



166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Code of Federal Regulations Title 47 Part 15 – Radio Frequency Devices

Subpart C – Intentional Radiators – Section 15.247
Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz,
5725 - 5875 MHz, and 24.0 - 24.25 GHz.

THE FOLLOWING MEETS THE ABOVE TEST SPECIFICATION

FCC ID: P36-2875R-20

Formal Name: M18™ FORCE LOGIC™ 5” Underground Cable Cutter w/
Wireless Remote (This test report is for the tool only. See D.L.S.
Electronic Systems, Inc. test report #27993 for the wireless
remote)

Kind of Equipment: Cutting Tool with Bluetooth Low Energy (BLE) Transceiver

Frequency Range(s): 2402 – 2480 MHz

Test Configuration: Table top, Stand-alone

Model Number(s): 2875R-20

Model(s) Tested: 2875R-20

Serial Number(s): 4010052D

Date of Tests: August 7 – 11, 2023

Test Conducted For: Milwaukee Electric Tool Corporation
13135 West Lisbon Road
Brookfield, Wisconsin, 53005, USA

NOTICE: This test report contains test data, equipment lists and/or other information regarding only the sample provided by the client for testing. 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 Test Sample" page listed inside of this report.

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Signature Page

Report By:

Craig Brandt
Test Engineer

Reviewed By:

William Stumpf
Technical Manager

Approved By:

Brian Mattson
General Manager



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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

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

R. Douglas Leonard Jr., VP, PILR SBU
Expiry Date: 23 April 2024
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 Summary of Test Report

It was determined that the M18™ FORCE LOGIC™ 5” Underground Cable Cutter w/ Wireless Remote, model 2875R-20, complies with the requirements of Title 47 CFR Part 15, Subpart C, Section 15.247.

Subpart C Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
15.31(e)	Supply Voltage Statement	N/A		Yes
15.203	Antenna Requirement Statement	N/A		Yes
Informative	Duty Cycle of Test Unit	ANSI C63.10-2013 Section 11.6(b)	1	NA
15.247(a)(2)	DTS Bandwidth (6 dB Bandwidth)	ANSI C63.10-2013 Sections 6.9.2 & 11.8.2	1	Yes
15.247(b)(3)	Peak Output Power	ANSI C63.10-2013 Section 11.9.1.1	1	Yes
15.247(e)	Peak Power Spectral Density	ANSI C63.10-2013 Section 11.10.2	1	Yes
15.247(d)	Emissions in Non-Restricted Frequency Bands	ANSI C63.10-2013 Sections 11.11.1(a), 11.11.2, & 11.11.3	1	Yes
15.247(d) 15.205(b) 15.209(a)	Emissions in Restricted Frequency Bands	ANSI C63.10-2013 Section 11.12.1	2	Yes
15.247(d)	Authorized Band Edge	ANSI C63.10-2013 Sections 6.10.4 & 11.11.1(a)	1	Yes
15.247(d) 15.205(b) 15.209(a)	Restricted Band Edge	ANSI C63.10-2013 Section 6.10.5.2	2	Yes

Note 1: RF Conducted measurement.

Note 2: Radiated Emission measurement; tested in 3 orthogonal axes.



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2.0 Introduction

During August 7 – 11, 2023 the M18™ FORCE LOGIC™ 5" Underground Cable Cutter w/ Wireless Remote, model 2875R-20, as provided by Milwaukee Electric Tool Corporation, was tested to the requirements of Title 47 CFR Part 15, Subpart C, Section 15.247. To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S. Electronic Systems, Inc.

The Digital Device requirements (Part 15.109 Class B) will be addressed as an SDoC.

3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full-service EMC/Safety Testing Laboratory accredited to ISO 17025. ANAB Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, ISED Canada, and VCCI.

Wisconsin Test Facility:

D.L.S. Electronic Systems, Inc.
166 S. Carter Street
Genoa City, Wisconsin 53128

Wheeling Test Facility:

D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, IL 60090

FCC Registration #90531

4.0 Description of Test Sample

Description:

Our M18™ FORCE LOGIC™ 5" Underground Cable Cutter w/ Wireless Remote is The Smartest Way to Cut. We remove the physical connection to the tool allowing cablemen to cut up to 5" (127 mm) Diameter Communications, Armored, Lead Sheath, Copper, and Aluminum Power Cables wirelessly. The wireless remote communicates with the tool via a mutually exclusive connection, eliminating the potential for other smart devices to connect to the tool. After set-up, cablemen can arm the remote cutter and move away from the cutting area. A green LED on the wireless remote gives a positive indication that the tool is done cutting, delivering a safer way to cut remotely. The M18™ FORCE LOGIC™ 5" Underground Cable Cutter w/ Wireless Remote easily converts from Local to Remote cutting mode. Its balanced design, d-handle, and hang hook enable the easiest set-up in vaults. The head of the cutter rotates 180° and the quick turn-to-close style latch pin is easily opened or secured. Whether cutting remotely or locally, Milwaukee® delivers an optimized cutting experience.



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4.0 Description of Test Sample – continued

Type of Equipment:

Hand-held

DTS – Bluetooth Low Energy (BLE)

Frequency Range:

2402 – 2480 MHz

Physical Dimensions of Equipment Under Test:

Length: 36.5 in x Width: 6 in x Height: 11 in

Power Source:

18 Volt rechargeable battery

Internal Frequencies:

32.768 kHz

Transmit Frequencies Used For Test Purpose:

2402 MHz, 2442 MHz, 2480 MHz

Type of Modulation(s)

GFSK (40 Channels)

Antenna Type:

2.4 GHz 50-Ohm Omni Directional Button Antenna (0.89 dBi Peak Gain in free space)



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5.0 Test Equipment

A list of the equipment used can be found in the table below. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

D.L.S. Wisconsin – RF Conducted – Site G1 – Test Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI26	835336/003	20 Hz-26.5 GHz	7-15-23	7-15-24
Cable	Micro-Coax	UFC142A	CBL-101	30 MHz-40 GHz	7-24-23	7-24-24
20 dB Attenuator	MCE/ WEINSCHL	5955A-20	2056	30 MHz-40 GHz	8-7-23	8-7-24
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A

D.L.S. Wisconsin – Radiated Emissions 30-1000 MHz – Site 1 – Test Equipment: (Pre-scan search: No Radiated Emissions detected from 30 to 1000 MHz)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI26	835336/003	20 Hz-26.5 GHz	7-15-23	7-15-24
Antenna	EMCO	3104C	4849	20 MHz-300 MHz	4-24-23	4-24-25
Antenna	Electro-Metrics	LPA-25	1205	200 MHz-1 GHz	6-16-22	6-16-24
Cable	Pasternack Enterprises	PE3087-300	CBL-118	9 kHz-1 GHz	4-7-23	4-7-24
Cable	Pasternack Enterprises	PE3087-36	CBL-107	9 kHz-1 GHz	4-7-23	4-7-24
Cable	Pasternack Enterprises	PE3087-144	CBL-115	9 kHz-1 GHz	4-7-23	4-7-24
Preamp	Rohde & Schwarz	TS-PR10	032001/003	9 kHz-1 GHz	7-6-23	7-6-24
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A



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5.0 Test Equipment – continued

D.L.S. Wisconsin – Radiated Emissions 1-4 GHz – Site 1 – Test Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI26	835336/003	20 Hz-26.5 GHz	7-15-23	7-15-24
Horn Antenna	EMCO	3115	9502-4451	1 GHz-18 GHz	10-7-21	10-7-23
Cable	Micro-Coax	UFB311A-1	CBL-096	1 GHz-18 GHz	5-23-23	5-23-24
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A

D.L.S. Wisconsin – Radiated Emissions 4-18 GHz – Site 1 – Test Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI26	835336/003	20 Hz-26.5 GHz	7-15-23	7-15-24
Horn Antenna	EMCO	3115	9502-4451	1 GHz-18 GHz	10-7-21	10-7-23
Cable	Micro-Coax	UFB311A-1	CBL-096	1 GHz-18 GHz	5-23-23	5-23-24
High Pass Filter	Q Microwave	100462	1	4 GHz-18 GHz	5-23-23	5-23-24
Preamp	Miteq	AMF-7D-01001800-22-10P	1809602	1 GHz-18 GHz	7-31-23	7-31-24
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A



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5.0 Test Equipment – continued

D.L.S. Wisconsin – Radiated Emissions 18-25 GHz – Site 1 – Test Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI26	835336/003	20 Hz-26.5 GHz	7-15-23	7-15-24
Horn Antenna	EMCO	3116	2549	18 GHz-40 GHz	1-19-23	1-19-25
Cable	Pasternack Enterprises	PE3C0666-24	CBL-103	30 MHz-40 GHz	7-31-23	7-31-24
Cable	Micro-Coax	UFC142A	CBL-092	30 MHz-40 GHz	7-24-23	7-24-24
High Pass Filter	K & L	50140 11SH10- 18000/T40 000-K-K	8	18 GHz-40 GHz	5-23-23	5-23-24
Preamp	Miteq	AMF-8B- 180265-40- 10P-H/S	438727	18 GHz-26 GHz	5-23-23	5-23-24
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A

6.0 Test Arrangements

Measurement Arrangement:

All measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.10-2013, unless otherwise noted. Descriptions of procedures and measurements can be found in Section A – Measurement Data. See Section B for measurement uncertainty. See separate exhibit for photos of the test set up.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz



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7.0 Test Conditions

Temperature and Humidity:

74 °F at 41% RH

Supply Voltage:

18 Volts DC supplied by a fully charged Milwaukee Tool model M18 rechargeable battery pack

8.0 Modifications Made to EUT For Compliance

None noted at time of test.

9.0 Additional Descriptions

Following FCC Part 15 and ANSI C63.10 requirements, the EUT was programmed to transmit continuously, modulated, with a 100% duty cycle. The transmit power is non-adjustable, therefore there are no “power settings” applicable to this device.

For RF Conducted measurements, a spectrum analyzer was connected through an RF cable and a 20 dB attenuator to the internal SMA antenna port on the RF circuit board. Correction factors for the loss of the RF cable and attenuator were downloaded into the spectrum analyzer so that the values displayed on the spectrum analyzer are already corrected for the cable and attenuator losses, and no further corrections are needed.

For Radiated Emission measurements, the EUT was tested while transmitting from the internal button antenna which is in the handle of the tool and connected to the RF circuit board via a short coaxial cable. The device was set up on a non-conductive table for testing purposes.

The EUT was programmed for continuous transmission (100% duty cycle) on the lowest, middle, and highest channels of operation in the 2.4 GHz BLE frequency band. The EUT was tested in three orthogonal axes to find worst-case emission levels. The worst-case levels are recorded in this test report.

See Section A for operation and setup specific to the FCC Rule part and ANSI C63.10 guidance reference for each test performed. See the separate Setup Photos exhibit for photos of the Radiated Emissions and RF Conducted measurement test setups.



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10.0 FCC 15.31(e) Supply Voltage Requirement statement

FCC 15.31(e) - For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Compliance Statement: This device complies with the requirements of Part 15.31(e):

- This device is battery operated. All tests were performed using a new (or fully charged) battery.
- This device provides a constant regulated voltage to the RF circuitry regardless of supply voltage (see schematic diagrams).
- This device does not provide a constant regulated voltage to the RF circuitry regardless of supply voltage. Data has been supplied in this test report that supports compliance. Details:

11.0 FCC 15.203 Antenna Requirement statement

SECTION 15.203 ANTENNA REQUIREMENT

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.... This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221.

Statement: This wireless device (Intentional Radiator) meets the requirements of FCC Part 15.203:

- The antenna is permanently attached.
- The antenna has a unique coupling to the intentional radiator.
Description of coupling: A standard SMA connector is used. The connector is within the transmitter enclosure and can only be accessed by disassembly of the device. Such disassembly is not normally required. (Meets the requirements as per FCC KDB 353028 D01, Section II(A)(2)(b)(ii)(3))
- This intentional radiator is professionally installed.
- This intentional radiator, in accordance with Section 15.31(d), must be measured at the installation site.



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12.0 Results

Measurements were performed in accordance with ANSI C63.10-2013. Graphical and tabular data can be found in Section A at the end of this report.

13.0 Conclusion

The M18™ FORCE LOGIC™ 5” Underground Cable Cutter w/ Wireless Remote, model 2875R-20, as provided by Milwaukee Electric Tool Corporation, tested during August 7 – 11, 2023 **meets** the requirements of Title 47 CFR Part 15, Subpart C, Section 15.247.



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Section A – Measurement Data

A1.0 Duty Cycle of Test Unit

Rule Part:

Informative

Test Procedure:

ANSI C63.10-2013, Section 11.6(b)
Zero-span mode on a spectrum analyzer

Limit:

Informative

Results:

Duty Cycle Correction Factor: **None.** EUT in test mode is transmitting continuously with a duty cycle of 100%.

Notes:

This test was performed using the RF Conducted test configuration. The test software was set to transmit a modulated signal at 100% duty cycle. This same software setting was used for all RF Conducted and Radiated Emissions testing.

Special note regarding the Upper Radiated Restricted Band compliance measurement: Per FCC KDB 558074 D01 15.247 Meas Guidance v05r02, Q&A #3, a correction factor was used for this measurement. This correction factor is -6.26 dB with a maximum worst-case duty cycle of 48.64%. See manufacturer's duty cycle justification document.



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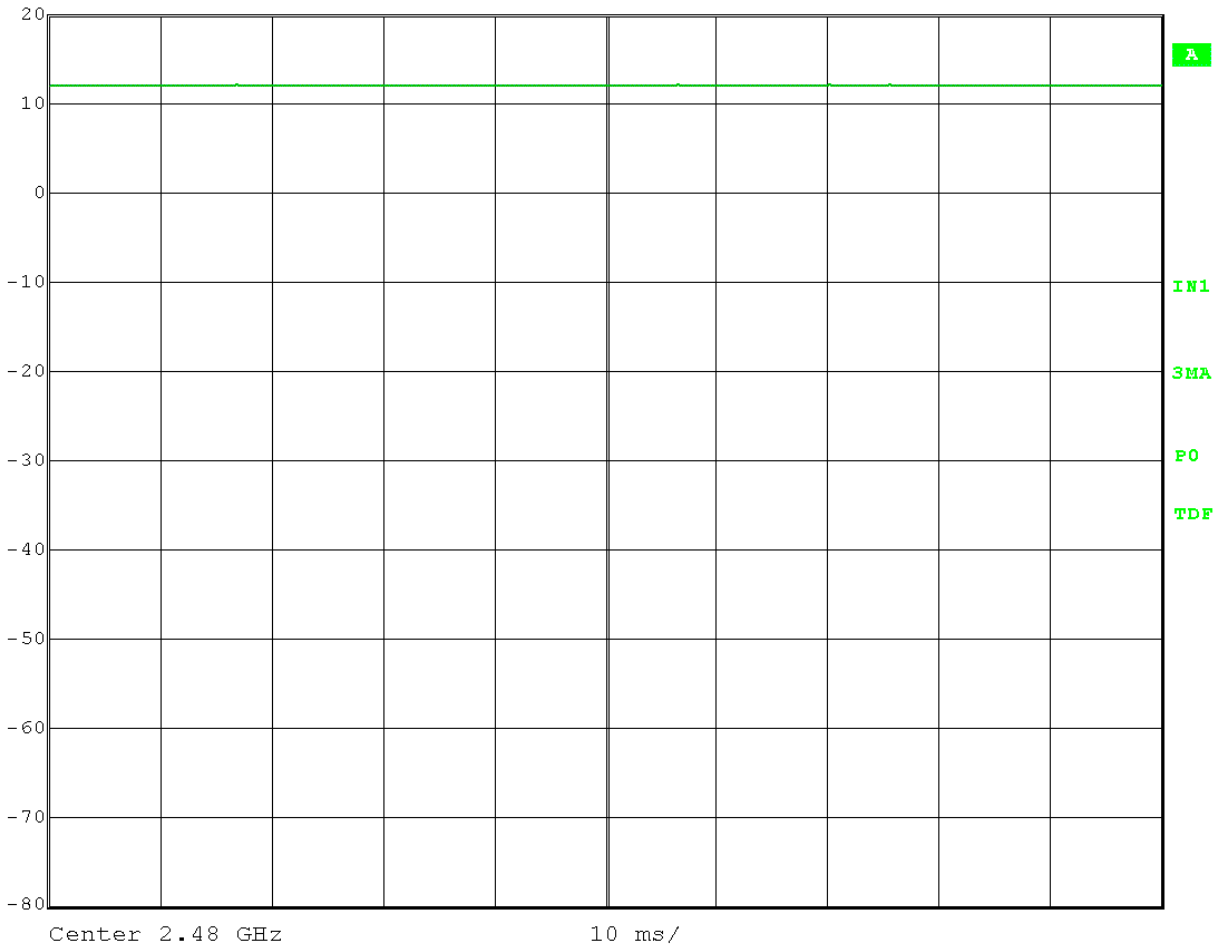
Section A

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Duty Cycle of Test Unit
Operator: cbrandt

Comment: Transmit Duty Cycle = 100%

100 ms sweep:

	Max/Ref Lvl	RBW	5 MHz	RF Att	30 dB
	20 dBm	VBW	10 MHz		
	15 dBm	SWT	100 ms	Unit	dBm





