

# Test report

**Number** T251-0232/24

Project file: C20230329

Date: 2024-05-15

Pages: 9

**Product:** Vacuum cleaner

**Type reference:** CT 26-48

**Ratings:** 120 V a.c.; 60 Hz, 1200 W  
Class: |

**Trademark:**



**Applicant:** Festool GmbH  
Wertstrasse 20, 73240 Wendlingen, Germany

**Manufacturer:** Festool GmbH  
Wertstrasse 20, 73240 Wendlingen, Germany

**Place of manufacture:** Festool GmbH  
Wertstrasse 20, 73240 Wendlingen, Germany

## 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: 2024-02-20  
Number of items tested: 1  
Date of performance of tests: 2024-03-18  
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

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## 1 GENERAL

| History sheet |              |                             |          |
|---------------|--------------|-----------------------------|----------|
| Date          | Report No.   | Change                      | Revision |
| 2024-05-15    | T251-0232/24 | 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

### Vacuum cleaner

Type: CT 26-48

Tested was antenna pattern of the sample below.



Picture of test sample – BLE Antenna



Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



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

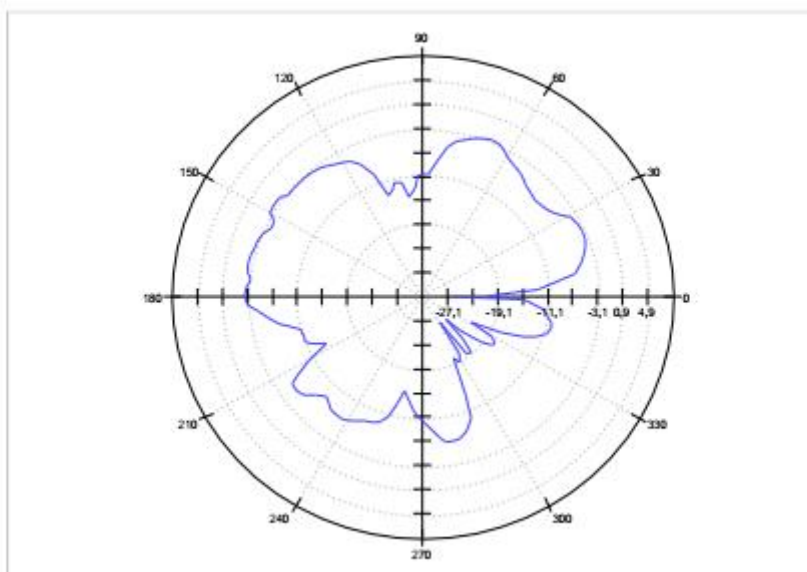
#### EUT Information

Product: Festool CTM 26 EI AC  
Op. condition: TX, 2402 MHz

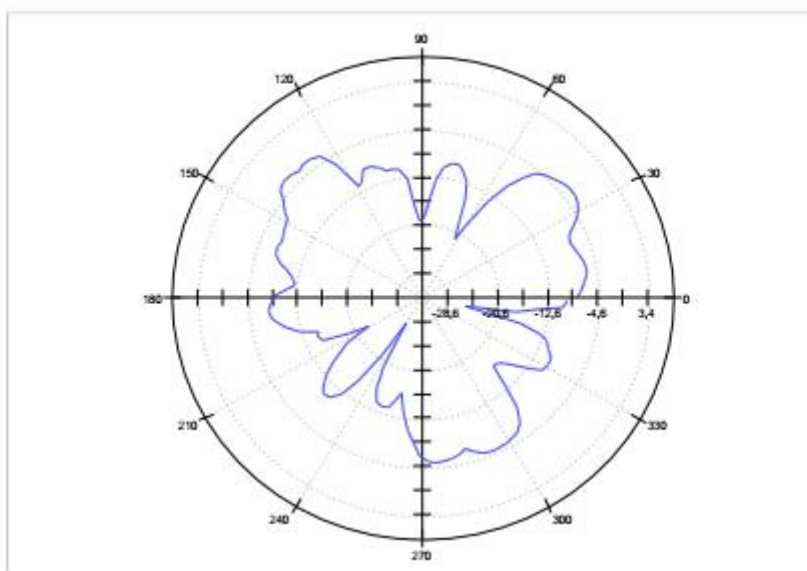
#### AziChart MinMax Eval

| Frequency (MHz) | Max. Value (dBm) | Azimuth max. (deg) | Pol max. | Min. Value (dBm) | Azimuth min. (deg) | Pol min. |
|-----------------|------------------|--------------------|----------|------------------|--------------------|----------|
| 2402.000000     | -2,61            | 169                | H        | -27,59           | 239                | V        |

