



166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Evaluated: 22-80-2875
Evaluation Exhibit: RF Exposure
Project Number: 12837
Report Number: 27994 rev1.2

FCC Title 47 CFR Part 1.1307(b)
&
FCC Title 47 CFR Part 2.1093

SAR Exemption Thresholds – Portable Device – General Population
RF Exposure Statement of Compliance

THE FOLLOWING MEETS THE ABOVE TEST SPECIFICATION

FCC ID: P36-22802875

(Handheld use with antenna distance to external surface of device < 5 cm)

Formal Name: 5” Underground Cable Cutter Wireless Remote
Kind of Equipment: Remote Control with Bluetooth Low Energy (BLE) Transceiver
Frequency Range: 2402 – 2480 MHz
Evaluation Method: SAR Exemption based on transmission output power lower than SAR test exemption levels
Model Number: 22-80-2875
Date of Evaluation: May 10, 2024
Conducted For: Milwaukee Electric Tool Corporation
13135 West Lisbon Road
Brookfield, Wisconsin, 53005, USA

NOTICE: This report contains test data, and/or other information regarding only the sample provided by the client for testing and evaluation. This test report shall not be used to claim product approval or endorsement by any governmental, regulatory, or accrediting agency. Please see the "Description of Device" page listed inside of this report.

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SIGNATURE PAGE

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CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

DLS Electronic Systems, Inc.

1250 Peterson Drive
Wheeling, IL 60090

(and satellite locations as shown on the scope)

Fulfills the requirements of

ISO/IEC 17025:2017

and

**U.S. Federal Communication Commission (FCC) EMC and Telecommunications (EC&T)
Testing Designation Program**

and

**Recognition of Telecommunications Testing - Innovation, Science, and Economic Development
(ISED) Canada**

and

**FDA Accreditation Scheme for Conformity Assessment (ASCA) Pilot Program -Basic Safety
and Essential Performance of Medical Electrical Equipment, Medical Electrical Systems, and
Laboratory Medical Equipment**

In the field of

TESTING

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Jason Stine, Vice President
Expiry Date: 23 April 2026
Certificate Number: AT-1859



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

SATELLITE SITE

DLS Electronic Systems, Inc. (OATS Site)

166 South Carter
Genoa City, Wisconsin 53128

www.dlsemc.com



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1.0 Transmitter Information

Maximum RF Conducted Output Power (measured)	10.79 dBm
Antenna Type:	2.4 GHz 50-Ohm Omni Directional Button Antenna
Antenna Gain:	4.09 dBi Peak Gain
Calculated EIRP from measured power and published antenna gain:	14.88 dBm e.i.r.p.
Rated Output Power	14 dBm
Maximum RF Conducted Output Power including acceptable tolerances due to component and production variations and tune up procedures (rated):	15.7 dBm
Calculated EIRP from maximum rated power (including tolerances, etc.) and published antenna gain:	19.79 dBm e.i.r.p.
Frequency Range:	2.402 – 2.480 GHz

2.0 Rule Part

Title 47 CFR Part 1.1307(b)(3)(i)(B)
Title 47 CFR Part 2.1093(c)(1)

3.0 Evaluation Procedure

FCC KDB 447498 D04 Interim General RF Exposure Guidance v01

2.1.3	SAR-Based Exemption
B.4	SAR-Based Exemption

SAR test exemption based on transmission output power lower than SAR test exemption levels.



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4.0 SAR Test Exemption Threshold

Per FCC Title 47 CFR Part 1.1307(b)(3)(i)(B), the device is exempt from SAR testing if the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula (for separation distances less than 20 cm).