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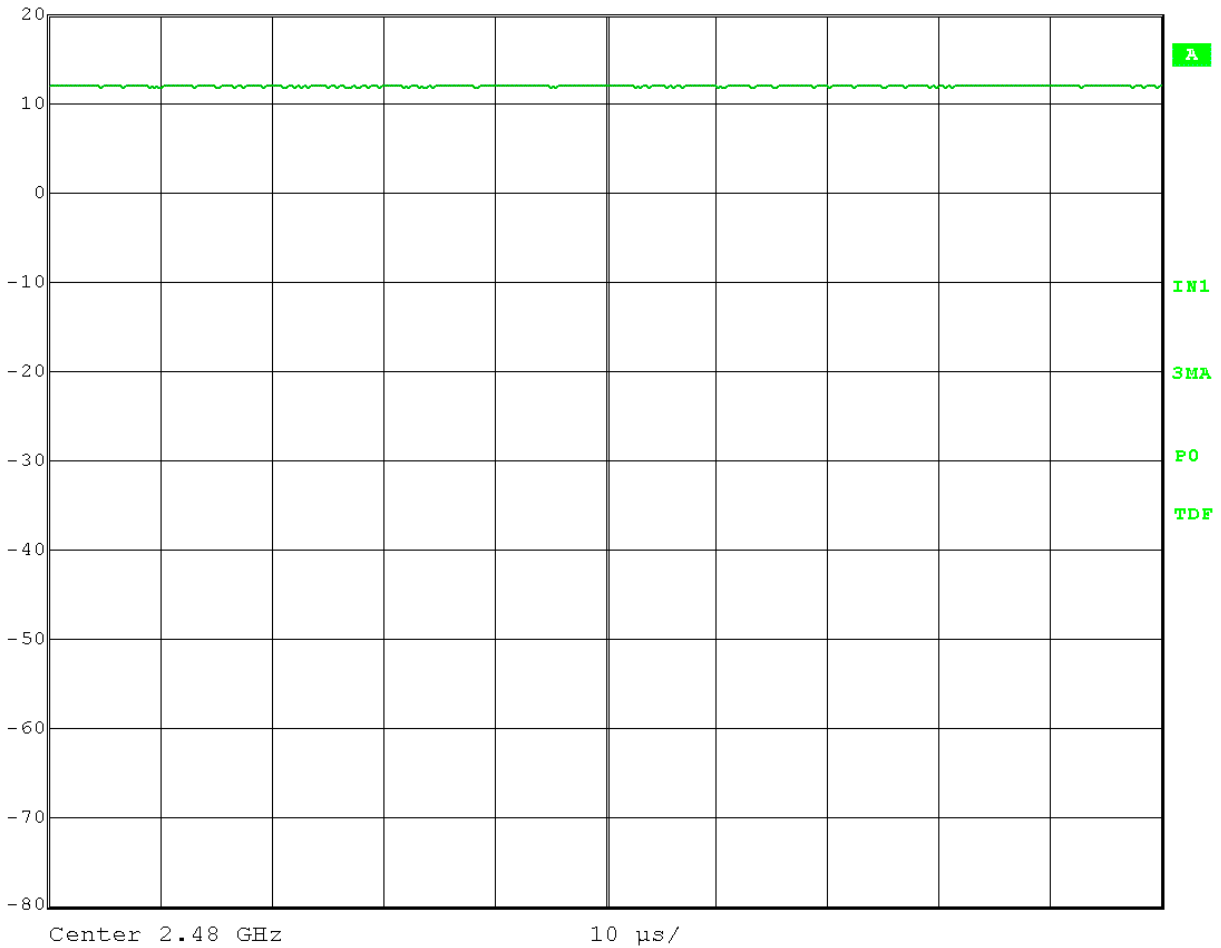
Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Duty Cycle of Test Unit
 Operator: cbrandt

Comment: Transmit Duty Cycle = 100%

100 μ s sweep:

	Max/Ref Lvl	RBW	5 MHz	RF Att	30 dB
	20 dBm	VBW	10 MHz		
	15 dBm	SWT	100 μ s	Unit	dBm





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Section A

A2.0 DTS Bandwidth (6 dB bandwidth)

Rule Part:

Section 15.247(a)(2)

Test Procedure:

ANSI C63.10-2013, Sections 6.9.2 and 11.8.2
Occupied bandwidth – relative measurement procedure
Automatic bandwidth measurement function of spectrum analyzer

Limit:

Minimum 6 dB bandwidth must be at least 500 kHz.

Results:

Compliant.
Minimum 6 dB bandwidth = **745 kHz**.

Notes:

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission, modulated, with a 100% duty cycle. This test was performed using the RF Conducted test configuration. The EUT was tested at the low, middle, and high channels of operation in accordance with FCC 15.31(m).



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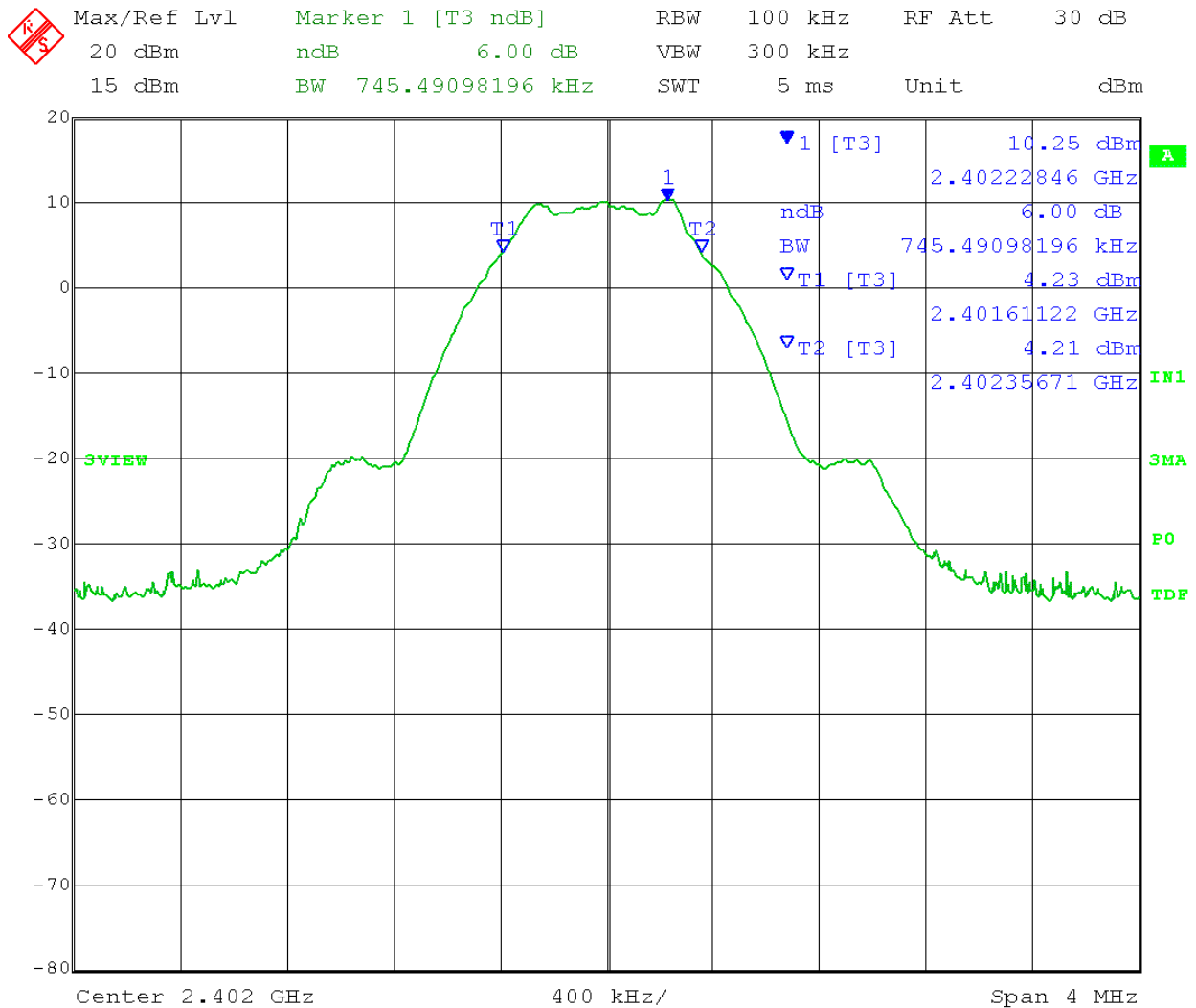
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Section A

Test Date: 08-10-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: DTS (6 dB) Bandwidth – RF Conducted
 Operator: cbrandt

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

6 dB Bandwidth = 745 kHz





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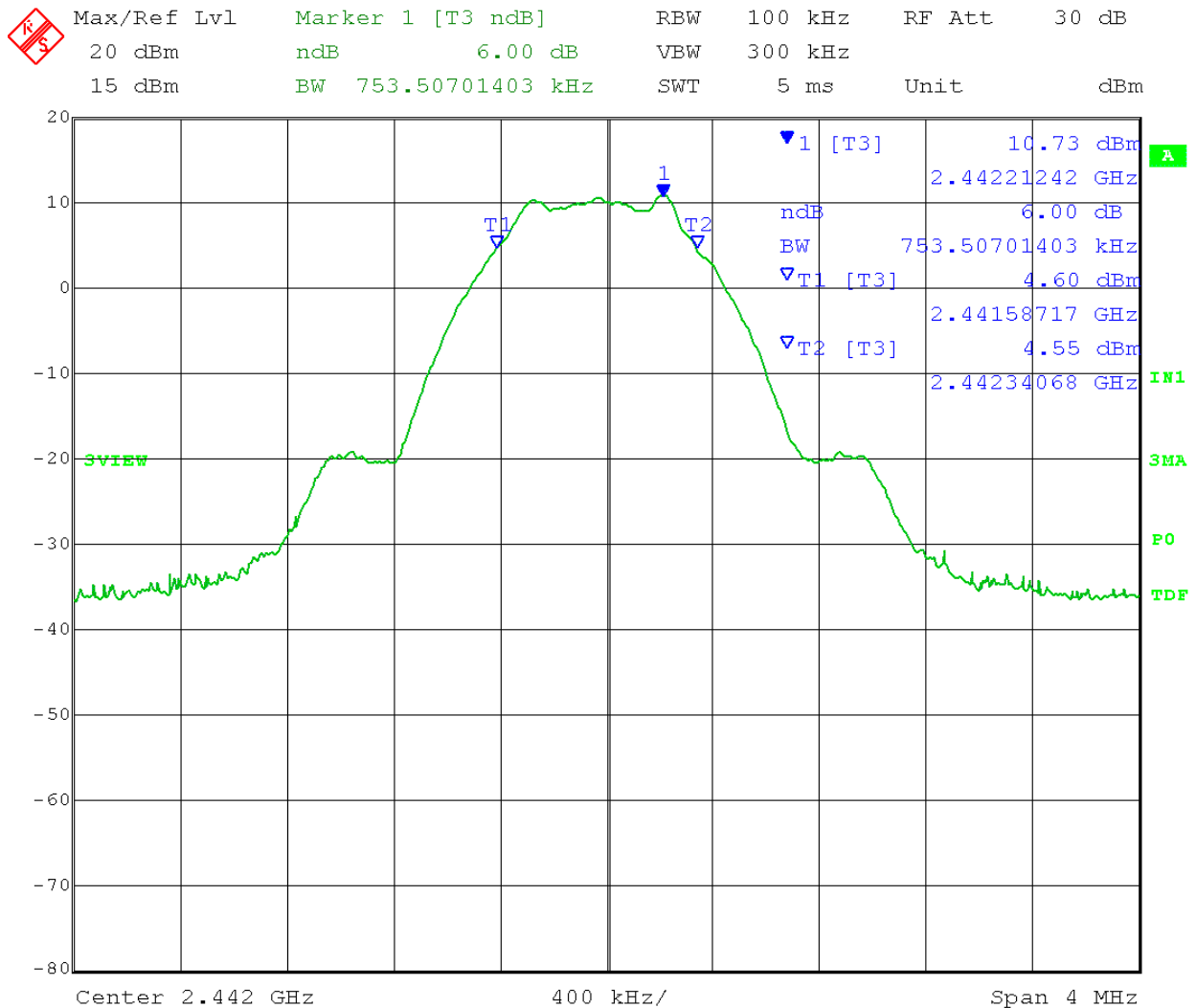
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Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: DTS (6 dB) Bandwidth – RF Conducted
 Operator: cbrandt

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

6 dB Bandwidth = 753 kHz





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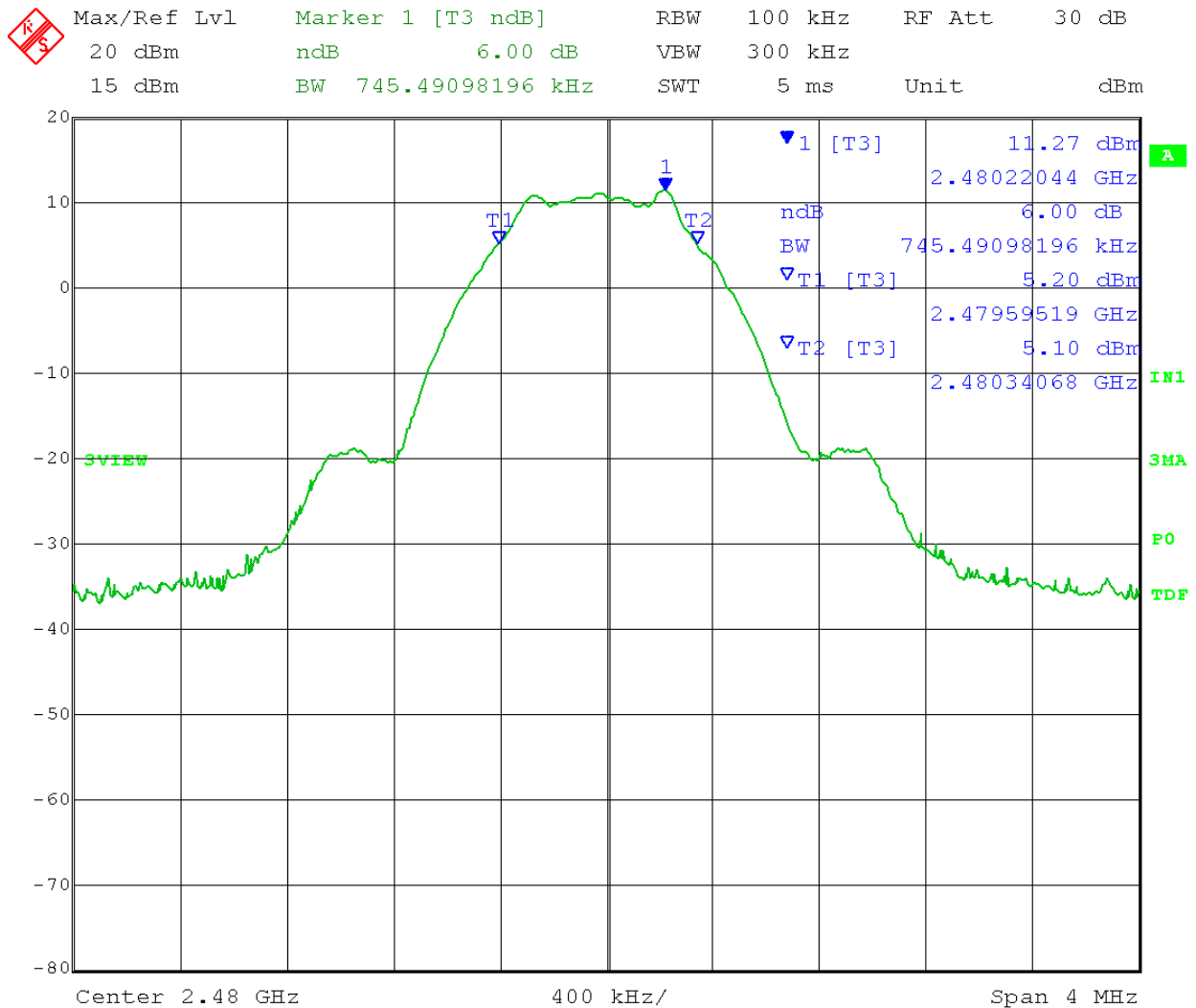
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Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: DTS (6 dB) Bandwidth – RF Conducted
 Operator: cbrandt

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

6 dB Bandwidth = 745 kHz





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Section A

A3.0 Peak Output Power

Rule Part:

Section 15.247(b)(3)

Test Procedure:

ANSI C63.10-2013, Section 11.9.1.1
Maximum peak conducted output power.
RBW \geq DTS bandwidth method

Limit:

1 Watt (30 dBm) RF Conducted

Results:

Compliant
Maximum Peak Output Power measured 12.03 dBm = **15.96 mW**.

Notes:

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission, modulated, with a 100% duty cycle. This test was performed using the RF Conducted test configuration. The EUT was tested at the low, middle, and high channels of operation in accordance with FCC 15.31(m).



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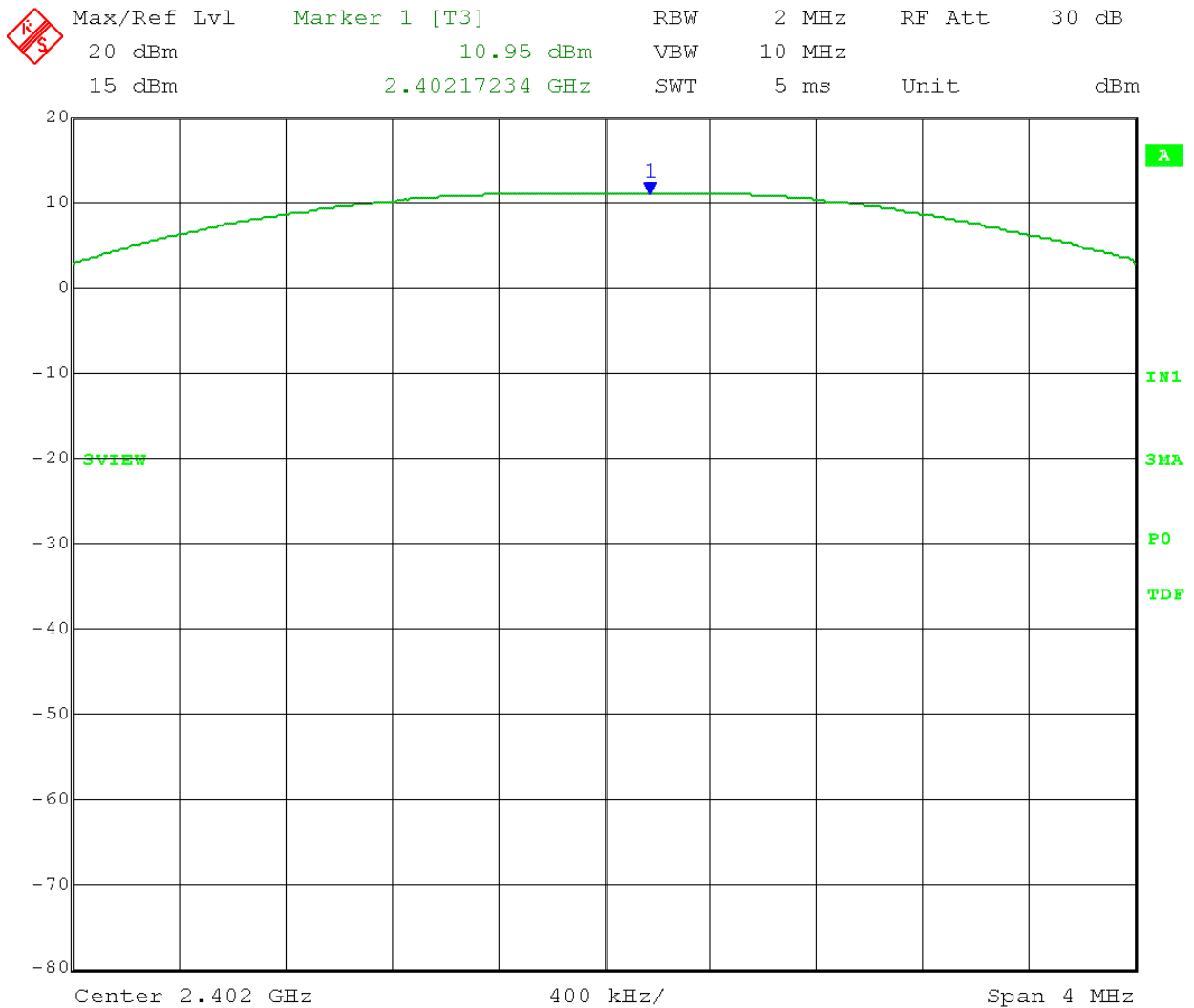
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Section A