Azimuth Chart: Horizontal



Azimuth Chart: Vertical





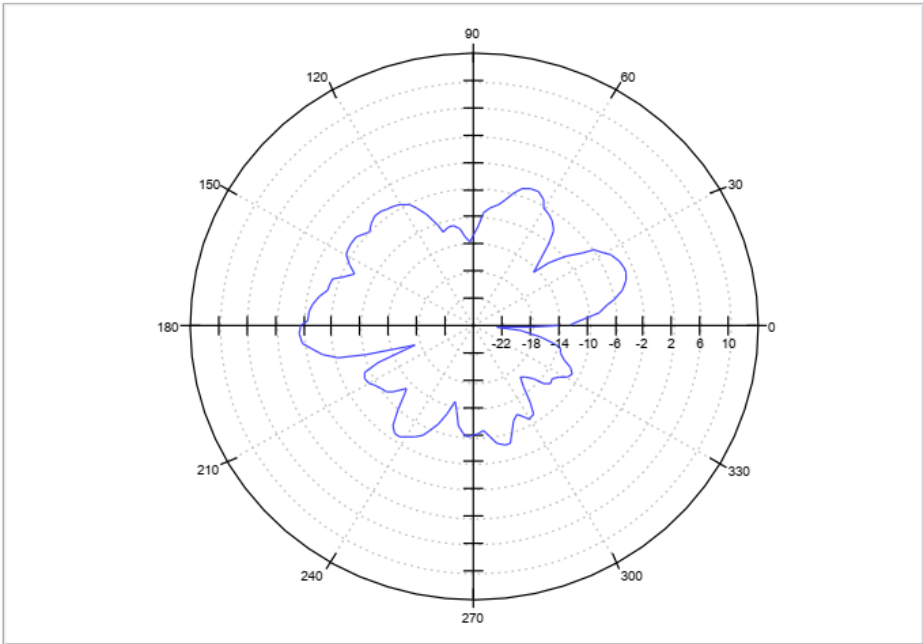
EUT Information

Product: Festool CTM 26 EI AC  
Op. condition: TX, 2440 MHz

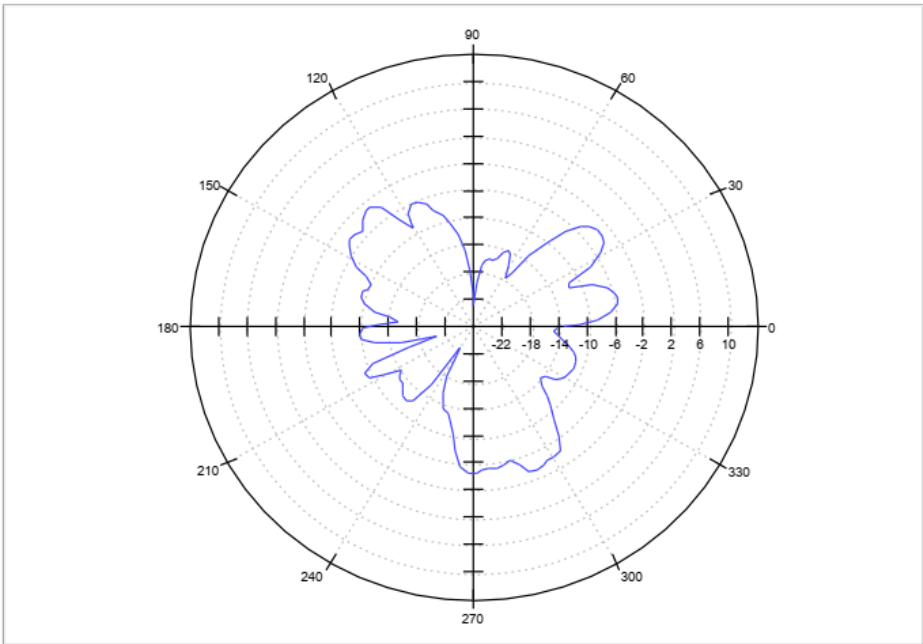
AziChart MinMax Eval

| 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. |
|--------------------|---------------------|--------------------------|----------|---------------------|--------------------------|----------|
| 2440.000000        | -1.34               | 183                      | H        | -22.97              | 88                       | V        |

