



# Test report

**Number** T251-0283/23

Project file: C20211657

Date: 2023-05-11

Pages: 10

**Product:** Automatic watch winder

**Type reference:** TM001

**Ratings:** 5 – 12 Vdc (Supplied over USB-C)  
Protection class: III

**Trademark:** TIME MACHINE

**Applicant:** Berišaj d.o.o.  
Vilharjeva ulica 44, SI-1000 Ljubljana

**Manufacturer:** Twenty Five Seven, prodaja in storitve, d.o.o.  
Vilharjeva ulica 44, SI-1000 Ljubljana

**Place of manufacture:** Twenty Five Seven, prodaja in storitve, d.o.o.  
Vilharjeva ulica 44, SI-1000 Ljubljana

## Summary of testing

**Testing method:** Antenna pattern measurements

**Testing location:** SIQ Ljubljana  
Mašera-Spasičeva ulica 10, SI-1000 Ljubljana, Slovenia

**Remarks:** Date of receipt of test items: 2021-08-05  
Number of items tested: 1  
Date of performance of tests: 2023-02-13  
The test results presented in this report relate only to the items tested.  
The test items were tested in the condition as received.  
The product complies with the requirements of the testing methods.

Tested by: Luka Cvajnar

Approved by: Marjan Mak

*The report shall not be reproduced except in full.*



| CONTENTS |                             | page      |
|----------|-----------------------------|-----------|
| <u>1</u> | <u>GENERAL</u>              | <u>3</u>  |
| 1.1      | EQUIPMENT UNDER TEST        | 3         |
| 1.2      | ANTENNA PATTERN MEASUREMENT | 5         |
| 1.3      | TEST RESULTS BLE ANTENNA    | 6         |
| 1.4      | MAXIMUM BLE ANTENNA GAIN    | 9         |
| <u>2</u> | <u>USED TEST EQUIPMENT</u>  | <u>10</u> |

## 1 GENERAL

| History sheet |              |                             |          |
|---------------|--------------|-----------------------------|----------|
| Date          | Report No.   | Change                      | Revision |
| 2023-05-11    | T251-0283/23 | Initial Test Report issued. | --       |