Test Date: 08-10-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Output Power – RF Conducted
Operator: cbrandt

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

Peak Output Power = 10.95 dBm = **12.45 mW**





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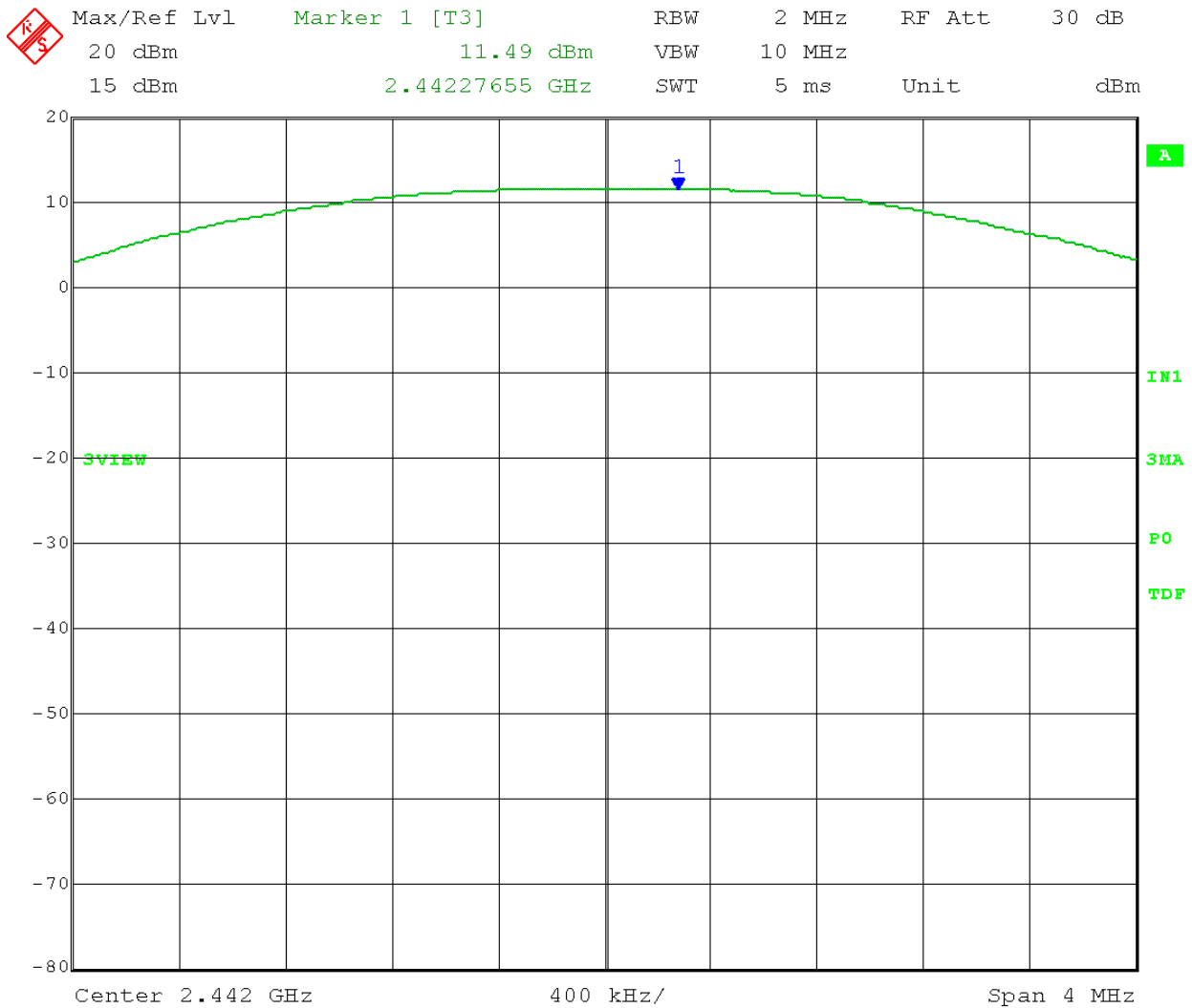
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Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Output Power – RF Conducted
 Operator: cbrandt

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

Peak Output Power = 11.49 dBm = **14.09 mW**





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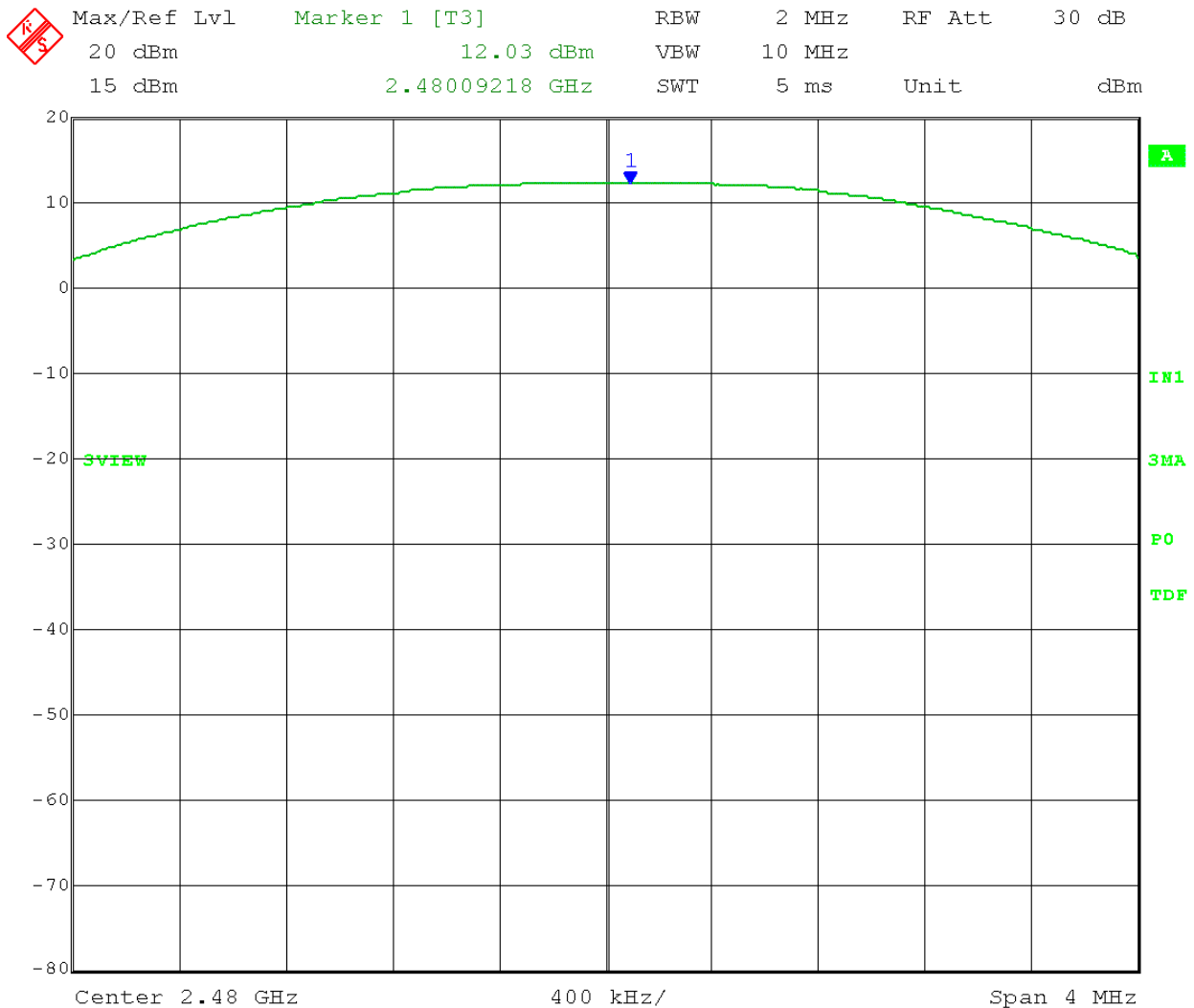
Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Output Power – RF Conducted
 Operator: cbrandt

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

Peak Output Power = 12.03 dBm = 15.96 mW





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

A4.0 Peak Power Spectral Density

Rule Part:

Section 15.247(e)

Test Procedure:

ANSI C63.10-2013, Section 11.10.2
Maximum Peak Power Spectral Density
Method PKPSD (peak PSD)

Limit:

+8 dBm in any 3 kHz band during continuous transmission

Results:

Compliant
Peak Power Spectral Density measured **2.12 dBm/10kHz**.

Notes:

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission, modulated, with a 100% duty cycle. This test was performed using the RF Conducted test configuration. The EUT was tested at the low, middle, and high channels of operation in accordance with FCC 15.31(m).



166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

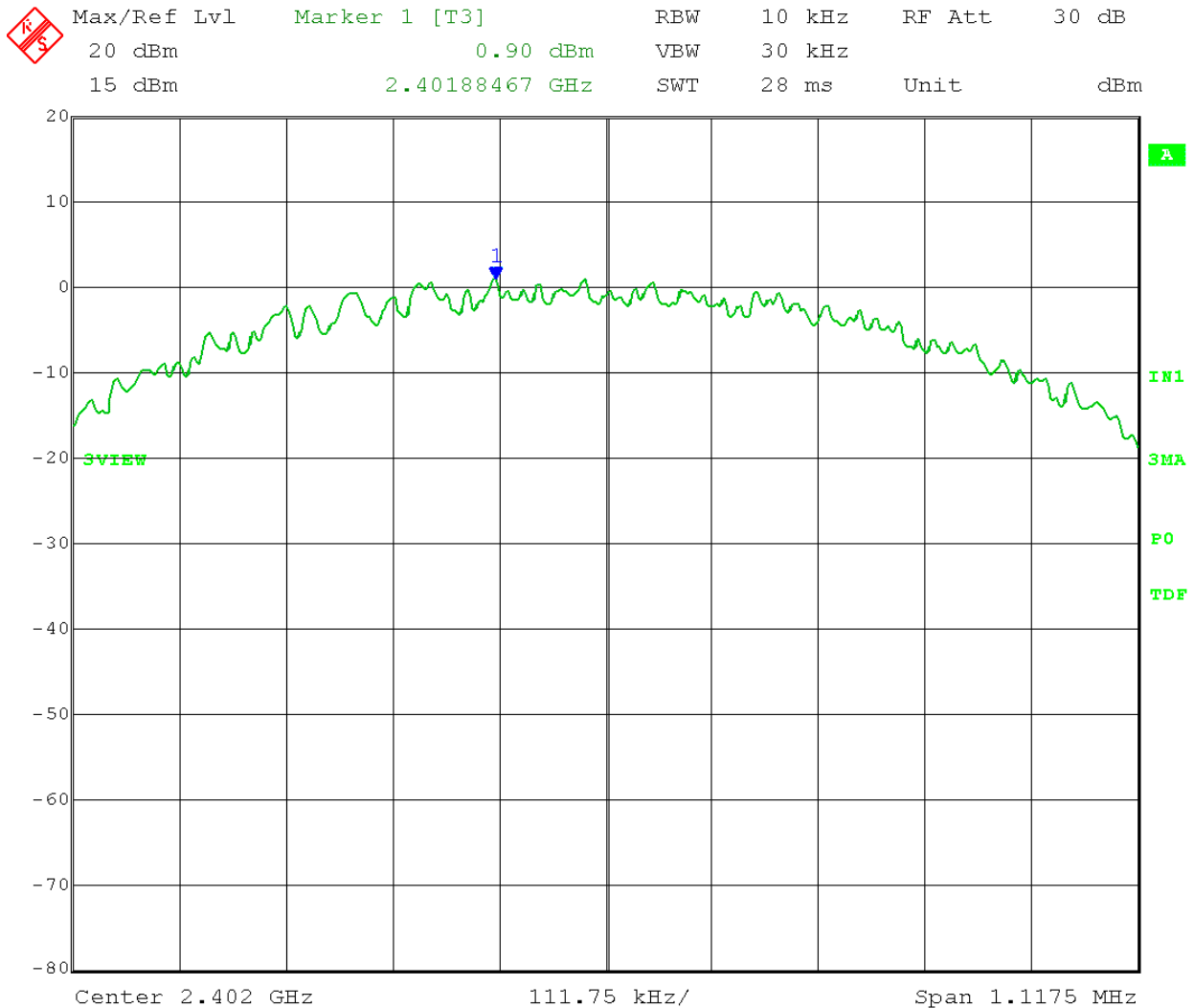
Test Date: 08-10-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Power Spectral Density – RF Conducted
 Operator: cbrandt
 Detector: Peak; max hold

Comment: Power set to full power (not adjustable)

Low Channel: 2402 MHz

Limit: +8 dBm/3kHz

Power Spectral Density (peak PSD) = 0.90 dBm/10kHz





166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

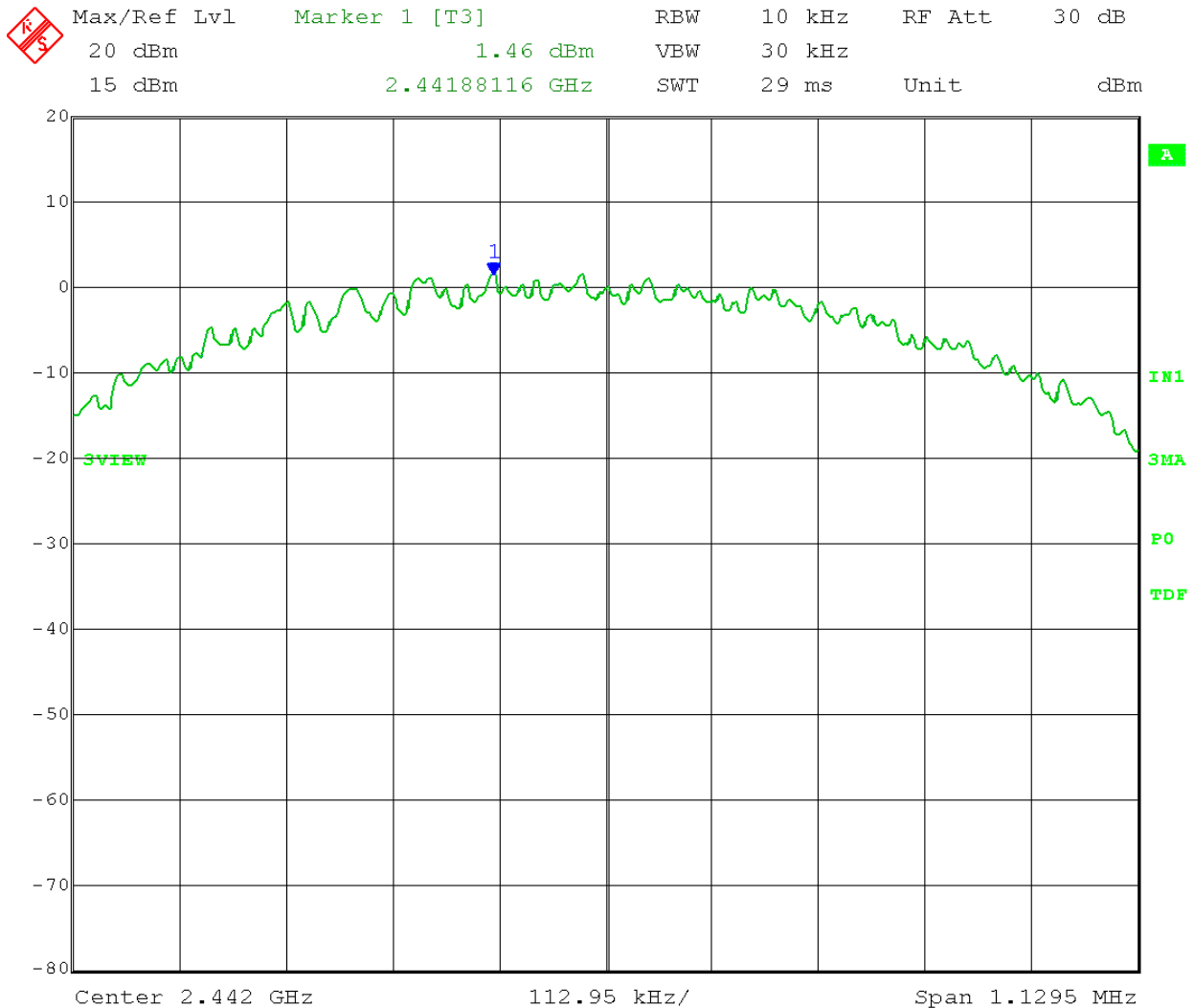
Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Power Spectral Density – RF Conducted
 Operator: cbrandt
 Detector: Peak; max hold

Comment: Power set to full power (not adjustable)

