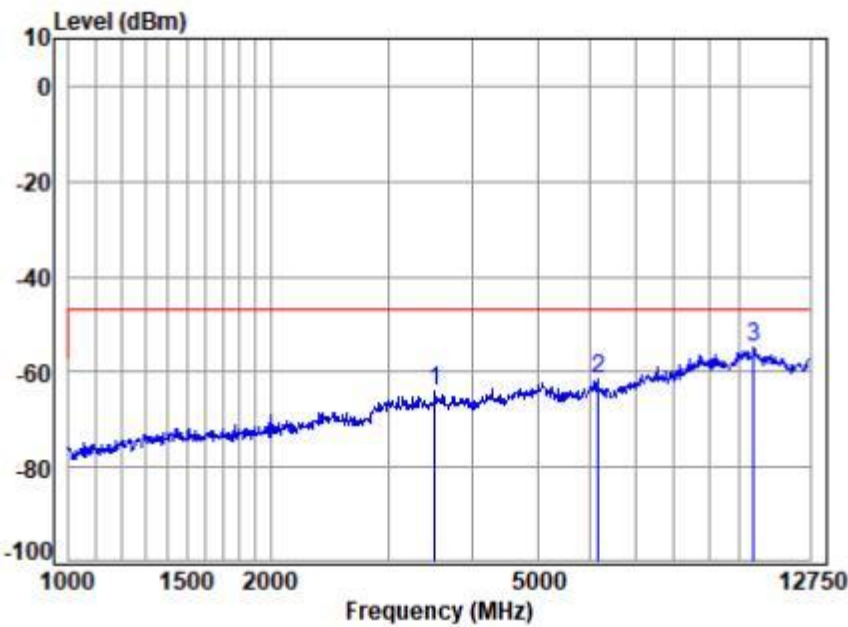
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL
Job No.: 02517AT
Test mode: 2469 RX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3333.55	-64.63	-47.00	-17.63
2	6868.65	-61.54	-47.00	-14.54
3	10587.85	-55.46	-47.00	-8.46

Test Mode: 01; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL
Job No.: 02517AT
Test mode: 2469 RX RSE
: 2.4G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3507.65	-64.05	-47.00	-17.05
2	6140.85	-61.58	-47.00	-14.58
3	10507.31	-54.78	-47.00	-7.78

6.6 Blocking or desensitization

Test Requirement EN 300 440 V2.2.1 clause 4.3.4

Test Method: EN 300 440 V2.2.1 clause 4.3.4.3

Limit:

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in the following table, except at frequencies on which spurious responses are found.

Receiver category	Limit
1	-30 dBm + k
2	-45 dBm + k
3	-60 dBm + k

The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

Where:

- f is the frequency in GHz;

- BW is the occupied bandwidth in MHz.

The factor k is limited within the following:

- -40 dB < k < 0 dB.

6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.2 °C

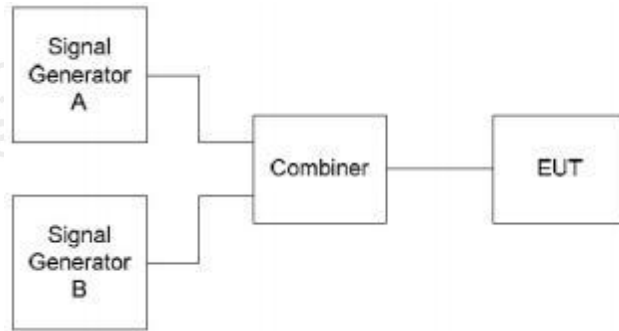
Humidity: 47.4 % RH

Atmospheric Pressure: 1005 mbar

6.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	Normal mode_Keep the EUT pairing and working normally.

6.6.3 Test Setup Diagram



6.6.4 Measurement Procedure and Data

1. Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, directly to the receiver temporary antenna connector.

Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.

Signal generator B shall be unmodulated and shall be adjusted to a test frequency at approximately 10 times, 20 times and 50 times of the occupied bandwidth above upper band edge of occupied bandwidth.

2. Initially unwanted signal generator B shall be switched off and using wanted signal generator A, the wanted signal level which still gives sufficient response shall be established. The output level of generator A shall then be increased by 3 dB.

3. Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.

4. The measurement shall be repeated with the test frequency for signal generator B at approximately 10 times, 20 times and 50 times of the occupied bandwidth below the lower band edge and above the upper band edge of the occupied bandwidth.

Remark: Monitored the working and response status of the EUT during the tests.

Please Refer to Appendix for Details

7 Test Setup Photo

Unwanted emissions in the spurious domain (Radiated)



8 EUT Constructional Details (EUT Photos)

Appearance photograph of EUT



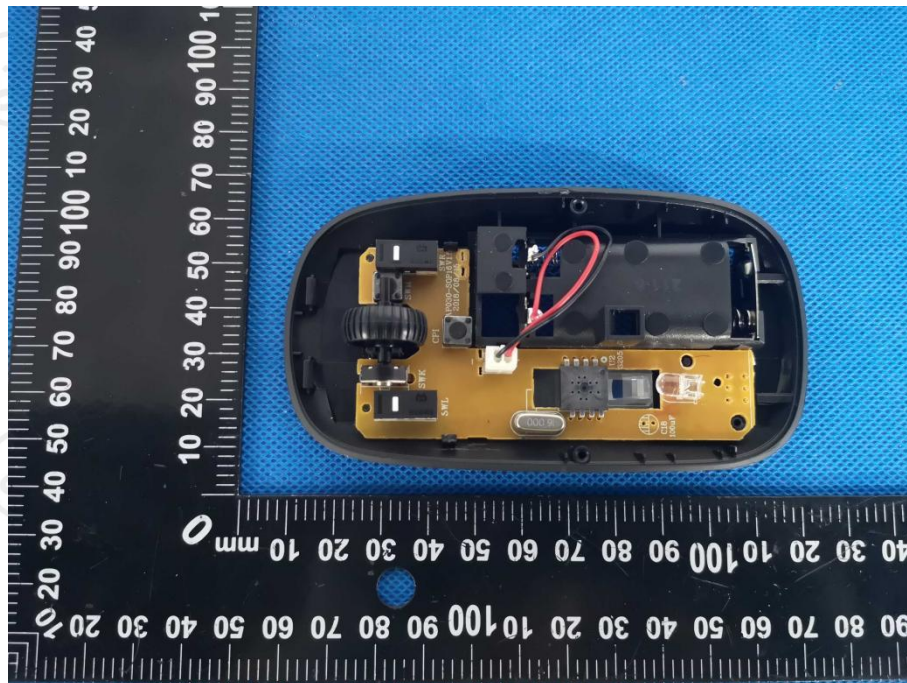
Appearance photograph of EUT



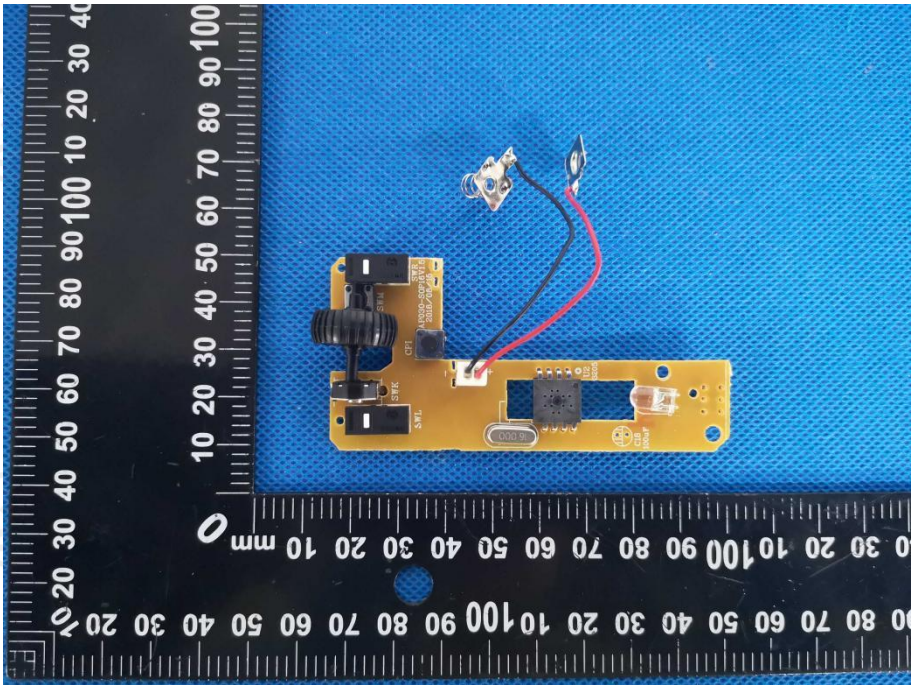
Appearance photograph of EUT



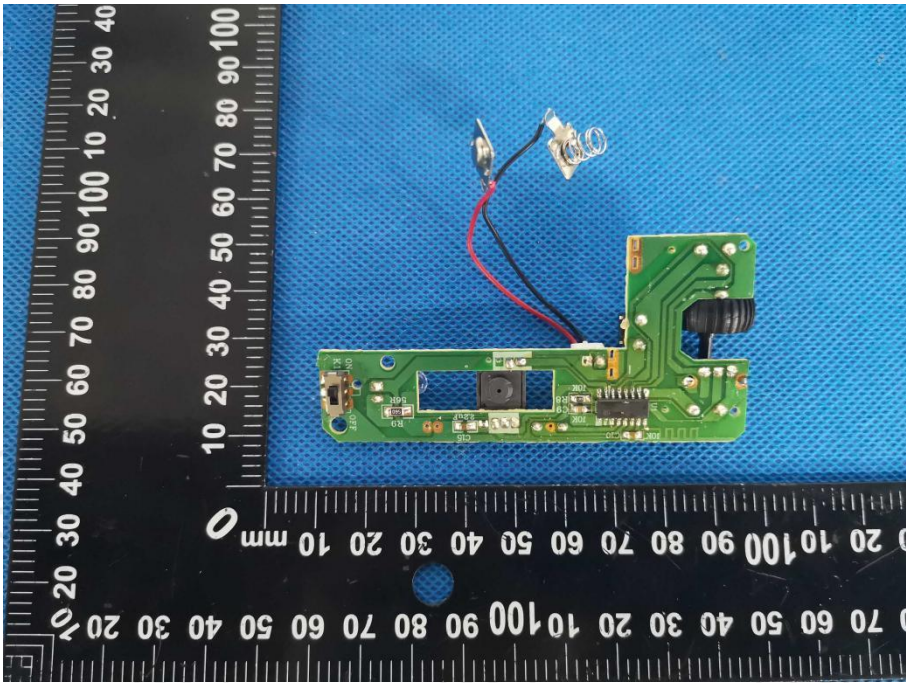
Appearance photograph of EUT