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} (d/20 \text{ cm})^x$$

Where

$$x = -\log_{10} (60/ERP_{20 \text{ cm}} \sqrt{f}) \text{ and } f \text{ is in GHz}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = 3060 \text{ when } f \text{ is between 1.5 GHz and 6 GHz}$$

d = the separation distance (cm)

5.0 Threshold Calculation

With a minimum separation distance of 3 cm from the radiating element:

$$P_{th} \text{ (mW)} = 3060 [(3/20 \text{ cm}) ^{-\log_{10} (60/(3060\sqrt{2.480}))}]$$

$$P_{th} \text{ (mW)} = 3060 [(3/20 \text{ cm}) ^{-\log_{10} (60/4818.89)}]$$

$$P_{th} \text{ (mW)} = 3060 [(3/20 \text{ cm}) ^{-\log_{10} (0.01245)}]$$

$$P_{th} \text{ (mW)} = 3060 [(3/20 \text{ cm}) ^{1.905}]$$

$$P_{th} \text{ (mW)} = 3060 [0.02694349]$$

$$P_{th} \text{ (mW)} = \underline{\underline{82.45 \text{ mW}}}$$



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6.0 Evaluation Results

The Maximum Rated RF Conducted Output Power including acceptable tolerances due to component and production variations and tune up procedures is 15.7 dBm. Accounting for the antenna gain of 4.09 dBi gives a maximum EIRP of 19.79 dBm.

$ERP = EIRP - 2.14 = 19.79 - 2.14 = 17.65 \text{ dBm e.r.p.} = \mathbf{58.21 \text{ mW e.r.p.}}$

This is less than the SAR test exemption threshold of **82.45 mW**.

SAR measurement is not necessary.

7.0 Conclusion

With a minimum separation distance of 3 cm as provided by the design of the 5" Underground Cable Cutter Wireless Remote, this is a *portable* device as defined by FCC KDB 447498 D04 Interim General RF Exposure Guidance v01. The Milwaukee Electric Tool Corporation, model 22-80-2875, **meets** the SAR test exemption based on the worst-case maximum effective radiated power (ERP) of the device. The peak output power of the transmitter is lower than the SAR test exemption threshold for portable devices operating in a general population environment.

This device complies with the RF exposure requirements of FCC Title 47 CFR Parts 1.1307(b) and 2.1093.