Mid Channel: 2442 MHz

Limit: +8 dBm/3kHz

Power Spectral Density (peak PSD) = **1.46 dBm/10kHz**





166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

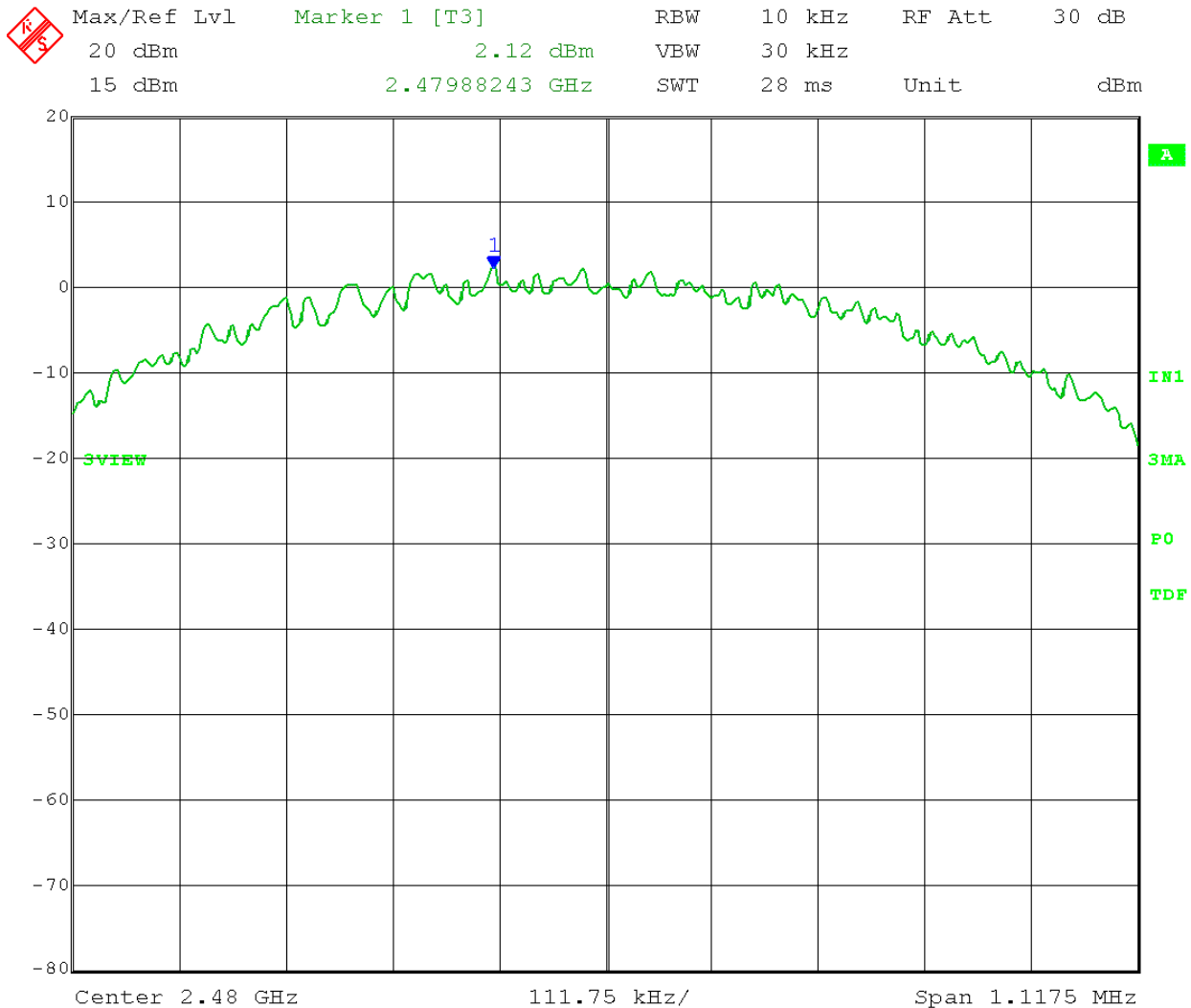
Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Power Spectral Density – RF Conducted
 Operator: cbrandt
 Detector: Peak; max hold

Comment: Power set to full power (not adjustable)

High Channel: 2480 MHz

Limit: +8 dBm/3kHz

Power Spectral Density (peak PSD) = 2.12 dBm/10kHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

A5.0 Emissions in Non-Restricted Frequency Bands – RF Conducted

Rule Part:

Section 15.247(d)

Test Procedure:

ANSI C63.10-2013, Sections 11.11.1(a), 11.11.2, and 11.11.3
Maximum PEAK conducted power procedure.
Reference level measurement
Emission level measurement

Limit:

20 dB down from the highest emission level within the authorized band as measured with a 100 kHz resolution bandwidth (RBW)

Results:

Compliant

Notes:

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission, modulated, with a 100% duty cycle. This test was performed using the RF Conducted test configuration. The EUT was tested at the low, middle, and high channels of operation in accordance with FCC 15.31(m).



166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

A5.1 Emissions in Non-Restricted Frequency Bands – Low Channel

Test Date: 08-10-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
 Operator: cbrandt

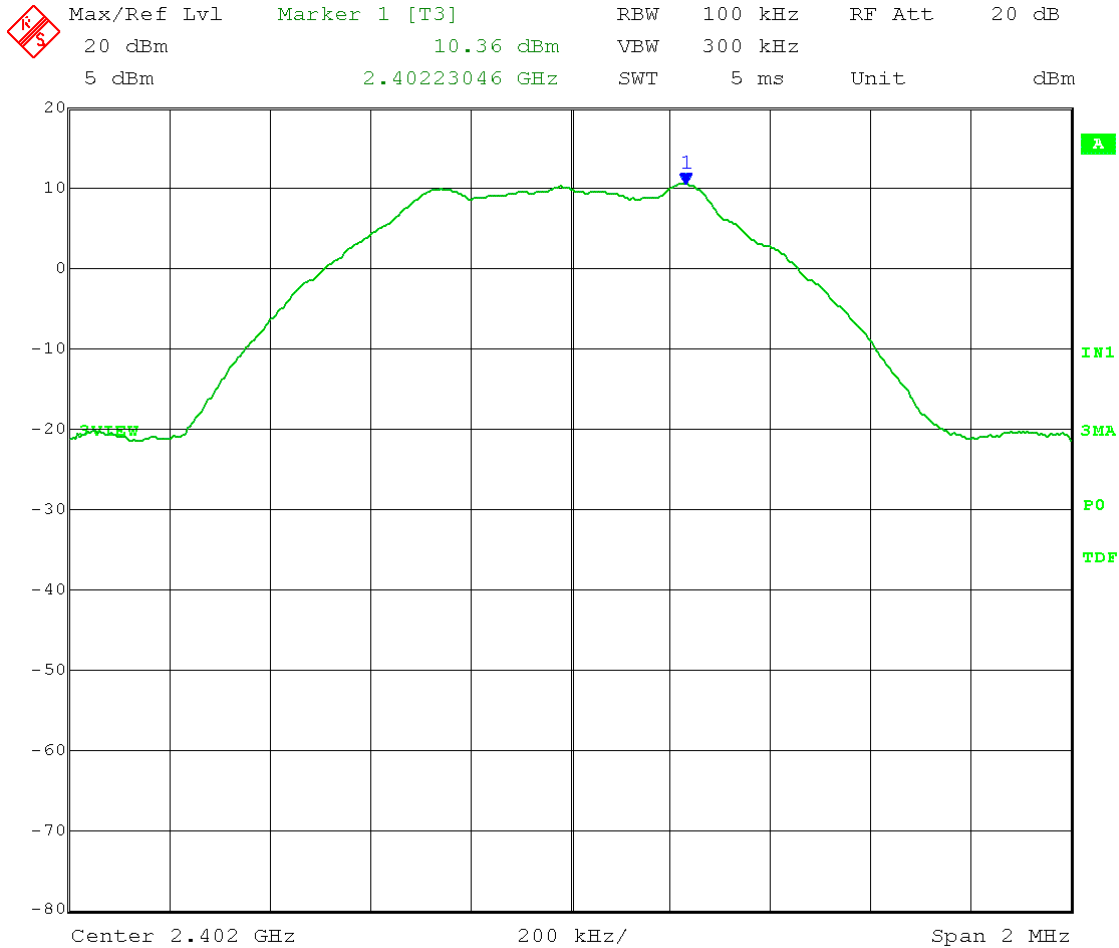
Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Span ≥ 1.5 x DTS bandwidth
 Sweep = auto couple Trace = max hold
 Detector = Peak

Low Channel: 2402 MHz

Power set to full power (not adjustable)

Reference Level measurement

Limit = 10.36 dBm – 20 dB = -9.64 dBm





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-10-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

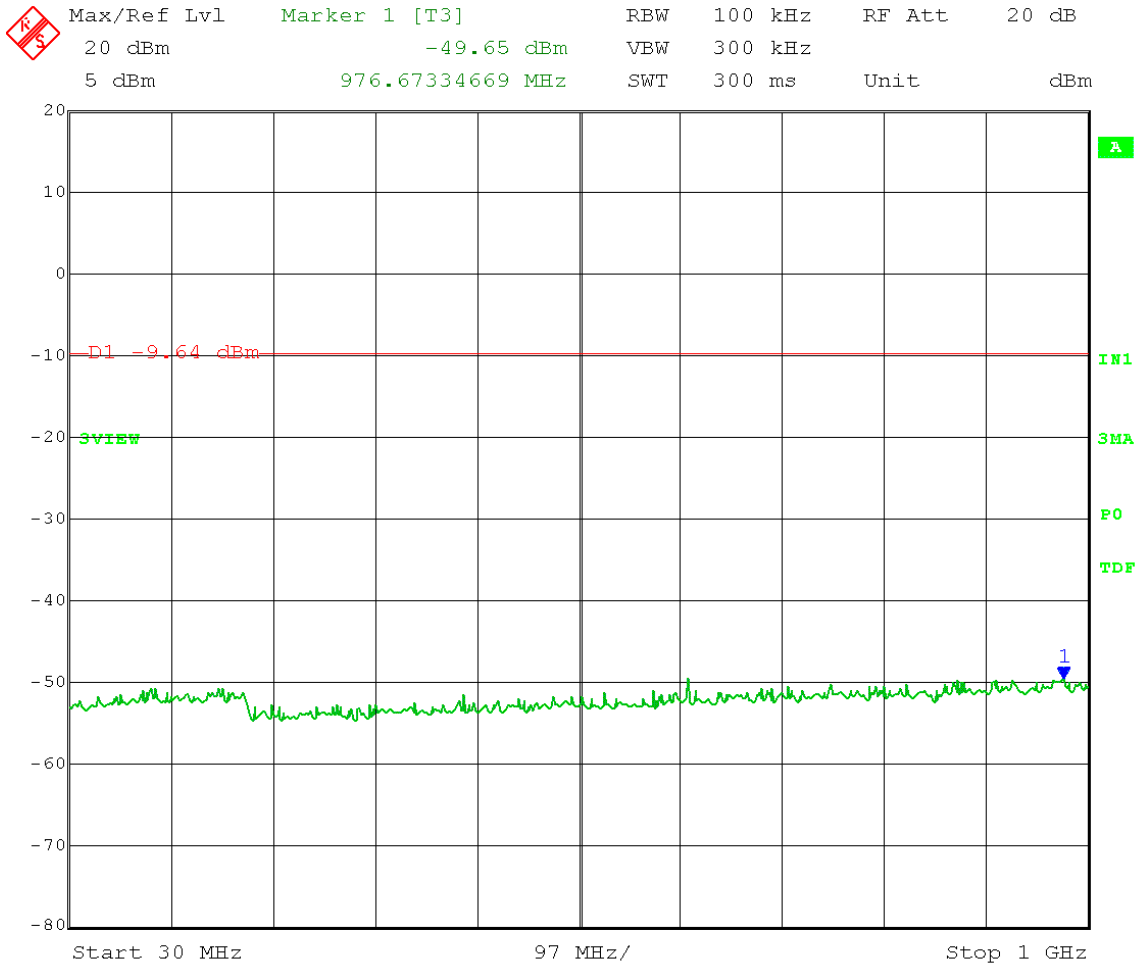
Low Channel: 2402 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.36 dBm – 20 dB = -9.64 dBm

Frequency Range: 30 – 1000 MHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-10-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

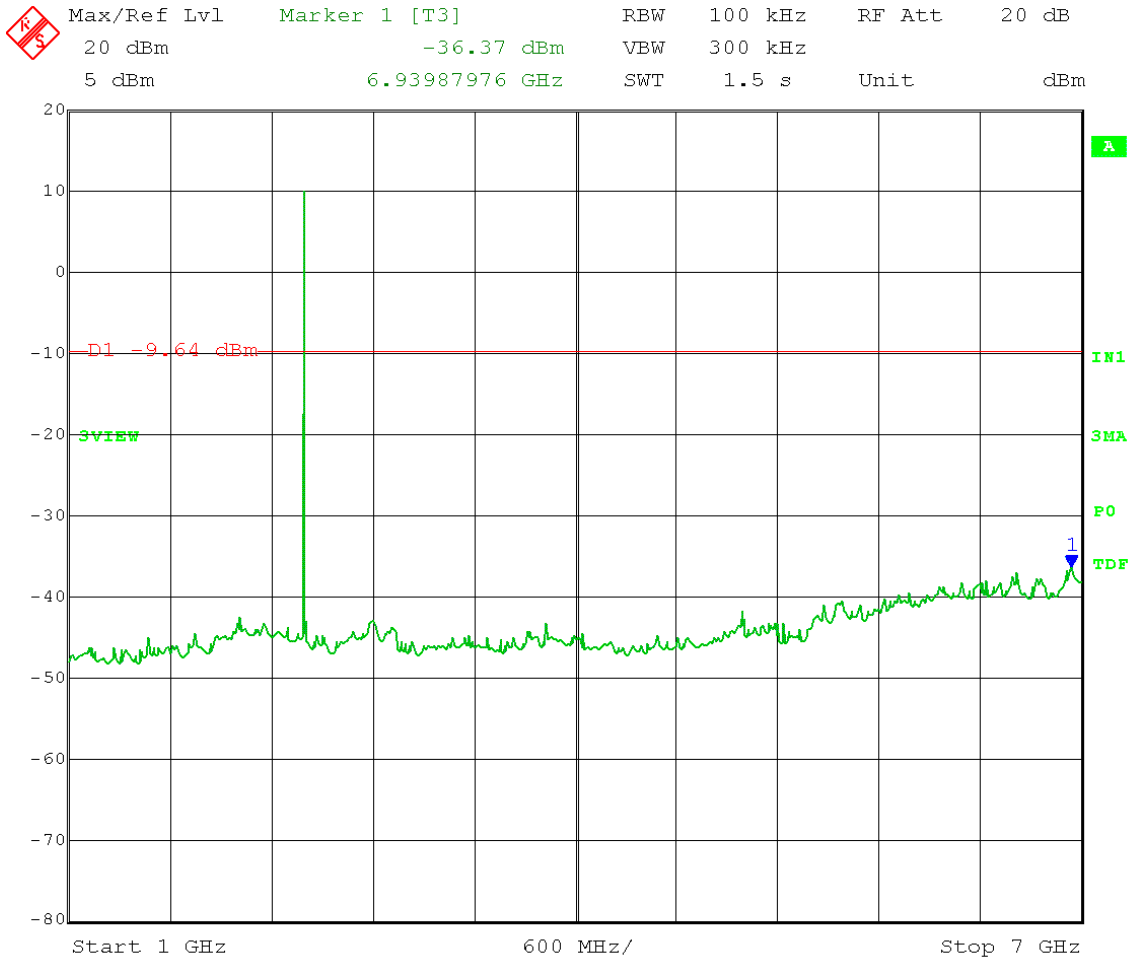
Low Channel: 2402 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.36 dBm – 20 dB = -9.64 dBm

Frequency Range: 1 – 7 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-10-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

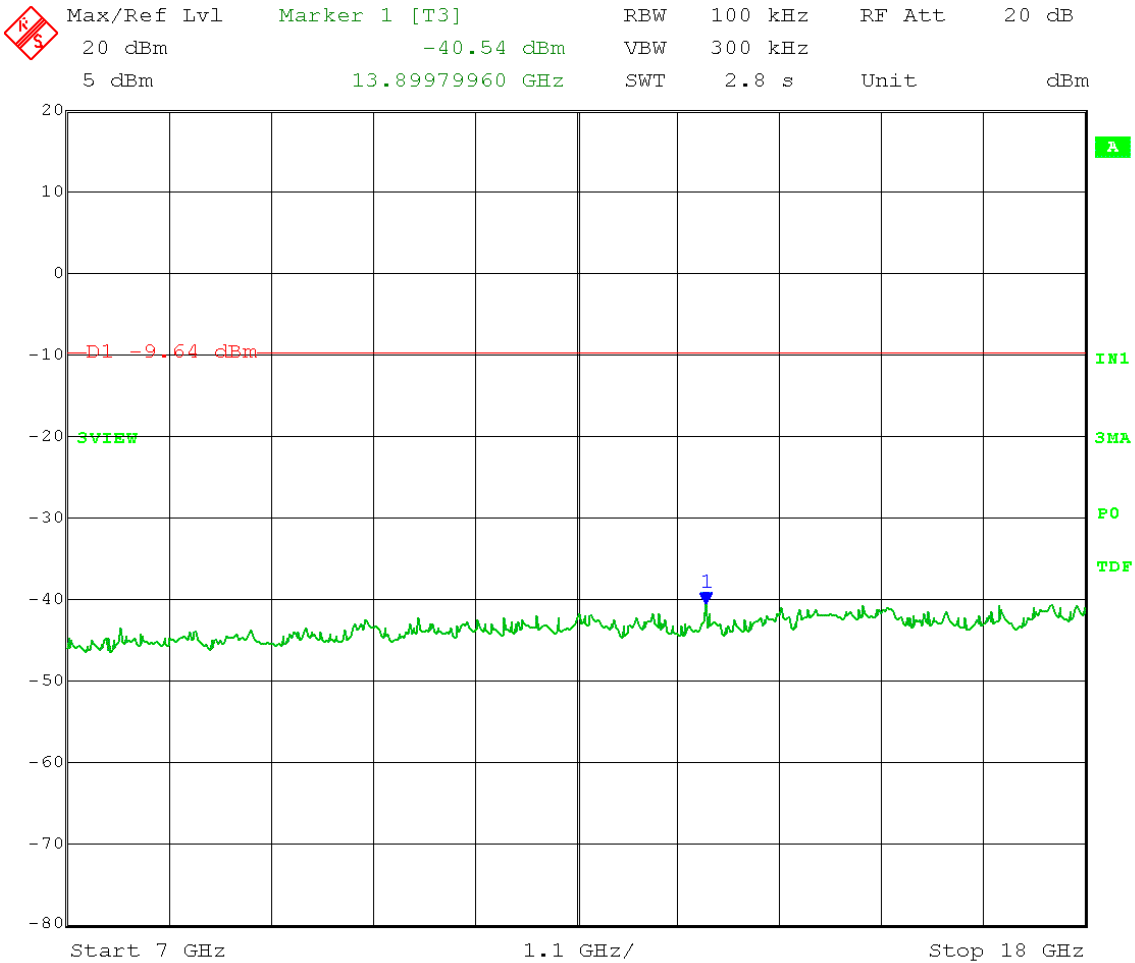
Low Channel: 2402 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.36 dBm – 20 dB = -9.64 dBm

Frequency Range: 7 – 18 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-10-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