Appearance photograph of EUT



Appearance photograph of EUT



9 Appendix

1. Duty cycle

Ton_cum(s):	102.6	Declared by manufacturer within an observation interval Tobs
Duty Cycle:	2.82	%
Remark: Duty Cycle= Ton_cum /3600		

2. -6dB Bandwidth

Mode	Channel (Frequency)	-6dB Bandwidth(MHz)	Conclusion
GFSK	L	0.616	N/A
	M	0.641	N/A
	H	0.582	N/A

3. Equivalent Isotropically Radiated Power

Test Conditions		Channel (Frequency)	EIRP Value (dBm)	Limit (dBm)	Result
Temp (°C)/ Volt (V DC)	Mode				
TNVN	GFSK	L	-20.39	10	PASS
		M	-20.70	10	PASS
		H	-20.47	10	PASS
VLTL	GFSK	L	-20.49	10	PASS
		M	-20.79	10	PASS
		H	-20.56	10	PASS
VLTH	GFSK	L	-20.58	10	PASS
		M	-20.87	10	PASS
		H	-20.63	10	PASS
VHTL	GFSK	L	-20.28	10	PASS
		M	-20.64	10	PASS
		H	-20.49	10	PASS
VHTH	GFSK	L	-20.79	10	PASS
		M	-20.56	10	PASS
		H	-20.58	10	PASS