### Environmental conditions:

Ambient temperature: 15 °C to 35 °C

Relative humidity: 30 % to 60 %

Atmospheric pressure: 860 mbar to 1060 mbar

## 1.1 Equipment under test

### Automatic watch winder

Type: **TM001**

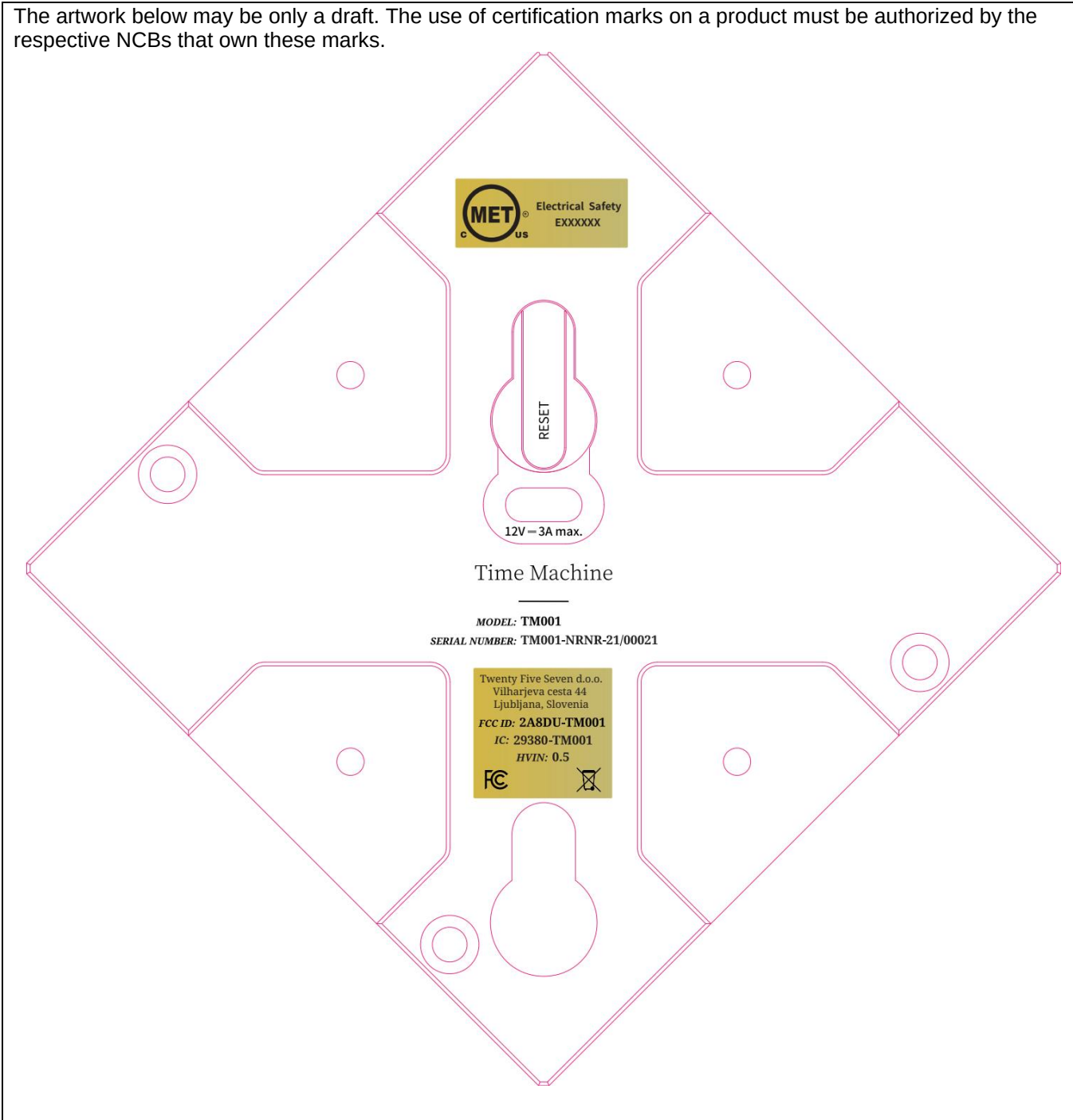
Tested was antenna pattern of the sample below.



**Picture of test sample – BLE Antenna**



Copy of marking plate



## **1.2 Antenna pattern measurement**

### **1.2.1 Test procedure**

The radiation pattern for BLE antenna implemented to PCB reference design has been measured in an anechoic chamber with 3 meters test distance. Test results show radiation patterns for two planes, measured with vertical and horizontal polarization of measuring antenna. All measurements were performed at 2402, 2440 and 2480 MHz frequency.