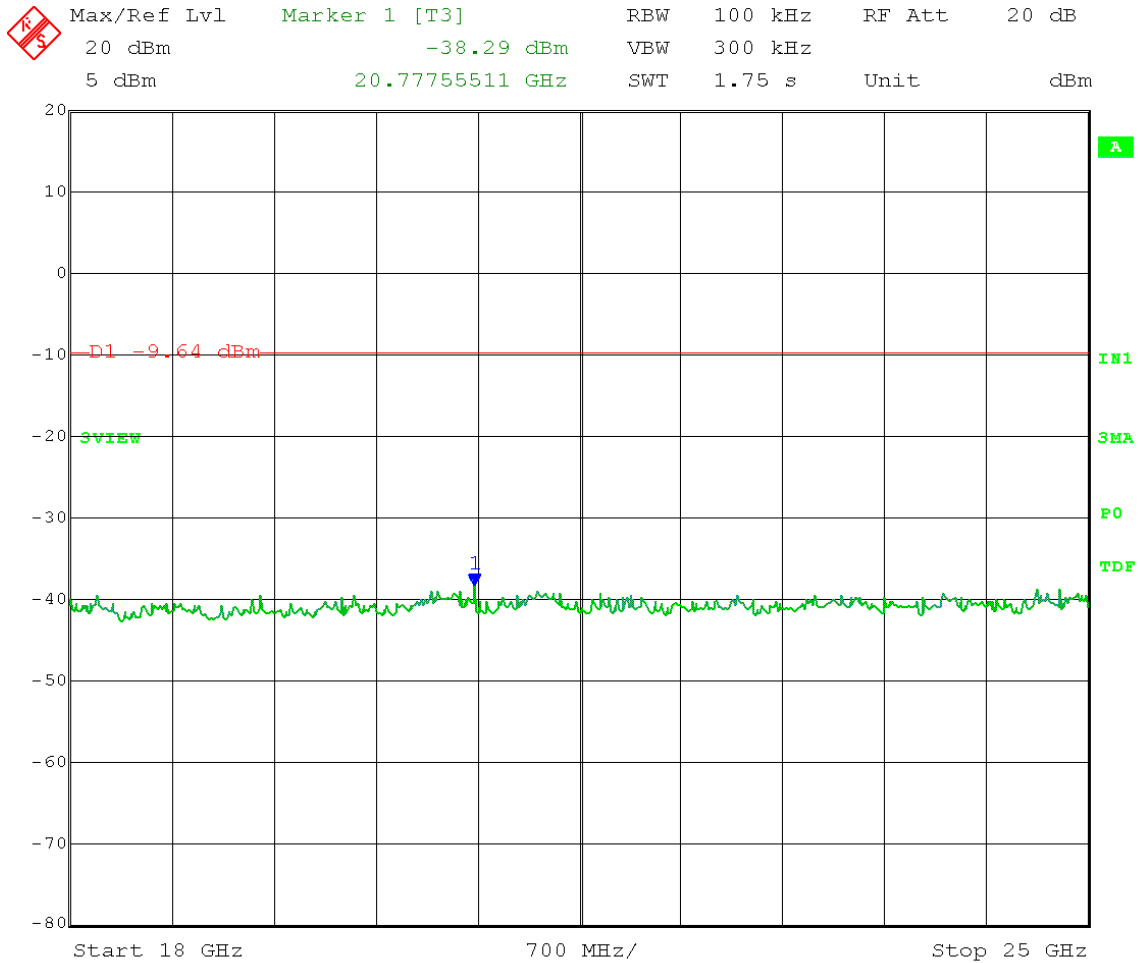
Low Channel: 2402 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.36 dBm – 20 dB = -9.64 dBm

Frequency Range: 18 – 25 GHz





166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

A5.2 Emissions in Non-Restricted Frequency Bands – Middle Channel

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
 Operator: cbrandt

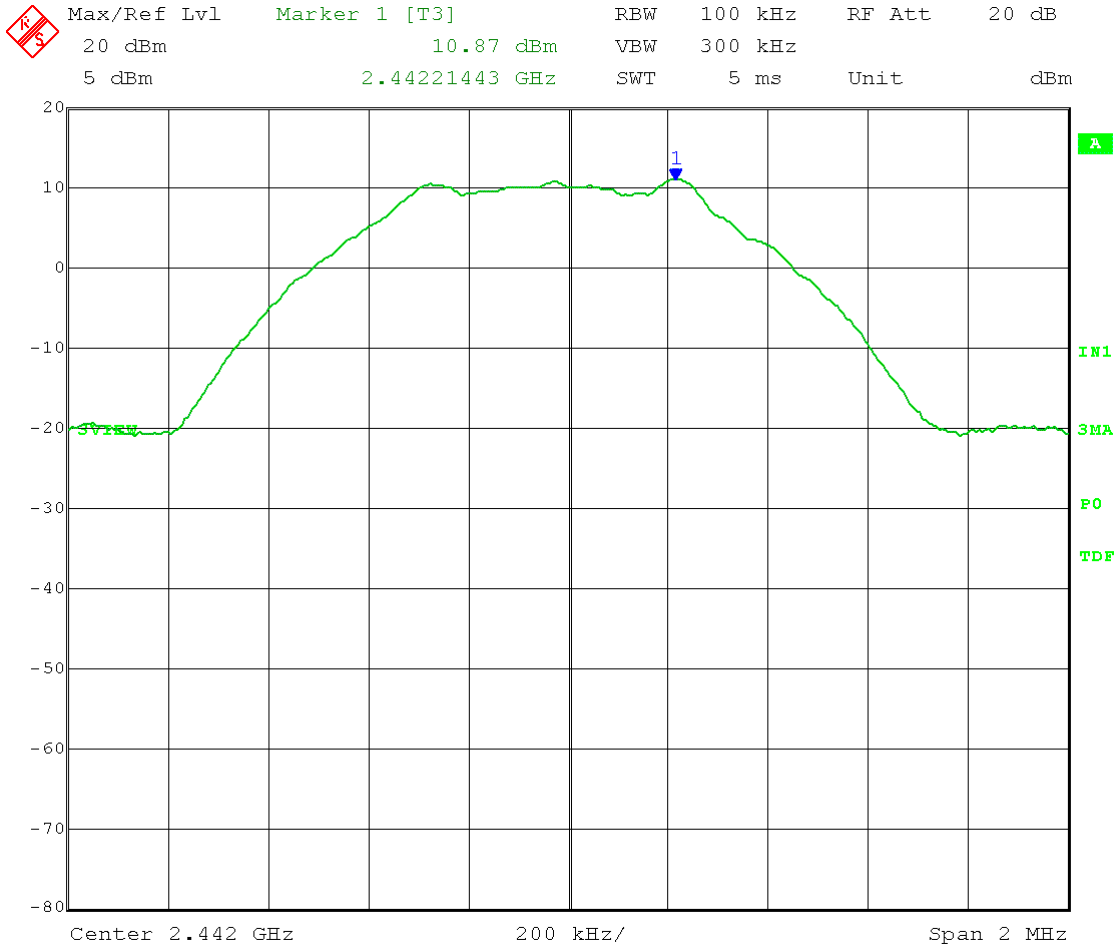
Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Span ≥ 1.5 x DTS bandwidth
 Sweep = auto couple Trace = max hold
 Detector = Peak

Mid Channel: 2442 MHz

Power set to full power (not adjustable)

Reference Level measurement

Limit = 10.87 dBm – 20 dB = -9.13 dBm





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

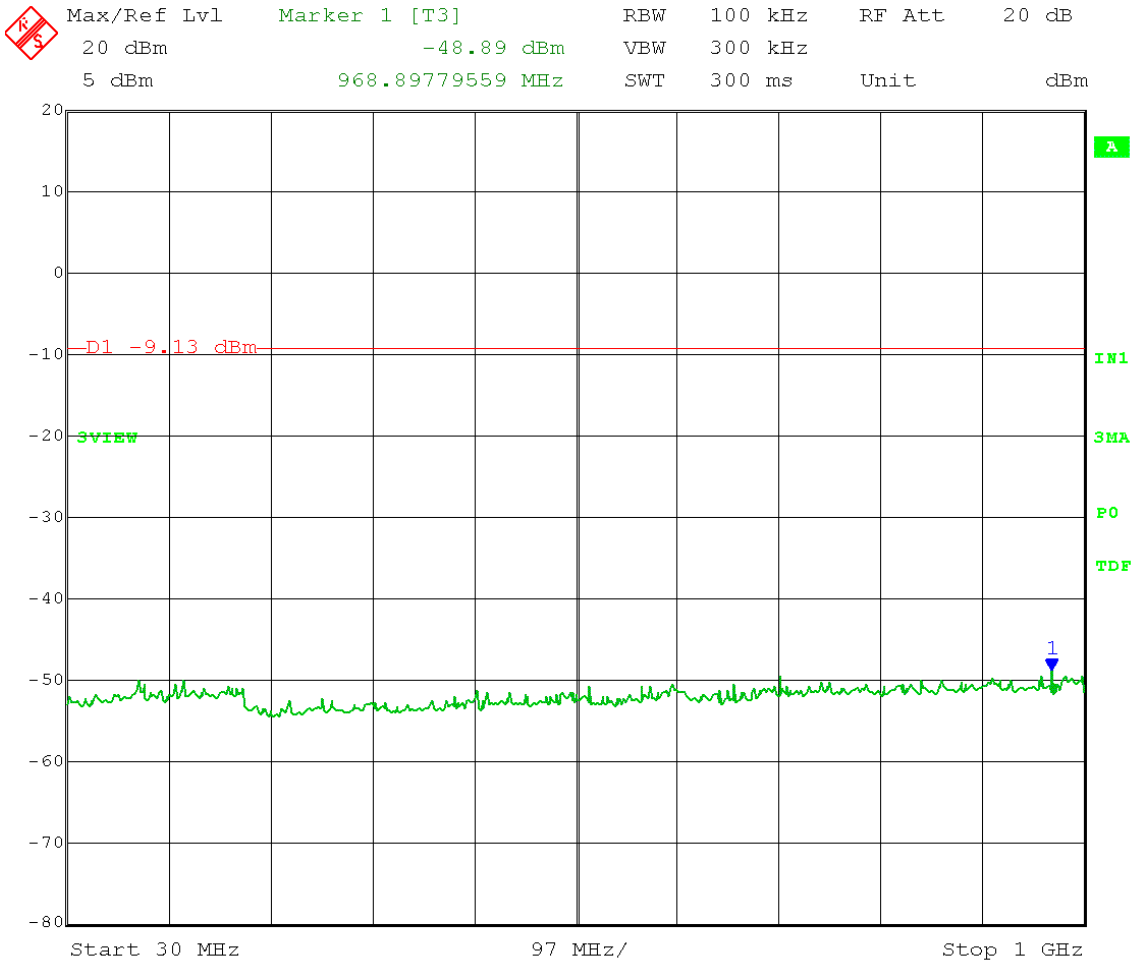
Mid Channel: 2442 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.87 dBm – 20 dB = -9.13 dBm

Frequency Range: 30 – 1000 MHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
 Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Span ≥ 1.5 x DTS bandwidth
 Sweep = auto couple Trace = max hold
 Detector = Peak

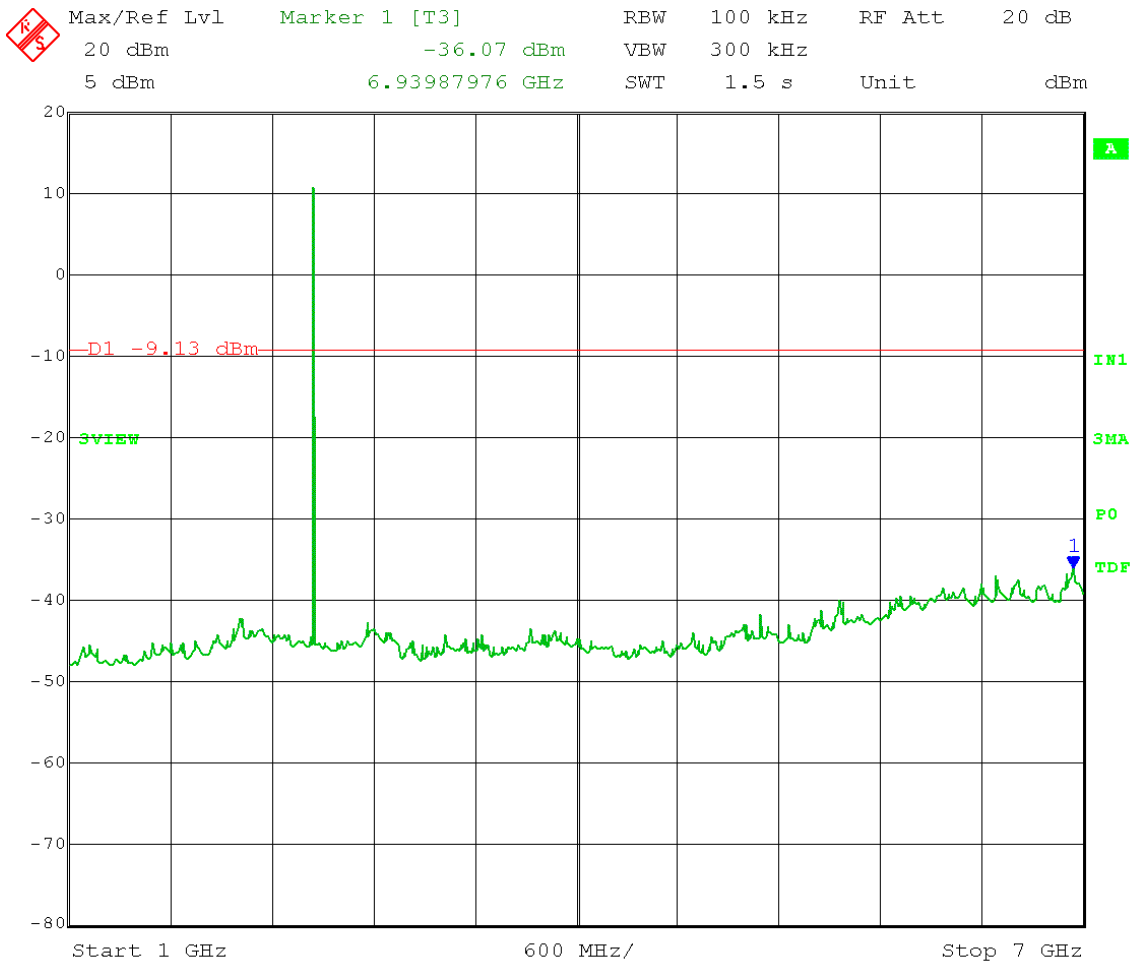
Mid Channel: 2442 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.87 dBm – 20 dB = -9.13 dBm

Frequency Range: 1 – 7 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

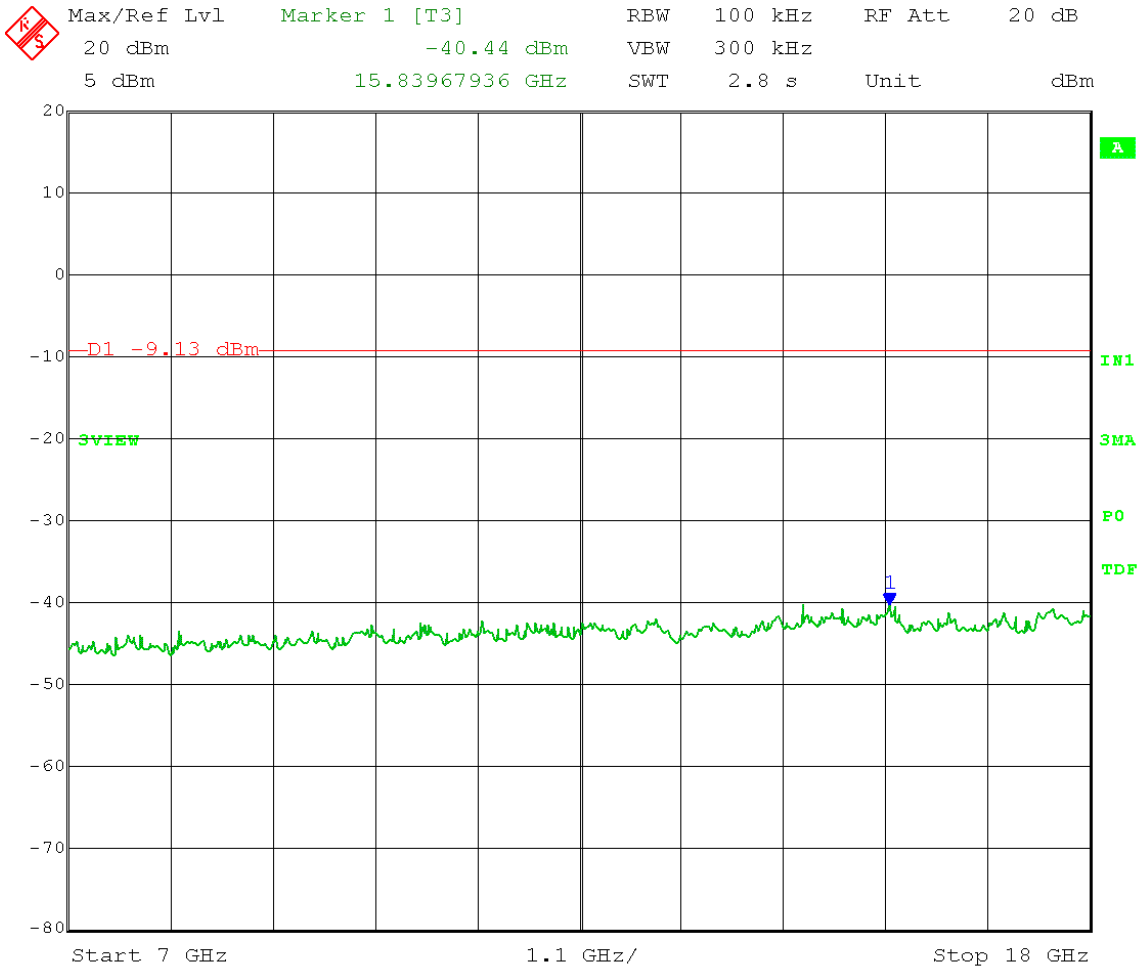
Mid Channel: 2442 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.87 dBm – 20 dB = -9.13 dBm

Frequency Range: 7 – 18 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
 Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Span ≥ 1.5 x DTS bandwidth
 Sweep = auto couple Trace = max hold
 Detector = Peak