4. Permitted Range of Operating Frequencies

Test Conditions		Mode	CH(Frequency)	Result(MHz)	Limit (MHz)	Conclusion
Temp (°C)/ Volt (V DC)						
VNTN	GFSK	L		2406.680	>2400	PASS
		H		2470.850	<2483.5	PASS
VLTL	GFSK	L		2406.680	>2400	PASS
		H		2470.844	<2483.5	PASS
VLTH	GFSK	L		2406.661	>2400	PASS
		H		2470.837	<2483.5	PASS
VHTL	GFSK	L		2406.692	>2400	PASS
		H		2470.861	<2483.5	PASS
VHTH	GFSK	L		2406.686	>2400	PASS
		H		2470.844	<2483.5	PASS

5. Test Results of Receiver Blocking

2.4G Low Channel (f=2408 MHz), OBW(MHz)				1.61
Channel lower band edge frequency Fl(MHz)				2407.195
Channel upper band edge frequency Fh(MHz)				2408.805
Receiver Category	Frequency Offset	Measured Blocking signal Power(dBm)	Limit(dBm)	Test Result (Pass/Fail)
3	+10*OBW	-38.2	-69.7	PASS
3	-10*OBW	-41.6	-69.7	PASS
3	+20*OBW	-42.1	-69.7	PASS
3	-20*OBW	-41.2	-69.7	PASS
3	+50*OBW	-40.5	-69.7	PASS
3	-50*OBW	-37.7	-69.7	PASS
Remark: K=-9.7				

2.4G High Channel (f=2469 MHz), OBW(MHz)				1.49
Channel lower band edge frequency Fl(MHz)				2468.255
Channel upper band edge frequency Fh(MHz)				2469.745
Receiver Category	Frequency Offset	Measured Blocking signal Power(dBm)	Limit(dBm)	Test Result (Pass/Fail)
3	+10*OBW	-50.3	-69.6	PASS
3	-10*OBW	-46.2	-69.6	PASS
3	+20*OBW	-41.0	-69.6	PASS
3	-20*OBW	-40.9	-69.6	PASS
3	+50*OBW	-35.4	-69.6	PASS
3	-50*OBW	-33.6	-69.6	PASS
Remark: K=-9.6				

- End of the Report -

TEST REPORT

EN 62479:2010 & EN 50663:2017

Report Number..... : SIT250314161301HR

Date of Test..... March 11, 2025 to March 25, 2025

Date of issue.....: March 25, 2025

Test Result : PASS

Testing Laboratory..... : Shenzhen SIT Testing Technology Co., Ltd.

Address: Room 401, Building A2, The 2nd Industrial Zone of Zhu'ao, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China

Applicant's name : Mid Ocean Brands B.V.

Address: 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Manufacturer's name : 114628

Test specification:

Standard..... EN 62479:2010
: EN 50663:2017

Test procedure..... : /

Non-standard test method : N/A

This device described above has been tested by SIT, and the test results show that the equipment under test (EUT) is in compliance with the 2014/53/EU RED Directive Art.3.1(a) requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of SIT, this document may be altered or revised by SIT, personal only, and shall be noted in the revision of the document.

Product name.....	Wireless USB Mouse
Trademark	: N/A
Model/Type reference.....	: MO8827
Ratings.....	: Mouse: 3V--- by AAA battery*2 USB dongle: 5V---

Testing procedure and testing location:

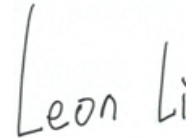
Testing Laboratory..... : **Shenzhen SIT Testing Technology Co., Ltd.**

Address..... : Room 401, Building A2, The 2nd Industrial Zone of
Zhu'ao, Gushu, Xixiang, Bao'an District, Shenzhen,
Guangdong, China

Tested by (name + signature)..... : Tom



Reviewer (name + signature)..... : Leon Li



Approved (name + signature)..... : Kevin Sun



Table of Contents	Page
1. Version.....	4
2. GENERAL INFORMATION.....	5
3. EN 50663 REQUIREMENT.....	6
3.1 GENERAL INFORMATION.....	6
3.2 LIMIT.....	6
4. RESULT.....	7
5. APPENDIX: PHOTOGRAPHS OF THE EUT.....	8

1. Version

Report No.	Issue Date	Description	Approved
SIT250314161301HR	March 24, 2025	Original	Kevin Sun