1.3 Test results BLE Antenna

EUT Information

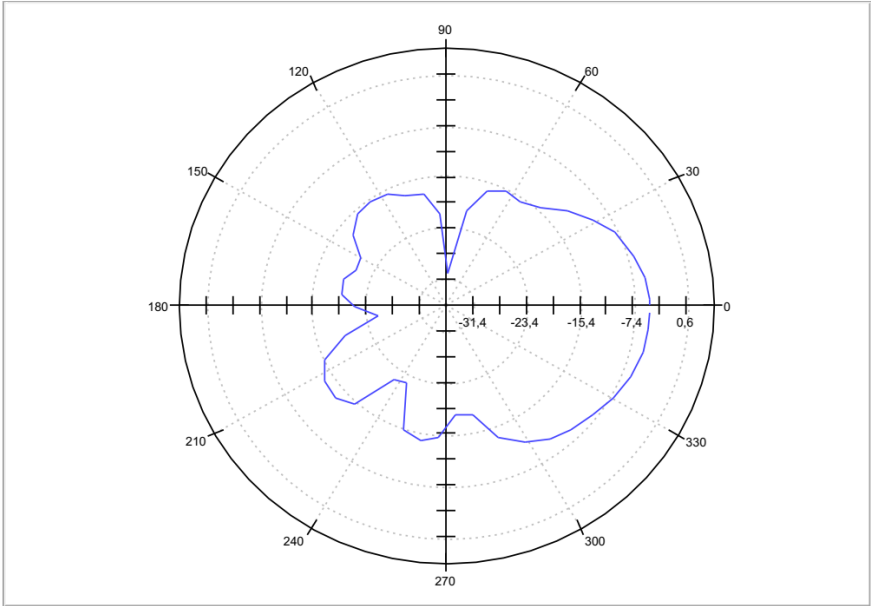
EUT:  
Operating mode

TimeMachine  
TX 2402 MHz

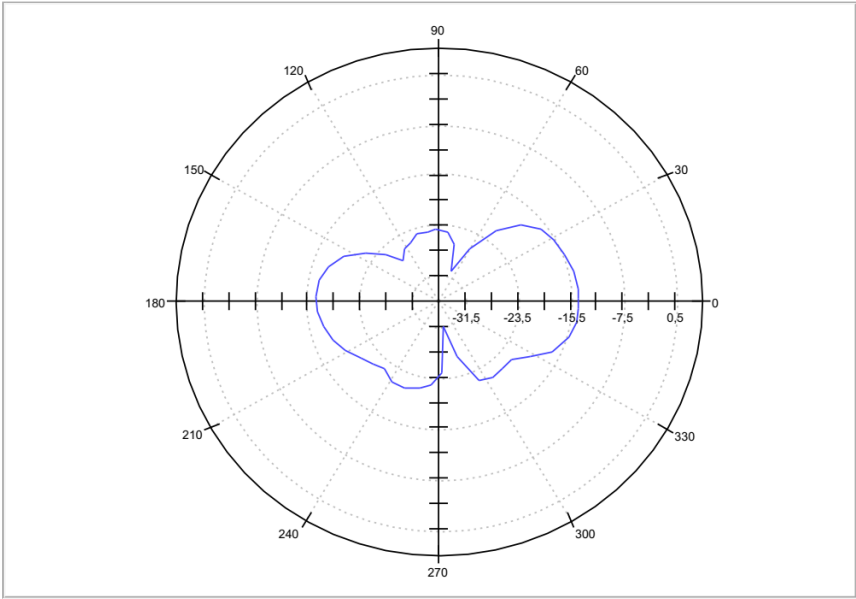
AziChart MinMax Eval

| Frequency<br>(MHz) | Max. Value<br>(dBm) | Azimuth<br>max.<br>(deg) | Pol max. | Min. Value<br>(dBm) | Azimuth<br>min.<br>(deg) | Pol min. |
|--------------------|---------------------|--------------------------|----------|---------------------|--------------------------|----------|
| 2402.000000        | -4.74               | 353                      | H        | -31.37              | 281                      | V        |