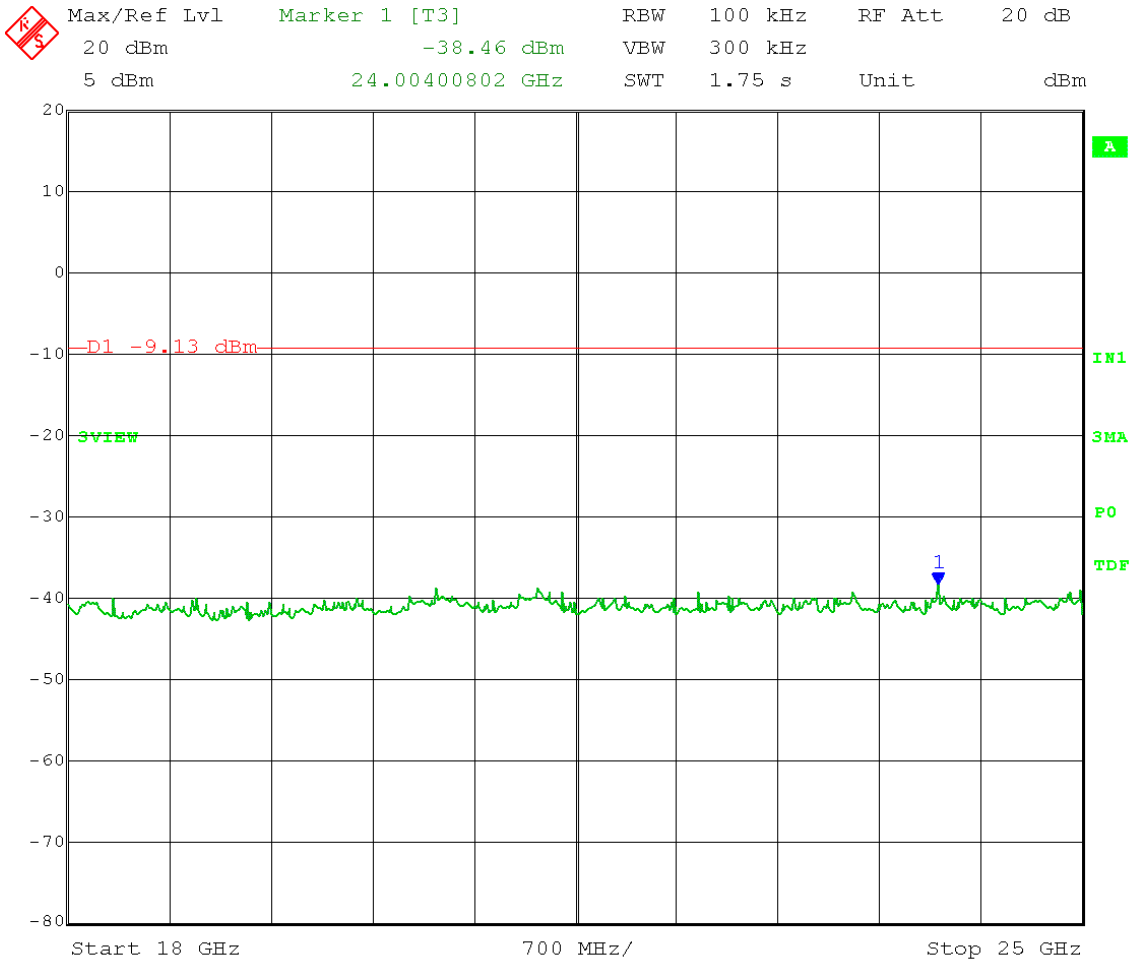
Mid Channel: 2442 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 10.87 dBm – 20 dB = -9.13 dBm

Frequency Range: 18 – 25 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

A5.3 Emissions in Non-Restricted Frequency Bands – High Channel

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

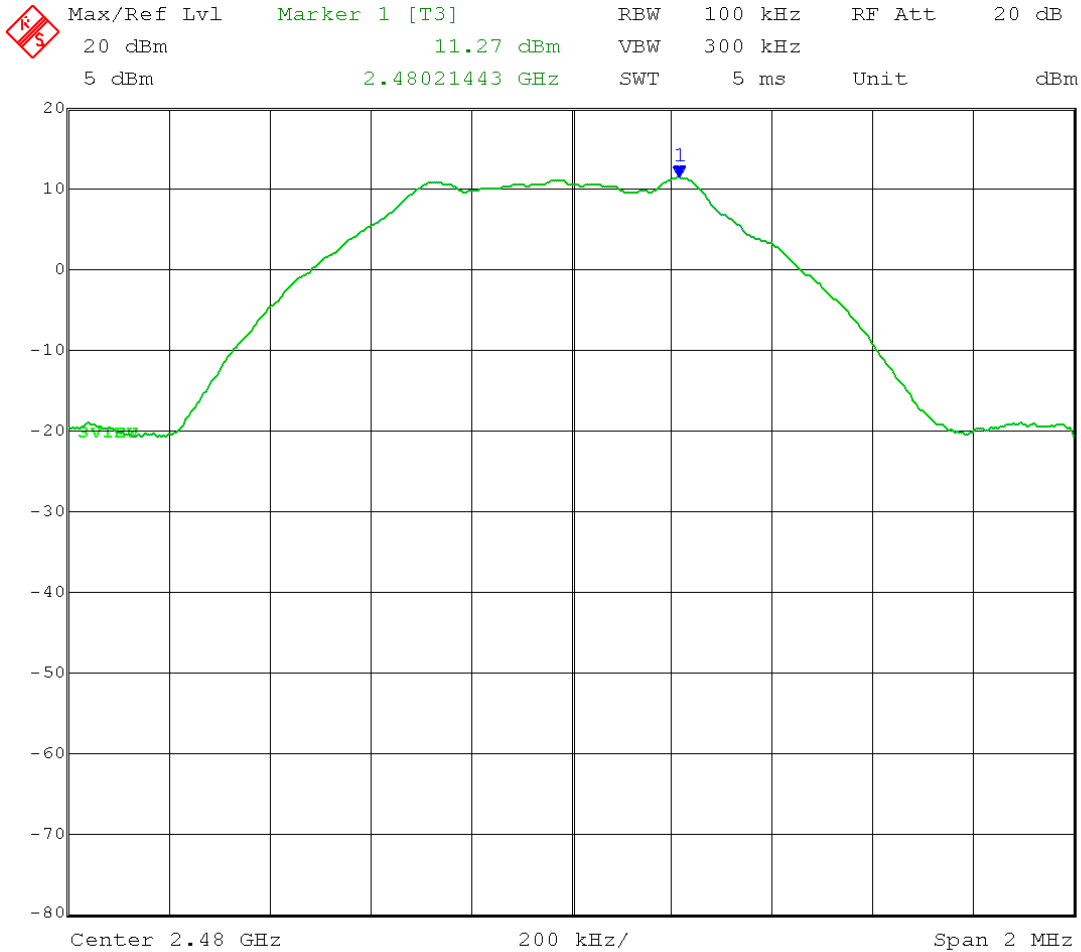
Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

High Channel: 2480 MHz

Power set to full power (not adjustable)

Reference Level measurement

Limit = 11.27 dBm – 20 dB = -8.73 dBm





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

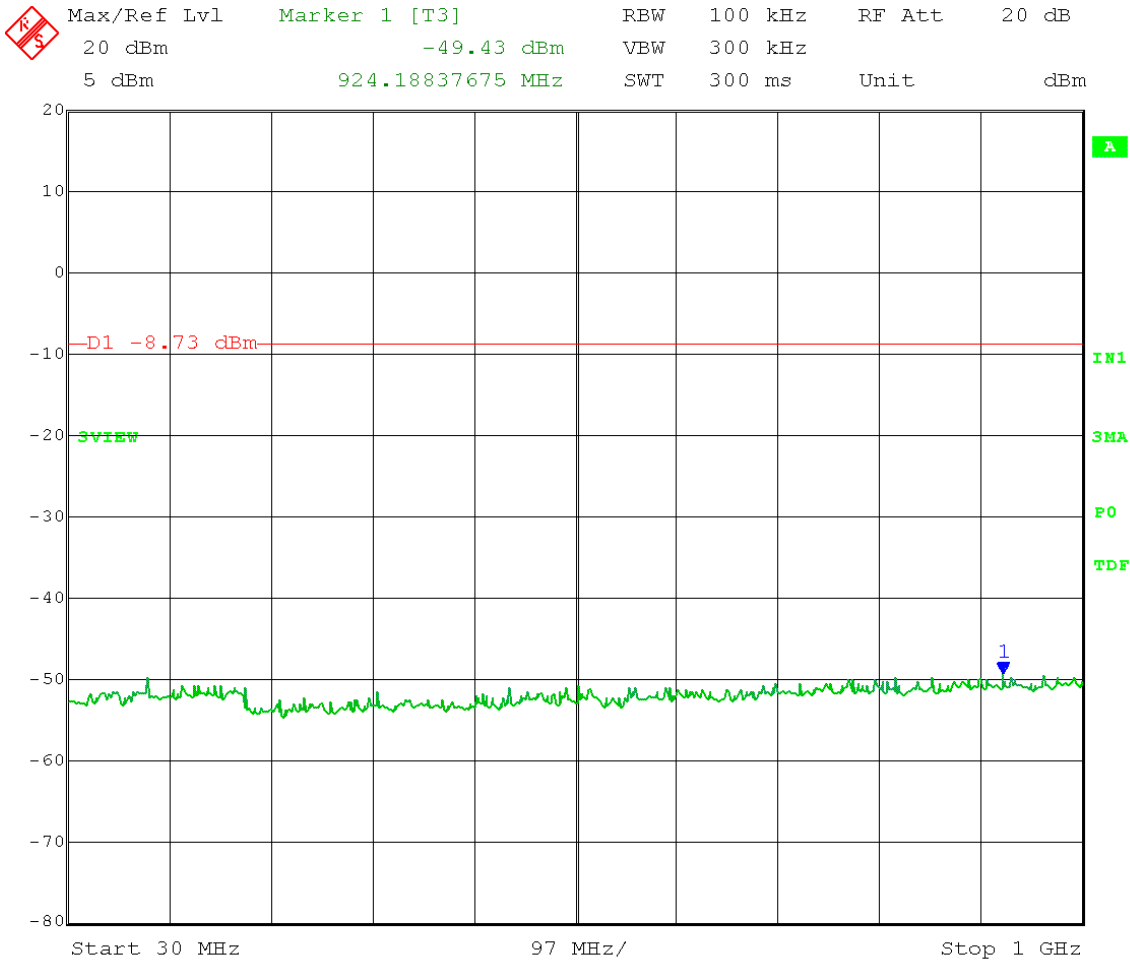
High Channel: 2480 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 11.27 dBm – 20 dB = -8.73 dBm

Frequency Range: 30 – 1000 MHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
 Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
 Span ≥ 1.5 x DTS bandwidth
 Sweep = auto couple Trace = max hold
 Detector = Peak

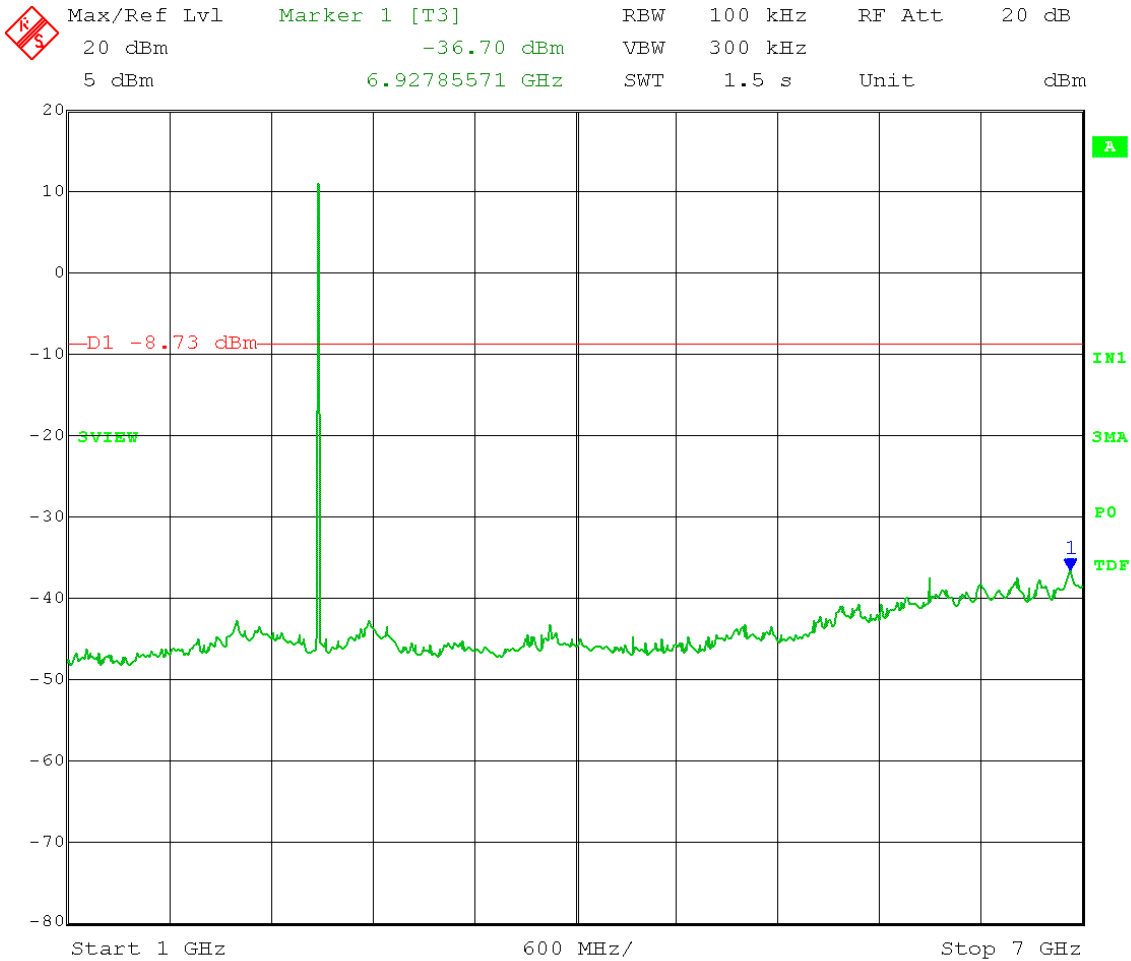
High Channel: 2480 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 11.27 dBm – 20 dB = -8.73 dBm

Frequency Range: 1 – 7 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

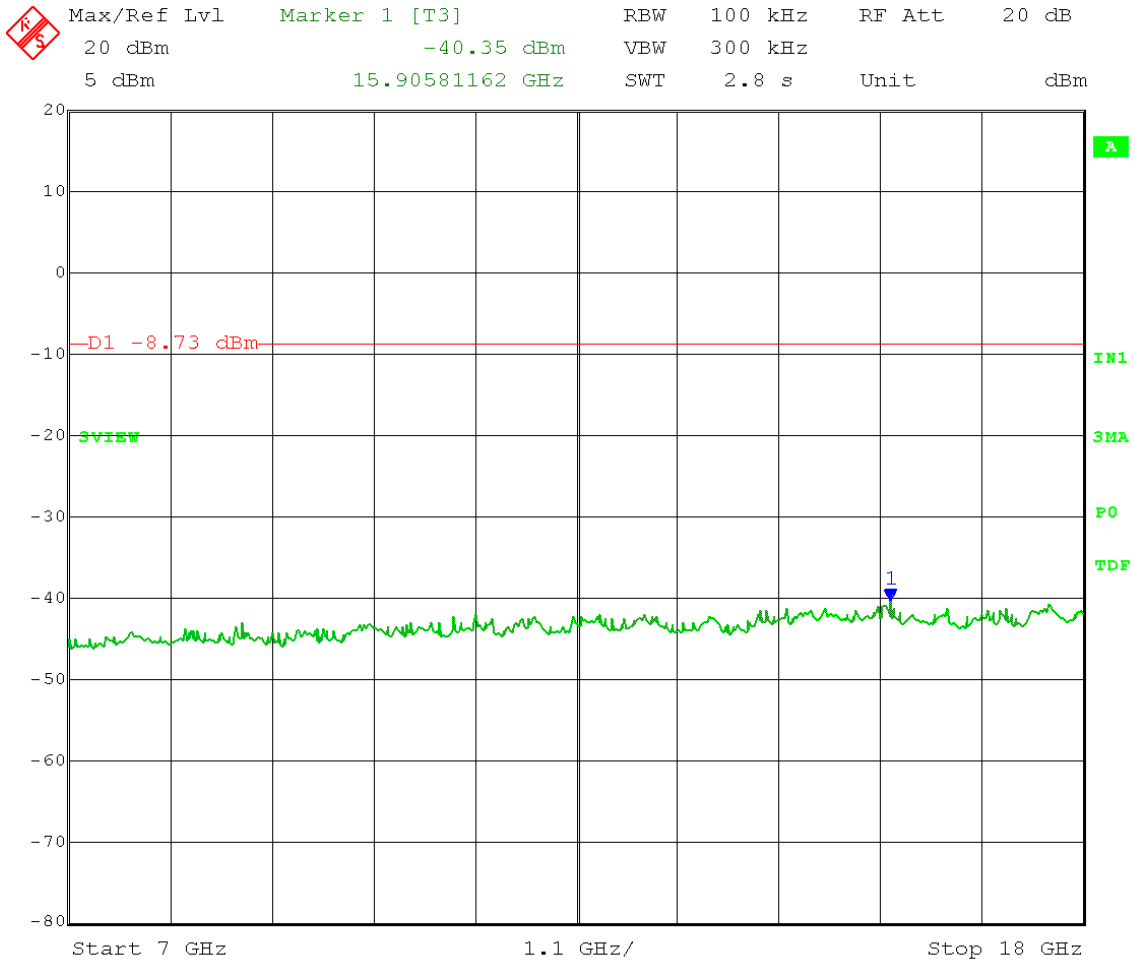
High Channel: 2480 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 11.27 dBm – 20 dB = -8.73 dBm

Frequency Range: 7 – 18 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Spurious Emissions in Non-Restricted Frequency Bands – RF Conducted
Operator: cbrandt

Comment: RBW = 100 kHz VBW ≥ 300 kHz
Span ≥ 1.5 x DTS bandwidth
Sweep = auto couple Trace = max hold
Detector = Peak