2. GENERAL INFORMATION

Product Name	:	Wireless USB Mouse
Model No.	:	MO8827
Operation Frequency	:	2402MHz-2480MHz
Antennal type	:	PCB Antenna
Modulation	:	GFSK, 8DPSK, $\pi/4$ QPSK
Power supply	:	Mouse: 3V $\overline{\text{---}}$ by AAA battery*2 USB dongle: 5V $\overline{\text{---}}$
Intend use environment	:	Residential, commercial and light industrial environment

3. EN 50663 REQUIREMENT

3.1 GENERAL INFORMATION

According to its specifications, the EUT must comply with the requirements of the following standards:

EN 50663: 2017 [Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)]

3.2 LIMIT

A. Typical usage, installation and the physical characteristics of equipment make it inherently compliant with the applicable EMF exposure levels such as those listed in the bibliography. This low-power equipment includes unintentional (or non-intentional) radiators, for example incandescent light bulbs and audio/visual (A/V) equipment, information technology equipment (ITE) and multimedia equipment (MME) that does not contain radio transmitters.

NOTE Equipment is described as A/V equipment, ITE or MME if its main use is playback/recording of music, voice or images, or processing of digital information.

B. The input power level to electrical or electronic components that are capable of radiating electromagnetic energy in the relevant frequency range is so low that the available antenna power and/or the average total radiated power cannot exceed the low-power exclusion level defined in 4.2.

C. The available antenna power and/or the average total radiated power are limited by product standards for transmitters to levels below the low-power exclusion level defined in 4.2.

D. Measurements or calculations show that the available antenna power and/or the average total radiated power are below the low-power exclusion level defined in 4.2.

4. RESULT

The available antenna power of this EUT is **9.38mW(-20.28dBm)**, the power are below the low-power exclusion level defined in 4.2(Pmax: 20mW).”