Azimuth Chart: Horizontal



Azimuth Chart: Vertical



## EUT Information

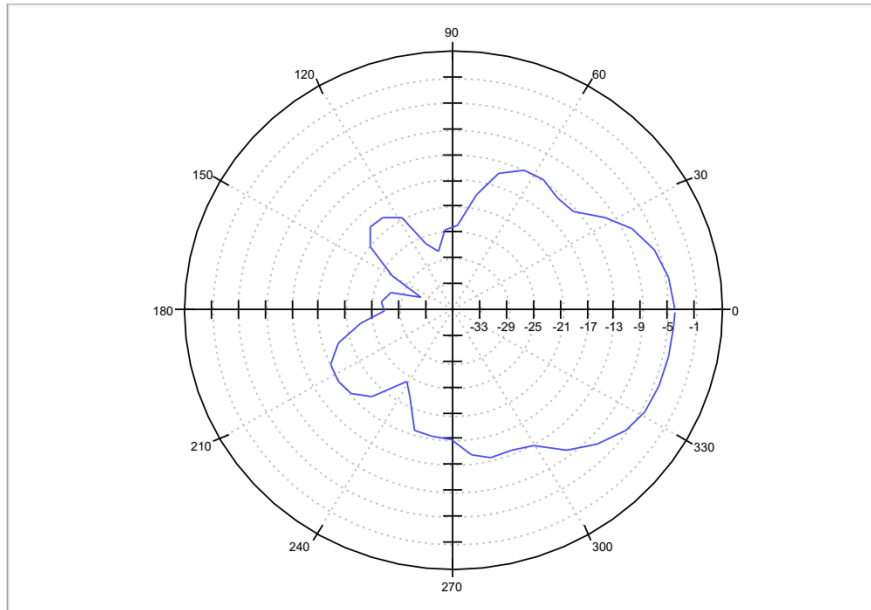
EUT:  
Operating mode

TimeMachine  
TX 2440 MHz

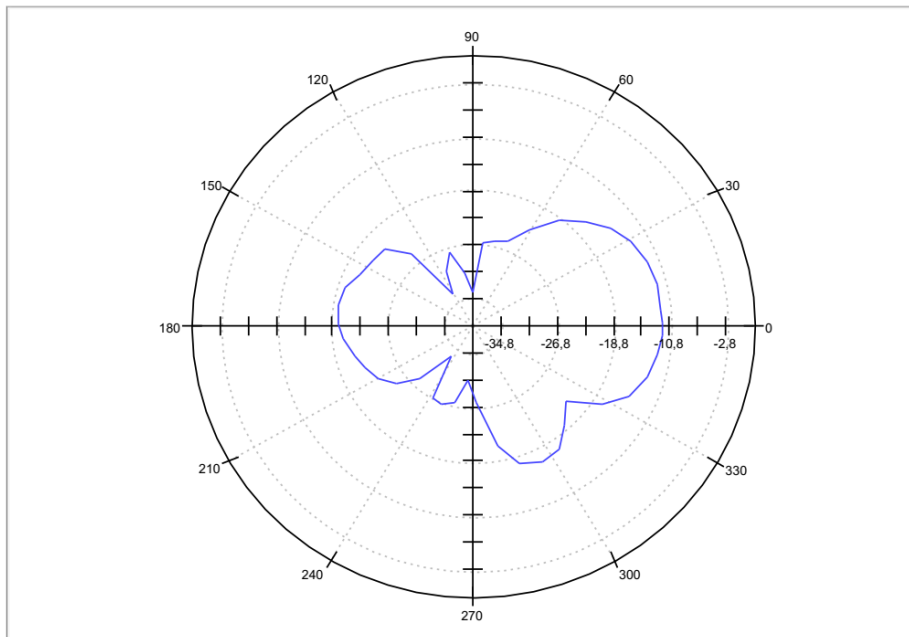
## AziChart MinMax Eval

| Frequency (MHz) | Max. Value (dBm) | Azimuth max. (deg) | Pol max. | Min. Value (dBm) | Azimuth min. (deg) | Pol min. |
|-----------------|------------------|--------------------|----------|------------------|--------------------|----------|
| 2440.000000     | -3.87            | 347                | H        | -33.82           | 91                 | V        |