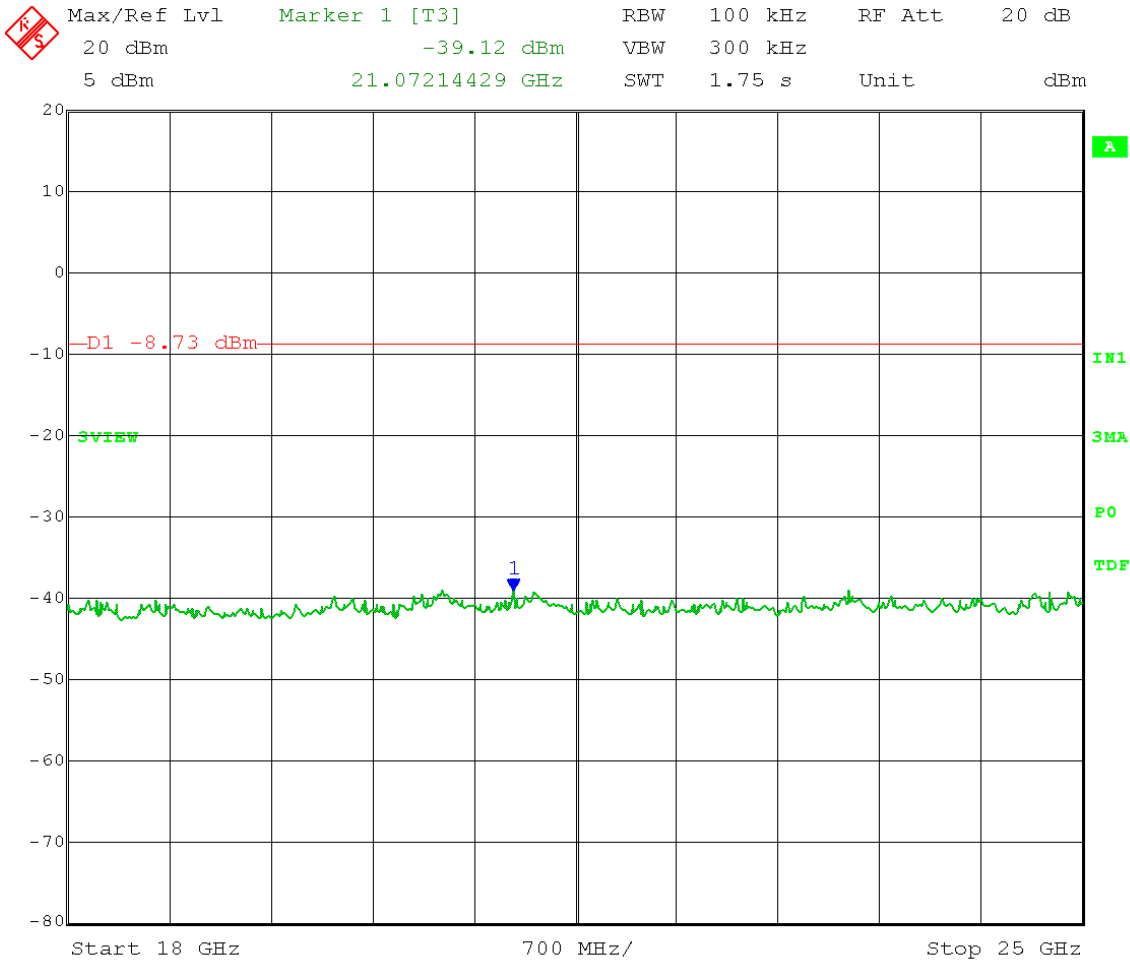
High Channel: 2480 MHz

Power set to full power (not adjustable)

Emission Level measurement

Limit = 11.27 dBm – 20 dB = -8.73 dBm

Frequency Range: 18 – 25 GHz





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

A6.0 Emissions in Restricted Frequency Bands

Rule Part:

Sections 15.247(d), 15.205(b), and 15.209(a)

Test Procedure:

ANSI C63.10-2013, Section 11.12.1
Radiated emission measurements

Limit:

Table in FCC 15.209

Results:

Compliant

Notes:

This was a Radiated Emissions test. The EUT was tested while transmitting from the internal button antenna which is in the handle of the tool and connected to the RF circuit board via a short coaxial cable. The device was set up on a non-conductive table for testing purposes.

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission (100% duty cycle). The EUT was tested at the low, middle, and high channels of operation in accordance with FCC 15.31(m) and was tested in three orthogonal axes to find worst-case emission levels. The worst-case levels are recorded in this test report.



166 South Carter, Genoa City, WI 53128

Section A

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Radiated Emissions in Restricted Frequency Bands

**Milwaukee Electric Tool Corporation
Project: M18™ FORCE LOGIC™ 5”
Underground Cable Cutter w/ Wireless Remote,
model 2875R-20**

**No Radiated Emissions
were found from the M18™ FORCE LOGIC™
5” Underground Cable Cutter,
model 2875R-20**

from 30 to 1000 MHz

**with the device in modulated continuous
transmit mode, (100% duty cycle).**

(pre-scan search for emissions in 3-meter chamber, Site 1)

08-11-2023

FCC Part 15.247 Restricted Bands

Electric Field Strength

EUT: 5" Underground Cable Cutter, Model: 2875
Manufacturer: Milwaukee Electric Tool Corporation
Operating Condition: 73 deg F 42% R.H.
Test Site: DLS Site 1
Operator: cbrandt; DLS Proj. #12836
Test Specification: Emissions in Restricted Frequency Bands
Comment: Transmit Low, Mid, High channels, 100% duty cycle
Date: 08-11-2023

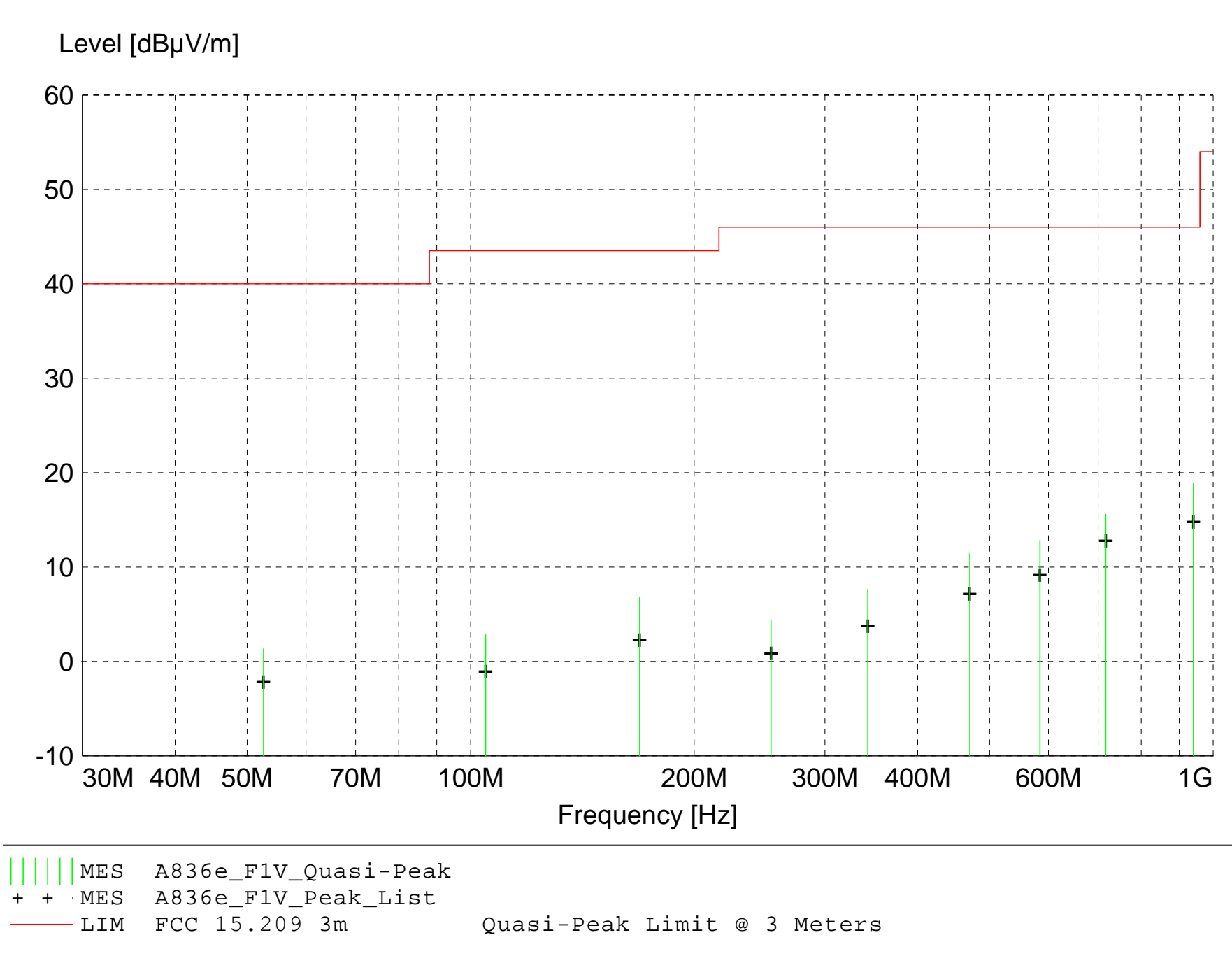
TEXT: "Vert 3 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

- Graph Markers: + Frequency marker (Level of marker not related to final level)
- | Final maximized level using Quasi-Peak detector
- X Final maximized level using Average dector
- # Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



MEASUREMENT RESULT: "A836e_F1V_Final"

8/11/2023 9:55AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
940.760000	16.17	23.03	-20.3	18.9	46.0	27.1	1.30	0	QUASI-PEAK	noise floor
716.630000	16.50	20.89	-21.8	15.6	46.0	30.4	1.30	0	QUASI-PEAK	noise floor
584.330000	16.54	18.62	-22.3	12.8	46.0	33.2	1.30	0	QUASI-PEAK	noise floor
470.060000	17.06	16.96	-22.6	11.5	46.0	34.5	1.30	0	QUASI-PEAK	noise floor
168.870000	16.10	14.79	-24.0	6.8	43.5	36.7	1.20	0	QUASI-PEAK	noise floor
342.680000	16.34	14.34	-23.0	7.6	46.0	38.4	1.30	0	QUASI-PEAK	noise floor
52.620000	15.41	11.05	-25.1	1.3	40.0	38.7	1.20	0	QUASI-PEAK	noise floor
104.760000	15.54	11.82	-24.5	2.8	43.5	40.7	1.20	0	QUASI-PEAK	noise floor
253.850000	16.08	11.97	-23.6	4.4	46.0	41.6	1.30	0	QUASI-PEAK	noise floor

FCC Part 15.247 Restricted Bands

Electric Field Strength

EUT: 5" Underground Cable Cutter, Model: 2875
Manufacturer: Milwaukee Electric Tool Corporation
Operating Condition: 73 deg F 42% R.H.
Test Site: DLS Site 1
Operator: cbrandt; DLS Proj. #12836
Test Specification: Emissions in Restricted Frequency Bands
Comment: Transmit Low, Mid, High channels, 100% duty cycle
Date: 08-11-2023

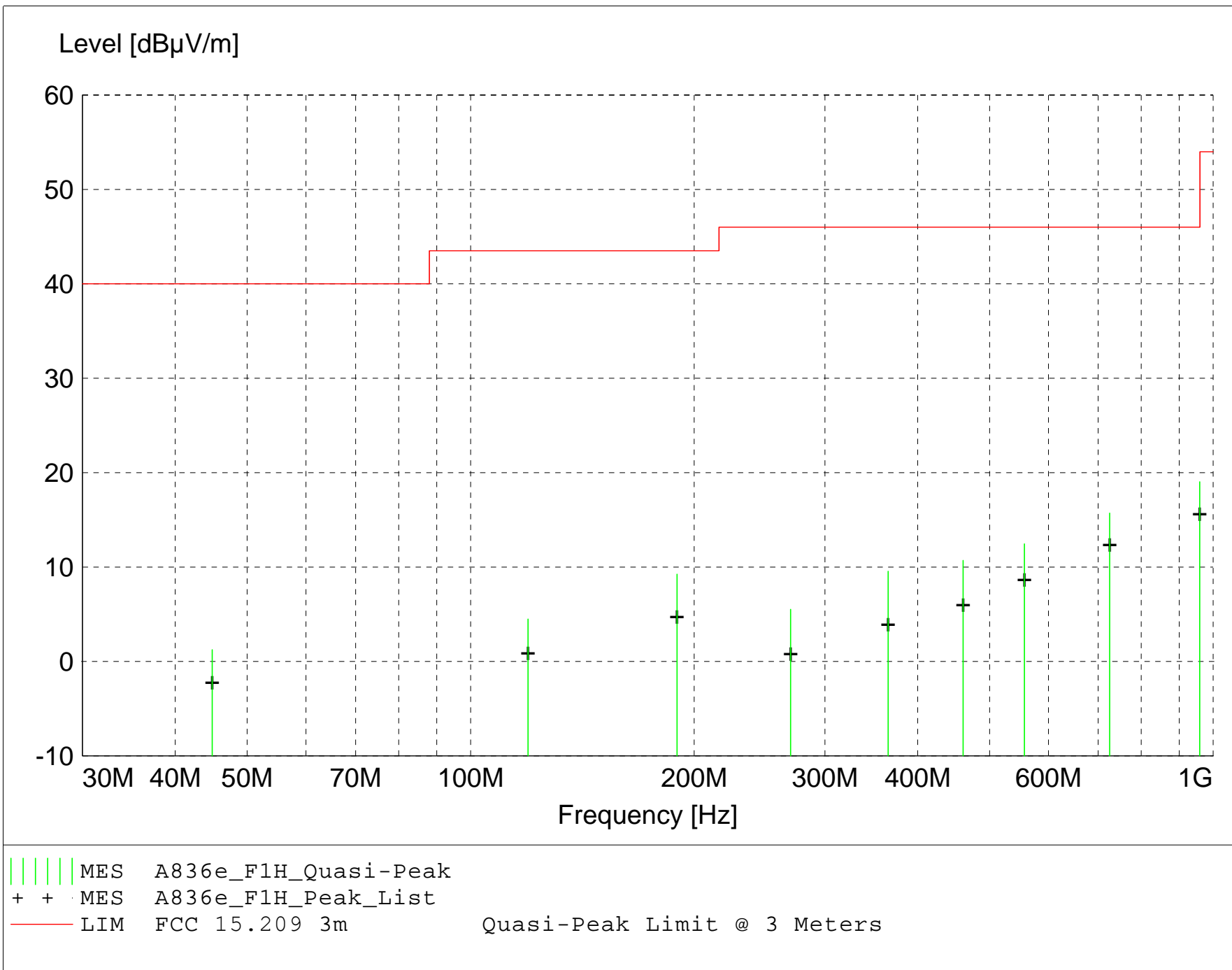
TEXT: "Horz 3 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

- Graph Markers: + Frequency marker (Level of marker not related to final level)
- | Final maximized level using Quasi-Peak detector
- X Final maximized level using Average dector
- # Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



MEASUREMENT RESULT: "A836e_F1H_Final"

8/11/2023 10:38AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
959.090000	15.98	23.31	-20.3	19.0	46.0	27.0	1.40	0	QUASI-PEAK	noise floor
725.510000	16.69	20.87	-21.8	15.7	46.0	30.3	1.40	0	QUASI-PEAK	noise floor
556.850000	16.50	18.21	-22.2	12.5	46.0	33.5	1.40	0	QUASI-PEAK	noise floor
189.600000	16.08	17.14	-24.0	9.2	43.5	34.3	1.80	0	QUASI-PEAK	noise floor
460.430000	16.48	16.74	-22.5	10.7	46.0	35.3	1.45	0	QUASI-PEAK	noise floor
365.000000	18.20	14.43	-23.1	9.6	46.0	36.4	1.45	0	QUASI-PEAK	noise floor
44.850000	14.91	11.57	-25.2	1.2	40.0	38.8	1.80	0	QUASI-PEAK	noise floor
119.490000	16.19	12.69	-24.4	4.5	43.5	39.0	1.80	0	QUASI-PEAK	noise floor
269.660000	16.34	12.58	-23.4	5.5	46.0	40.5	1.45	0	QUASI-PEAK	noise floor



166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

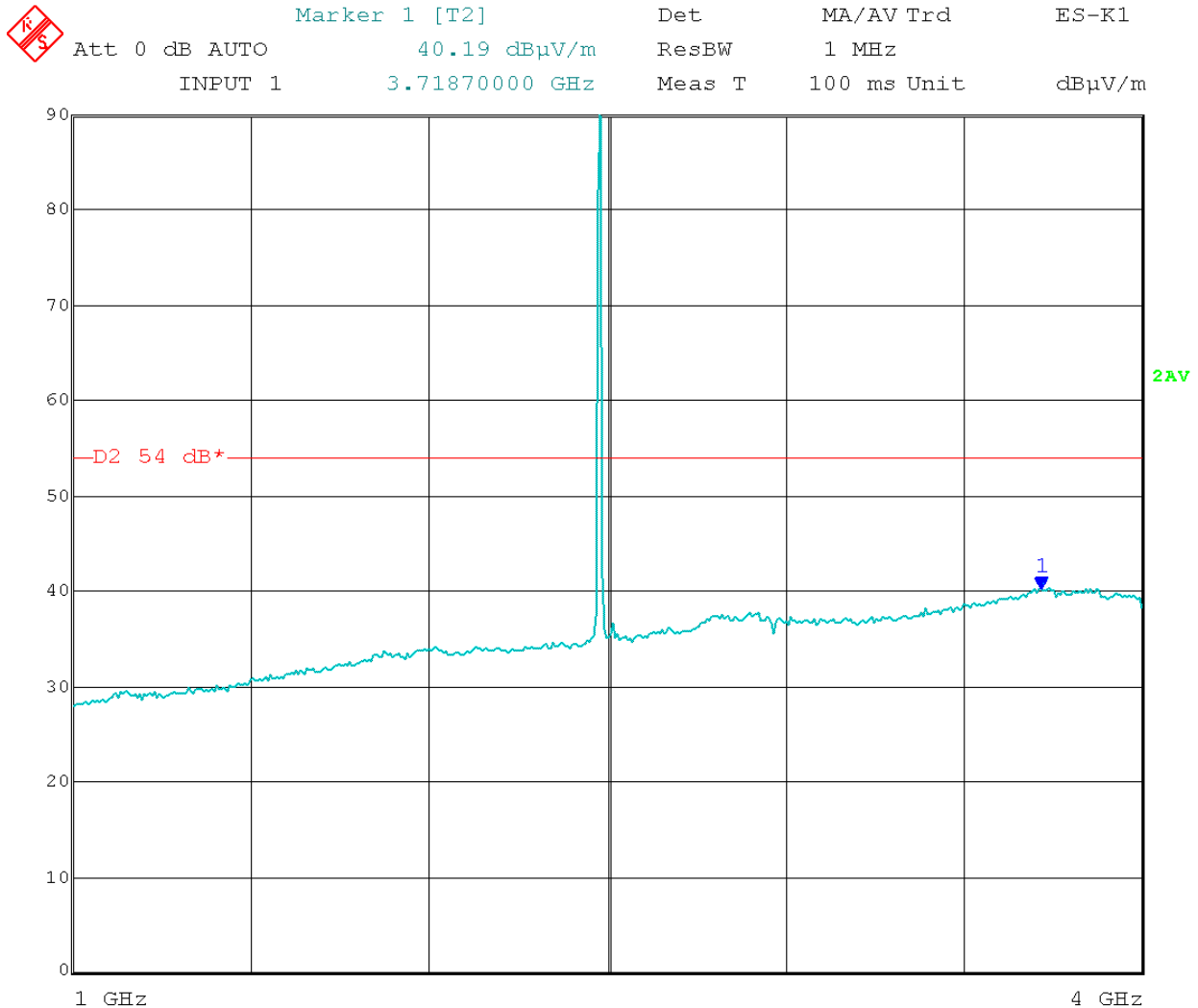
Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Radiated Emissions
 Operator: cbrandt
 Comment: High Channel: 2480 MHz

(Note: High channel also represents Low and Middle channels. No spurious emissions were found in the 1-4 GHz frequency range on either of these channels.