8.0 Supporting Documentation...



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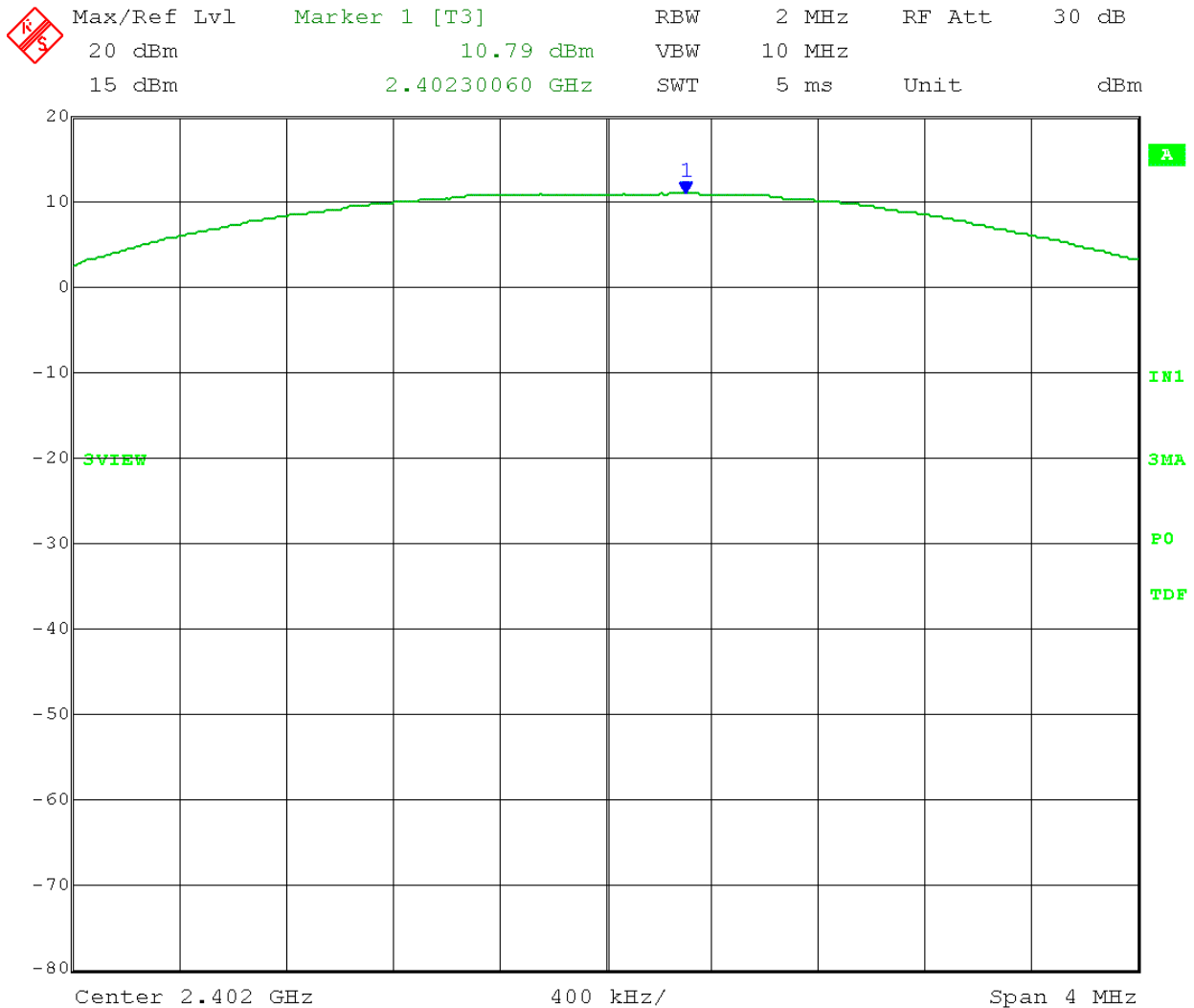
Company: Milwaukee Electric Tool Corp.
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8.1 RF Conducted Output Power Measurements

Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter Remote, Model: 22-80-2875
 Test: Output Power – RF Conducted
 Operator: cbrandt