Azimuth Chart: Horizontal



Azimuth Chart: Vertical





EUT Information

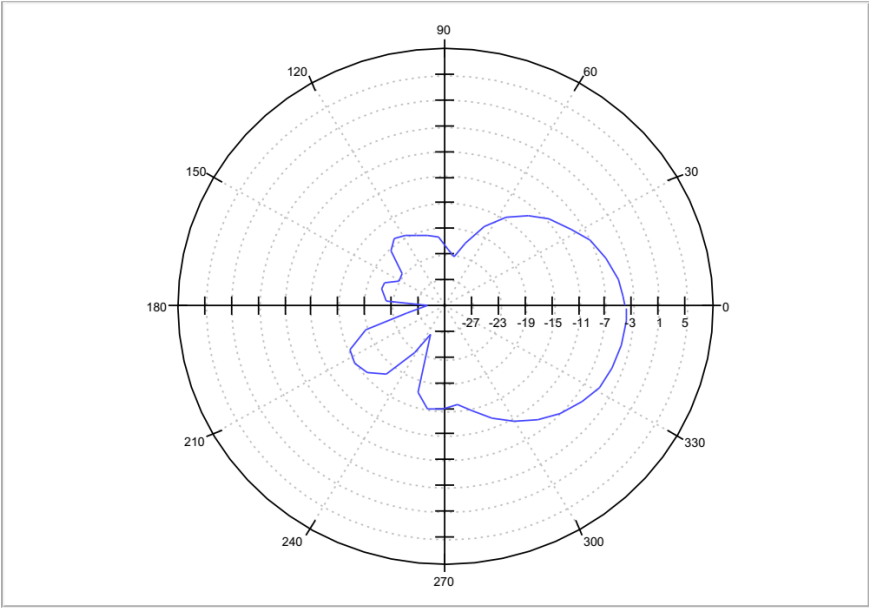
EUT:  
Operating mode

TimeMachine  
TX 2480 MHz

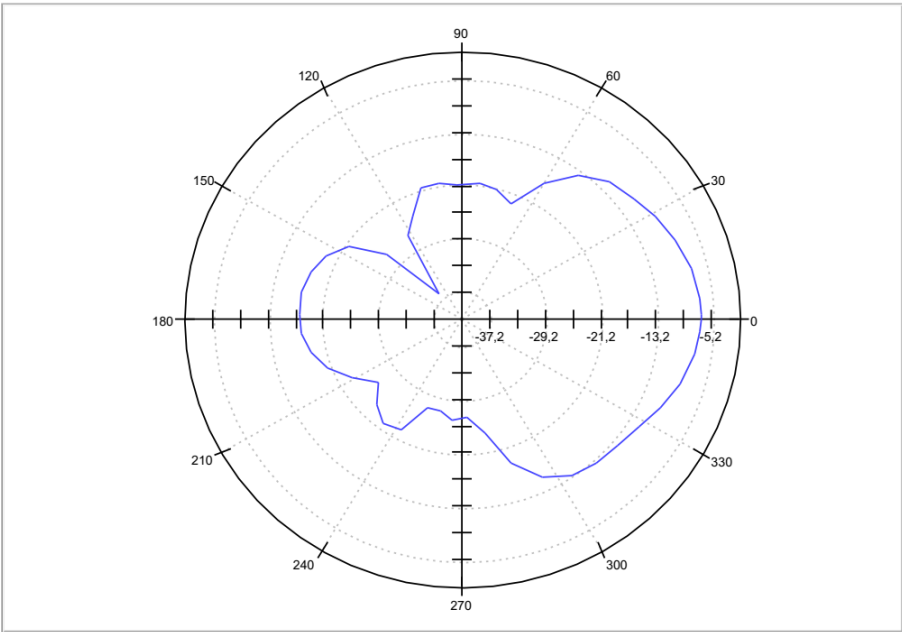
AziChart MinMax Eval

| Frequency<br>(MHz) | Max. Value<br>(dBm) | Azimuth<br>max.<br>(deg) | Pol max. | Min. Value<br>(dBm) | Azimuth<br>min.<br>(deg) | Pol min. |
|--------------------|---------------------|--------------------------|----------|---------------------|--------------------------|----------|
| 2480.000000        | -3.76               | 355                      | H        | -36.21              | 131                      | V        |

Azimuth Chart: Horizontal



Azimuth Chart: Vertical



1.4 Maximum BLE antenna gain

| DUT Frequency<br>(MHz) | Maximum antenna gain<br>(dBi) |
|------------------------|-------------------------------|
| 2402.000000            | -4.74                         |
| 2440.000000            | -3.87                         |
| 2480.000000            | -3.76                         |



## 2 USED TEST EQUIPMENT

Antenna pattern measurement

| Manufacturer                                                       | Model No. | Used | Calibrated | Calibrated until |
|--------------------------------------------------------------------|-----------|------|------------|------------------|
| Comtest engineering, SAC2<br>(together with controlling equipment) | SAC 3m    | X    | 2022-04-14 | 2025-04-14       |
| Maturo, Turn table (2 m diameter)                                  | TT 2.0 SI | X    | /          | /                |
| Maturo, Bore-sight antenna mast                                    | BAM-4.0-P | X    | /          | /                |
| Maturo, positioning equipment                                      | NCD       | X    | /          | /                |
| Rohde & Schwarz, RFI receiver                                      | ESU 26    | X    | 2022-01-04 | 2023-07-04       |
| R&S, Ultra Broadband Antenna                                       | HL562E    |      | 2020-09-30 | 2023-09-30       |
| R&S, Horn Antenna                                                  | HF907     | X    | 2020-08-21 | 2023-08-21       |