Azimuth Chart: Horizontal



Azimuth Chart: Vertical



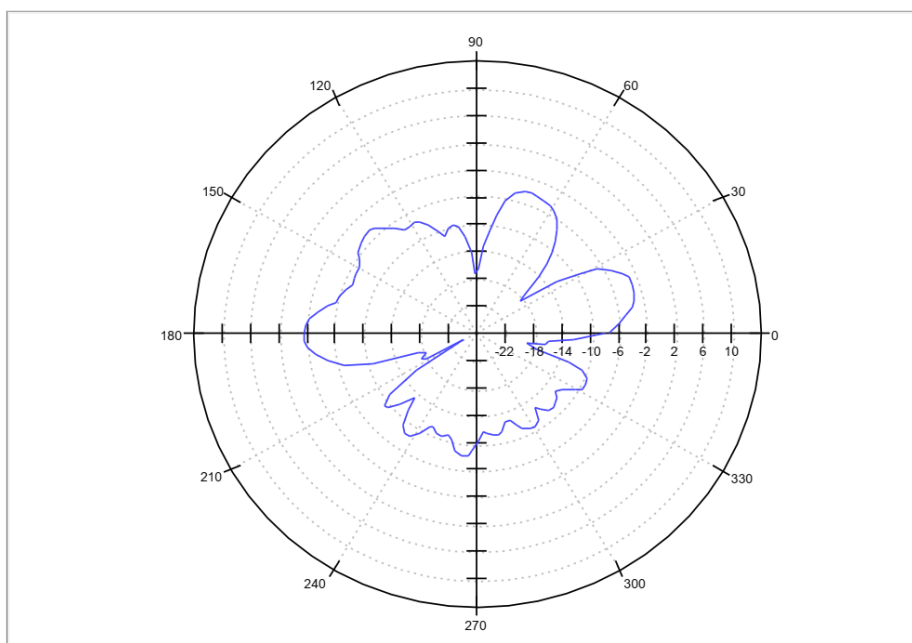
## EUT Information

EUT: Festool CTM 26 EI AC  
Operating mode: TX, 2480 MHz

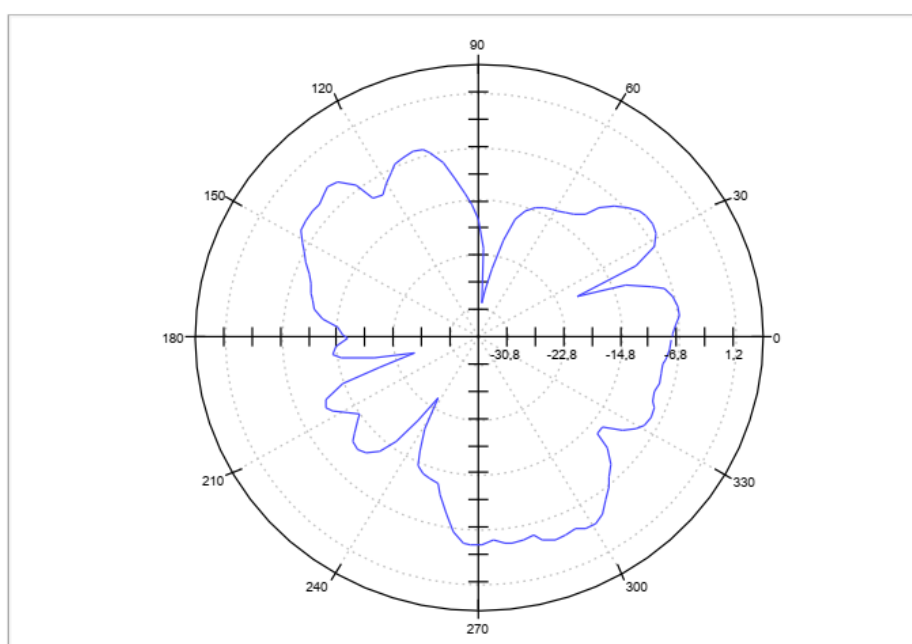
## AziChart MinMax Eval

| Frequency (MHz) | Max. Value (dBm) | Azimuth max. (deg) | Pol max. | Min. Value (dBm) | Azimuth min. (deg) | Pol min. |
|-----------------|------------------|--------------------|----------|------------------|--------------------|----------|
| 2480.000000     | -1.56            | 183                | H        | -29.78           | 84                 | V        |

Azimuth Chart: Horizontal



Azimuth Chart: Vertical





1.4 Maximum BLE antenna gain

| DUT Frequency<br>(MHz) | Maximum antenna gain<br>(dBi) |
|------------------------|-------------------------------|
| 2402.000000            | -2.61                         |
| 2440.000000            | -1.34                         |
| 2480.000000            | -1.56                         |



## 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                                      | ESW 44    | X    | 2023-03-09 | 2024-09-09       |
| R&S, Ultra Broadband Antenna                                       | HL562E    |      | 2023-09-26 | 2026-09-26       |
| R&S, Horn Antenna  | HF907     | X    | 2023-08-22 | 2026-08-22       |