Comment: Power set to full power (not adjustable)
 Low Channel: 2402 MHz

Peak Output Power = 10.79 dBm = 11.99 mW





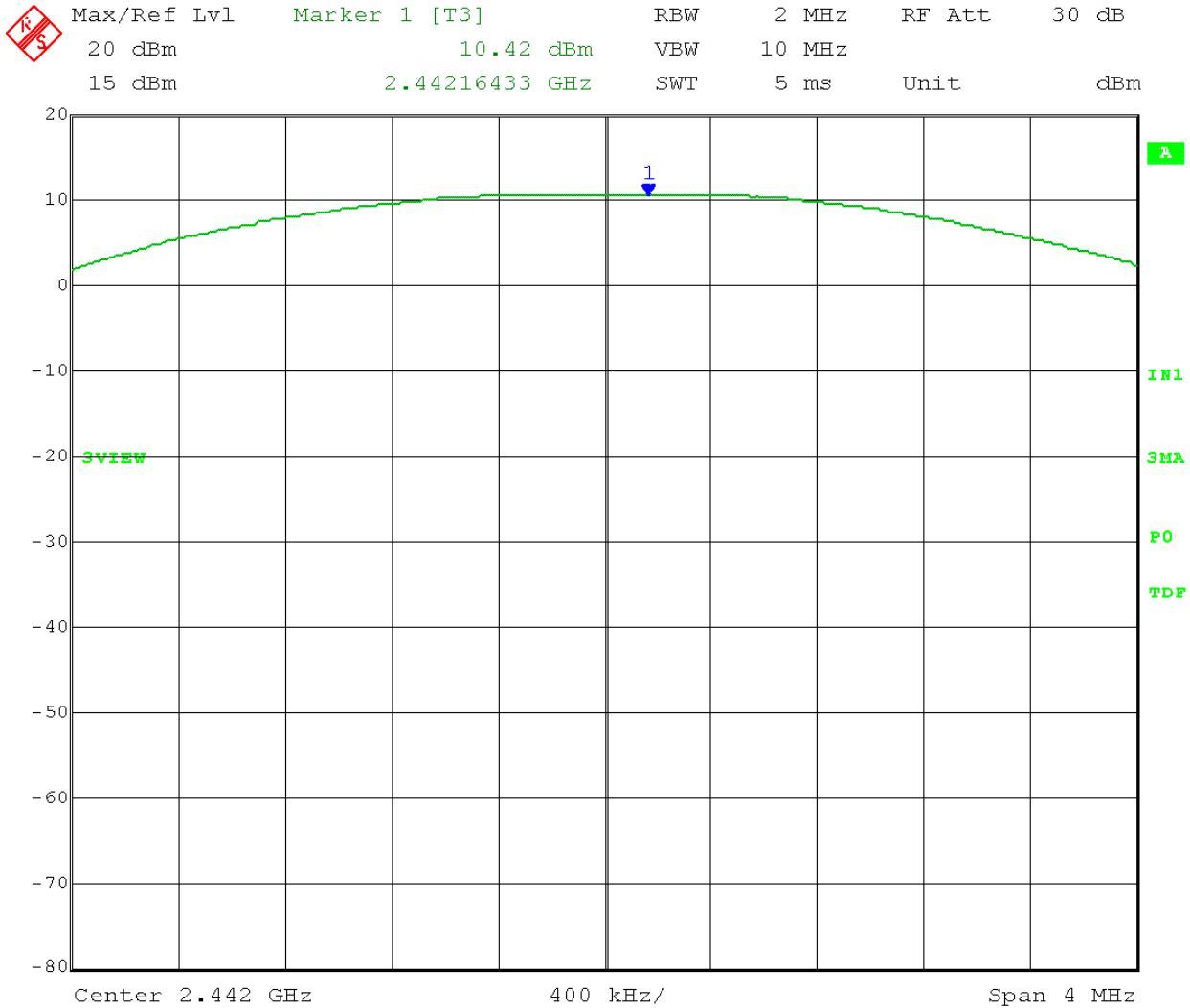
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Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter Remote, Model: 22-80-2875
Test: Output Power – RF Conducted
Operator: cbrandt