5 APPENDIX: PHOTOGRAPHS OF THE EUT

Appearance photograph of EUT



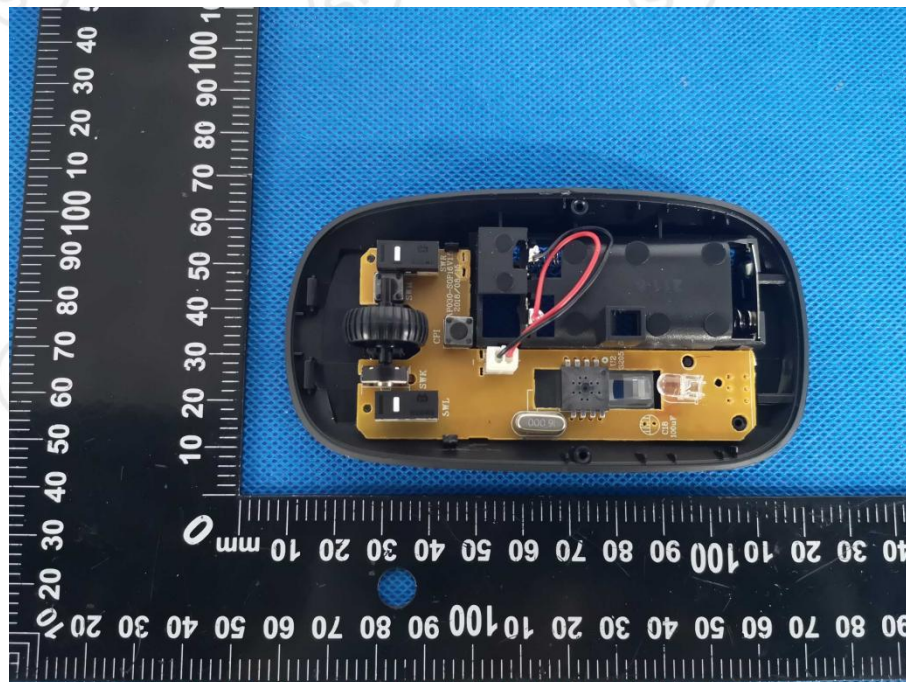
Appearance photograph of EUT



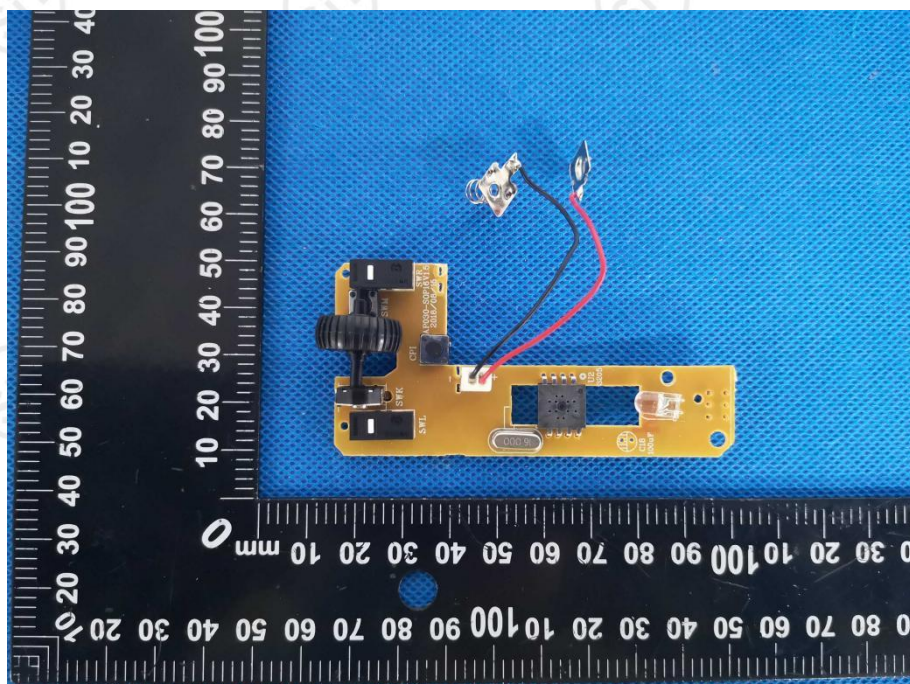
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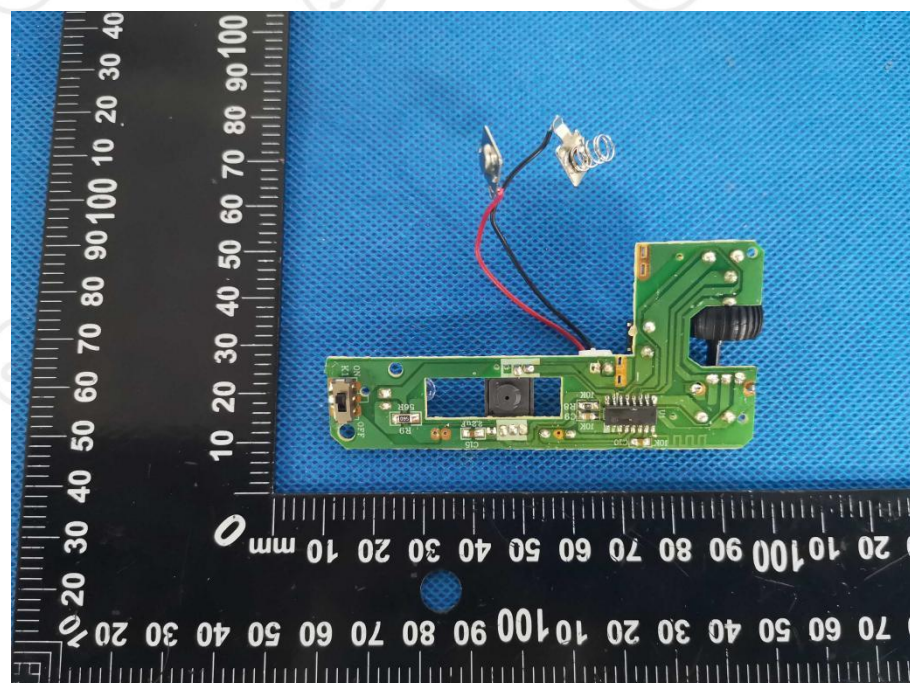
Appearance photograph of EUT



Appearance photograph of EUT



Appearance photograph of EUT



***** END OF REPORT *****