Comment: Power set to full power (not adjustable)
Mid Channel: 2442 MHz

Peak Output Power = 10.42 dBm = 11.02 mW





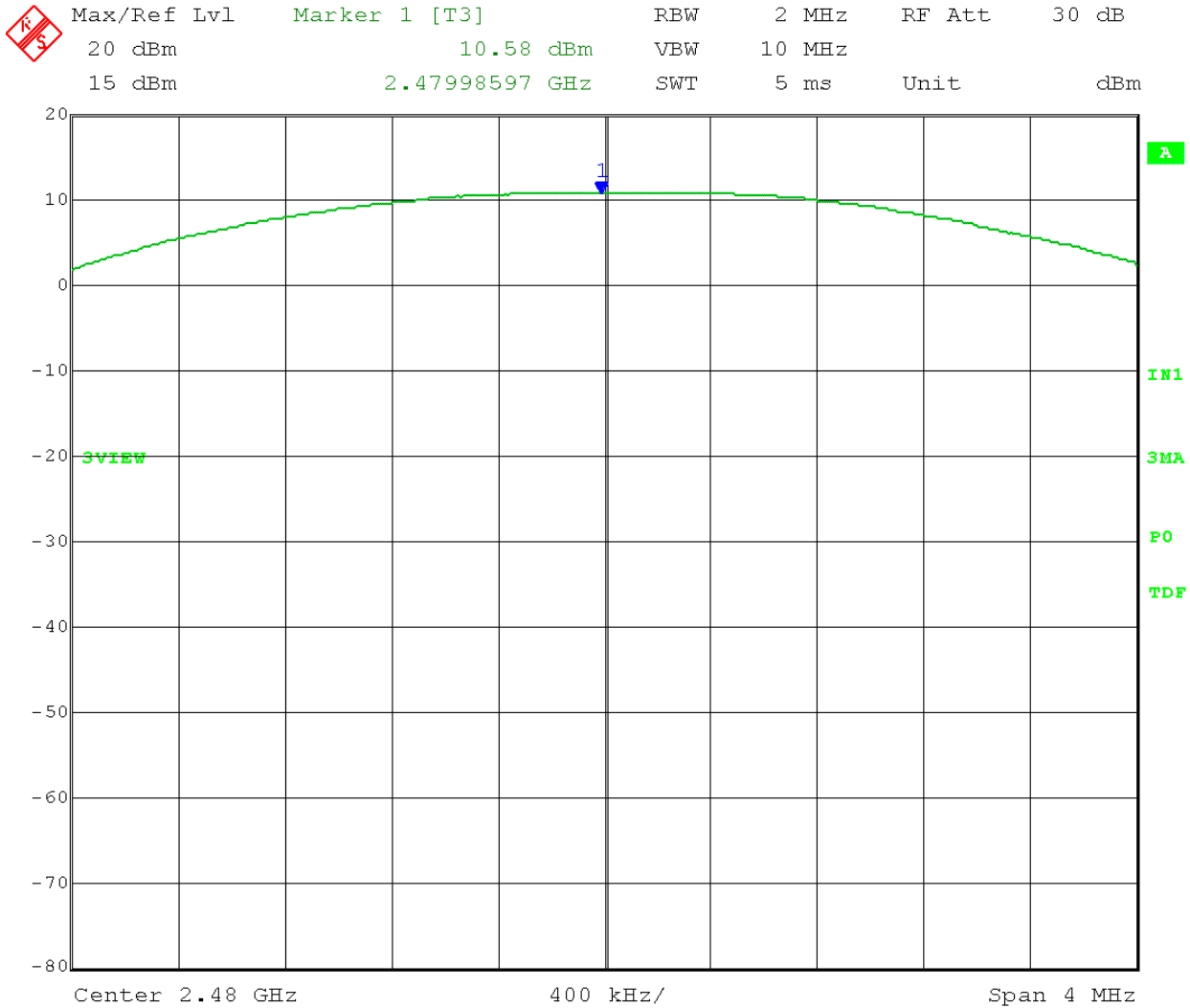
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Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter Remote, Model: 22-80-2875
 Test: Output Power – RF Conducted
 Operator: cbrandt

Comment: Power set to full power (not adjustable)
 High Channel: 2480 MHz

Peak Output Power = 10.58 dBm = 11.43 mW





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8.2 Antenna Gain Information

Antenna Gain is taken from TAOGLAS, Part No. WCM.01.0111 specification document SPE-17-8-090/A/IC.

The antenna in this device is located at the edge of a circuit board whose ground plane measures 12.5 cm x 8.5 cm. Therefore, the antenna gain factor from the specification sheet is 4.09 dBi which is given as the peak gain of the antenna when used at the edge of a 10 cm x 10 cm ground plane.



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END OF REPORT

Revision #	Date	Comments	By
1.0	08-23-2023	Initial Release	CB
1.1	10-05-2024	Change made to Maximum Rated Output Power with tolerances	CB
1.2	05-10-2024	Change made to Maximum Rated Output Power. Corrected ERP calculations to represent ERP instead of EIRP.	CB