Transmit at 100% duty cycle, modulated.

Test Distance: 3 meters
 Detector: Linear Average with max hold

VERTICAL:
 AVERAGE: Limit: 54 dB μ V/m at 3 meters





166 South Carter, Genoa City, WI 53128

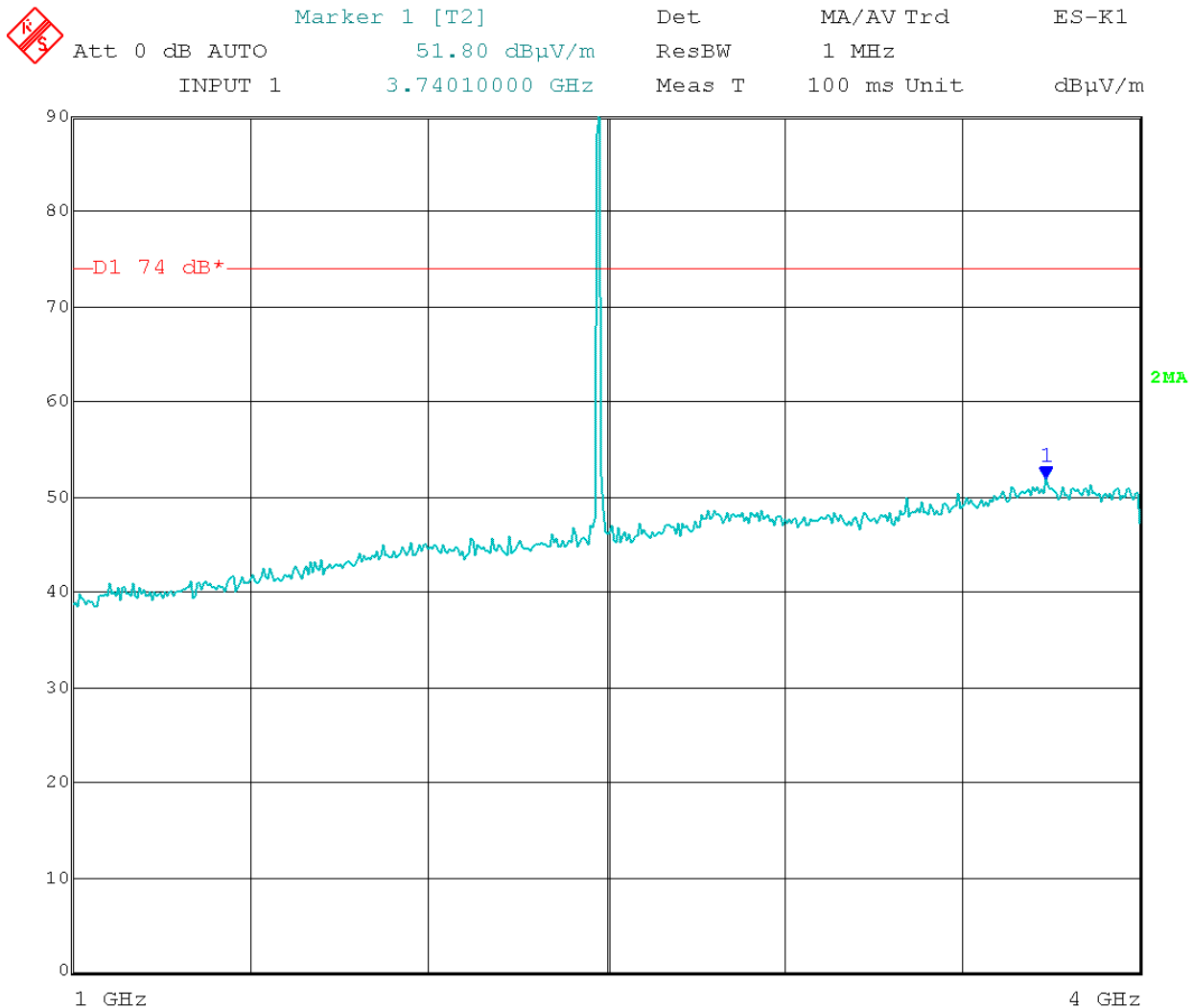
Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Radiated Emissions
 Operator: cbrandt
 Comment: High Channel: 2480 MHz

(Note: High channel also represents Low and Middle channels. No spurious emissions were found in the 1-4 GHz frequency range on either of these channels.
 Transmit at 100% duty cycle, modulated.

Test Distance: 3 meters
 Detector: Peak with max hold

VERTICAL:
 PEAK: Limit: 74 dB μ V/m at 3 meters



FCC Part 15.247 Restricted Bands

Electric Field Strength

EUT: 5" Underground Cable Cutter, Model: 2875
Manufacturer: Milwaukee Electric Tool Corporation
Operating Condition: 74 deg F 41% R.H.
Test Site: DLS Site 1
Operator: cbrandt; DLS Proj. #12836
Test Specification: Emissions in Restricted Frequency Bands
Comment: Transmit Low, Mid, High channels, 100% duty cycle
Date: 08-07-2023 & 08-08-2023

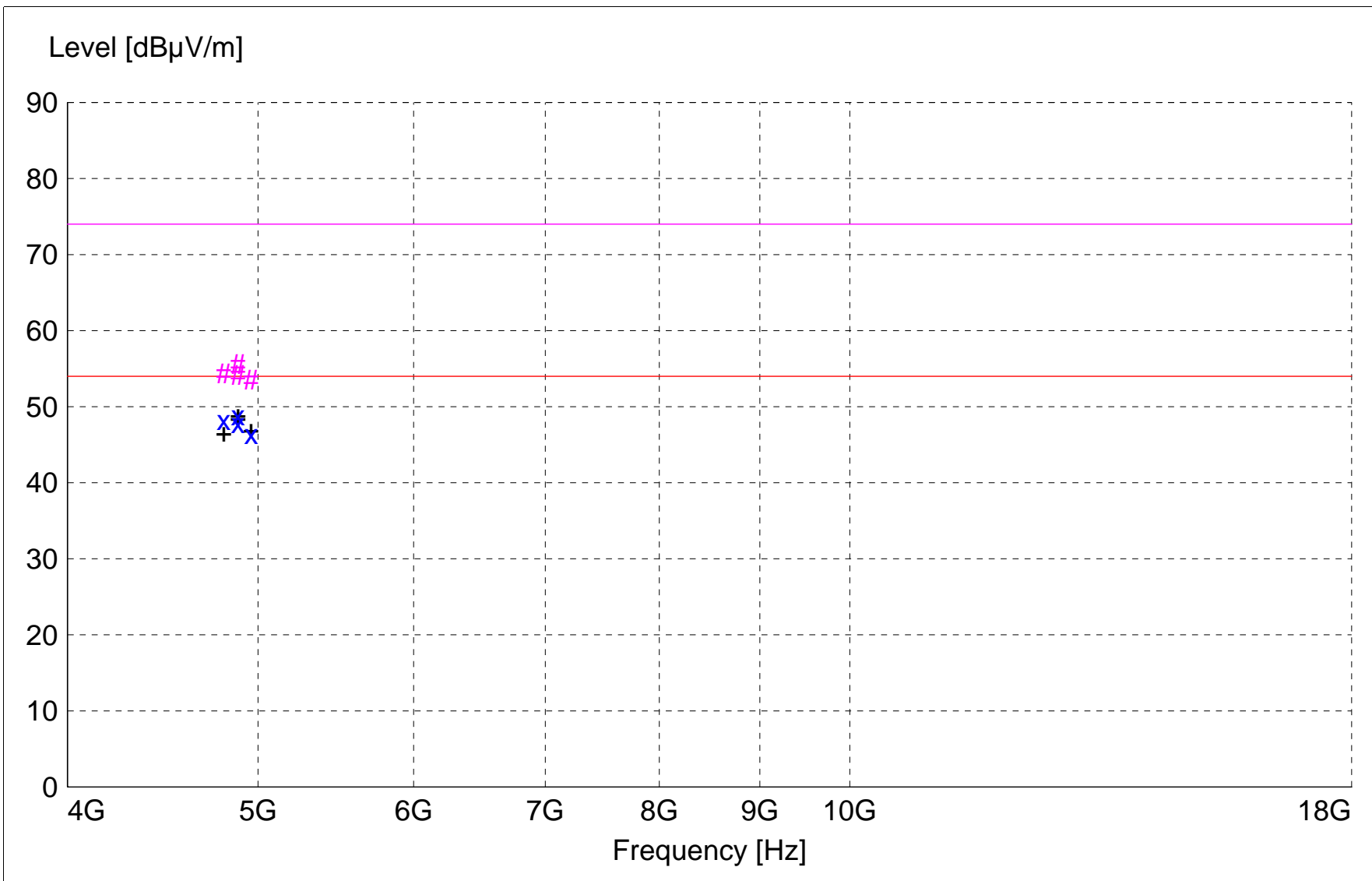
TEXT: "Vert 3 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20
Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

- Graph Markers: + Frequency marker (Level of marker not related to final level)
- | Final maximized level using Quasi-Peak detector
- X Final maximized level using Average dector
- # Final maximized level using Peak detector
- Background Scan Peak Detector (Optional)
- Background Scan Average Detector (Optional)



```

x x :MES  A836a_sv_Average
# # :MES  A836a_sv_Peak
+ + :MES  A836a_sv_Peak_List
— — :LIM  FCC 15.209 F 3m AVG   Field Strength AVG Limit 3m
— — :LIM  FCC 15.209 F 3m PK   Field Strength PEAK Limit 3m

```


MEASUREMENT RESULT: "A836a_sv_Final"

8/9/2023 9:05AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
4883.980000	65.55	33.02	-49.7	48.8	54.0	5.2	1.80	342	AVERAGE	Mid ch, X-axis
4803.960000	65.02	32.90	-49.7	48.2	54.0	5.8	2.02	264	AVERAGE	Low ch, Y-axis
4884.020000	64.51	33.02	-49.7	47.8	54.0	6.2	1.78	0	AVERAGE	Mid ch, Y-axis
4959.960000	62.83	33.07	-49.5	46.4	54.0	7.6	1.79	42	AVERAGE	High ch, Z-axis
4883.980000	72.36	33.02	-49.7	55.6	74.0	18.4	1.80	342	MAX PEAK	Mid ch, X-axis
4803.960000	71.19	32.90	-49.7	54.4	74.0	19.6	2.02	264	MAX PEAK	Low ch, Y-axis
4884.020000	70.86	33.02	-49.7	54.1	74.0	19.9	1.78	0	MAX PEAK	Mid ch, Y-axis
4959.960000	69.97	33.07	-49.5	53.5	74.0	20.5	1.79	42	MAX PEAK	High ch, Z-axis

FCC Part 15.247 Restricted Bands

Electric Field Strength

EUT: 5" Underground Cable Cutter, Model: 2875
 Manufacturer: Milwaukee Electric Tool Corporation
 Operating Condition: 74 deg F 41% R.H.
 Test Site: DLS Site 1
 Operator: cbrandt; DLS Proj. #12836
 Test Specification: Emissions in Restricted Frequency Bands
 Comment: Transmit Low, Mid, High channels, 100% duty cycle
 Date: 08-07-2023 & 08-08-2023

TEXT: "Horz 3 meters"

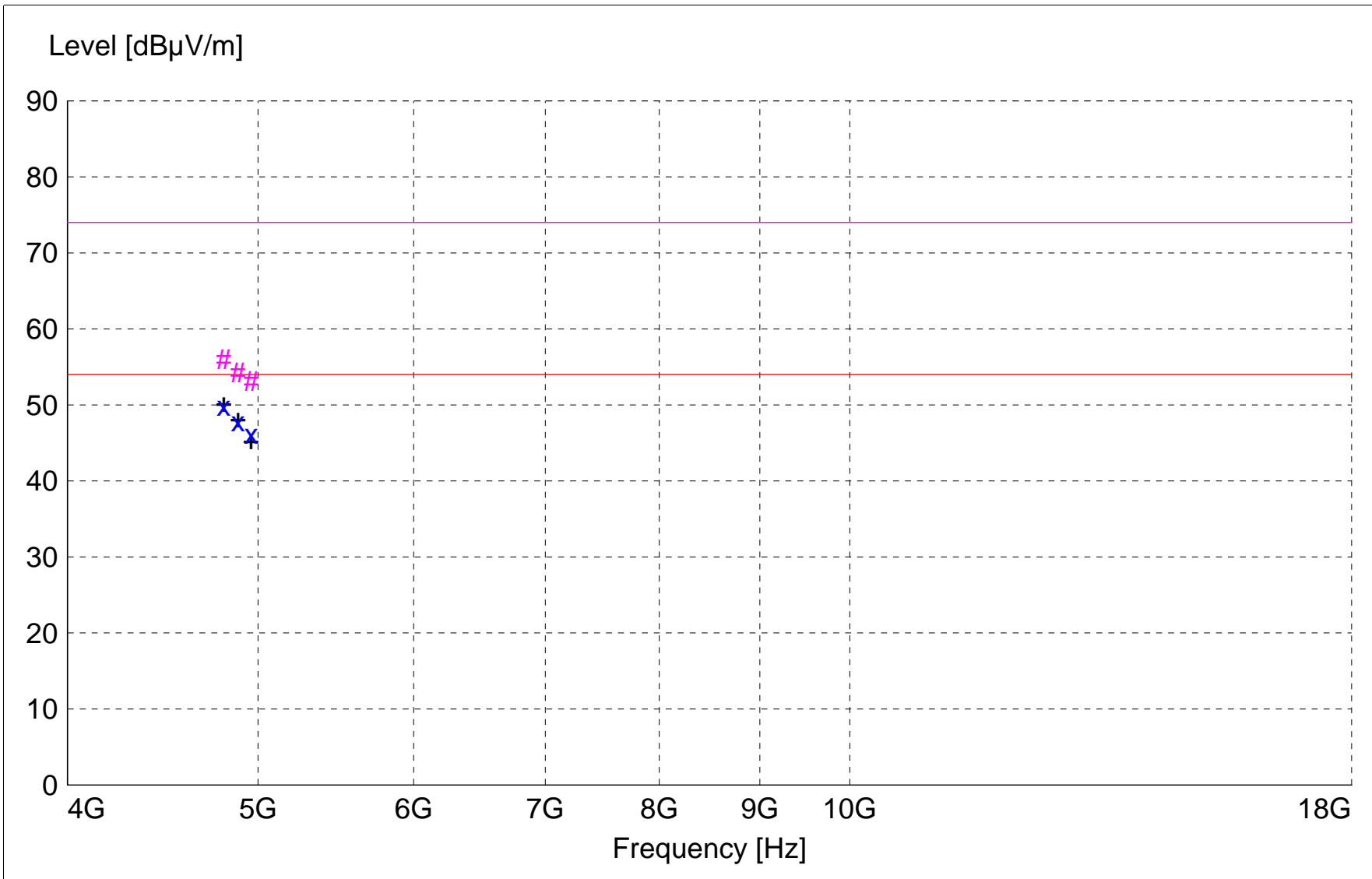
Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
 24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
 15.4 = 40 - 24.6

- Graph Markers: + Frequency marker (Level of marker not related to final level)
 | Final maximized level using Quasi-Peak detector
 X Final maximized level using Average dector
 # Final maximized level using Peak detector
 - Background Scan Peak Detector (Optional)
 - Background Scan Average Detector (Optional)



```

x x :MES  A836a_sh_Average
# # :MES  A836a_sh_Peak
+ + :MES  A836a_sh_Peak_List
— — :LIM  FCC 15.209 F 3m AVG  Field Strength AVG Limit 3m
— — :LIM  FCC 15.209 F 3m PK  Field Strength PEAK Limit 3m

```

MEASUREMENT RESULT: "A836a_sh_Final"

8/8/2023 4:32PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m			m	deg		
4803.950000	66.65	32.90	-49.7	49.9	54.0	4.1	1.84	137	AVERAGE	Low ch, Z-axis
4883.970000	64.55	33.02	-49.7	47.8	54.0	6.2	1.60	334	AVERAGE	Mid ch, Z-axis
4959.980000	62.67	33.07	-49.5	46.2	54.0	7.8	1.47	222	AVERAGE	High ch, X-axis
4803.950000	72.77	32.90	-49.7	56.0	74.0	18.0	1.84	137	MAX PEAK	Low ch, Z-axis
4883.970000	71.02	33.02	-49.7	54.3	74.0	19.7	1.60	334	MAX PEAK	Mid ch, Z-axis
4959.980000	69.59	33.07	-49.5	53.1	74.0	20.9	1.47	222	MAX PEAK	High ch, X-axis



166 South Carter, Genoa City, WI 53128

Section A

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Radiated Emissions in Restricted Frequency Bands

**Milwaukee Electric Tool Corporation
Project: M18™ FORCE LOGIC™ 5”
Underground Cable Cutter w/ Wireless
Remote, model 2875R-20**

**No Radiated Emissions
were found from the M18™ FORCE
LOGIC™ 5” Underground Cable Cutter,
model 2875R-20**

from 18 to 25 GHz

**with the device in modulated continuous
transmit mode, (100% duty cycle).**

(at a 1-meter test distance)

08-11-2023

FCC Part 15.247 Restricted Bands

Electric Field Strength

EUT: 5" Underground Cable Cutter, Model: 2875
Manufacturer: Milwaukee Electric Tool Corporation
Operating Condition: 74 deg F 42% R.H.
Test Site: DLS Site 1
Operator: cbrandt; DLS Proj. #12836
Test Specification: Emissions in Restricted Frequency Bands
Comment: Transmit Low, Mid, High channels, 100% duty cycle
Date: 08-11-2023

TEXT: "Vert 1 meters"

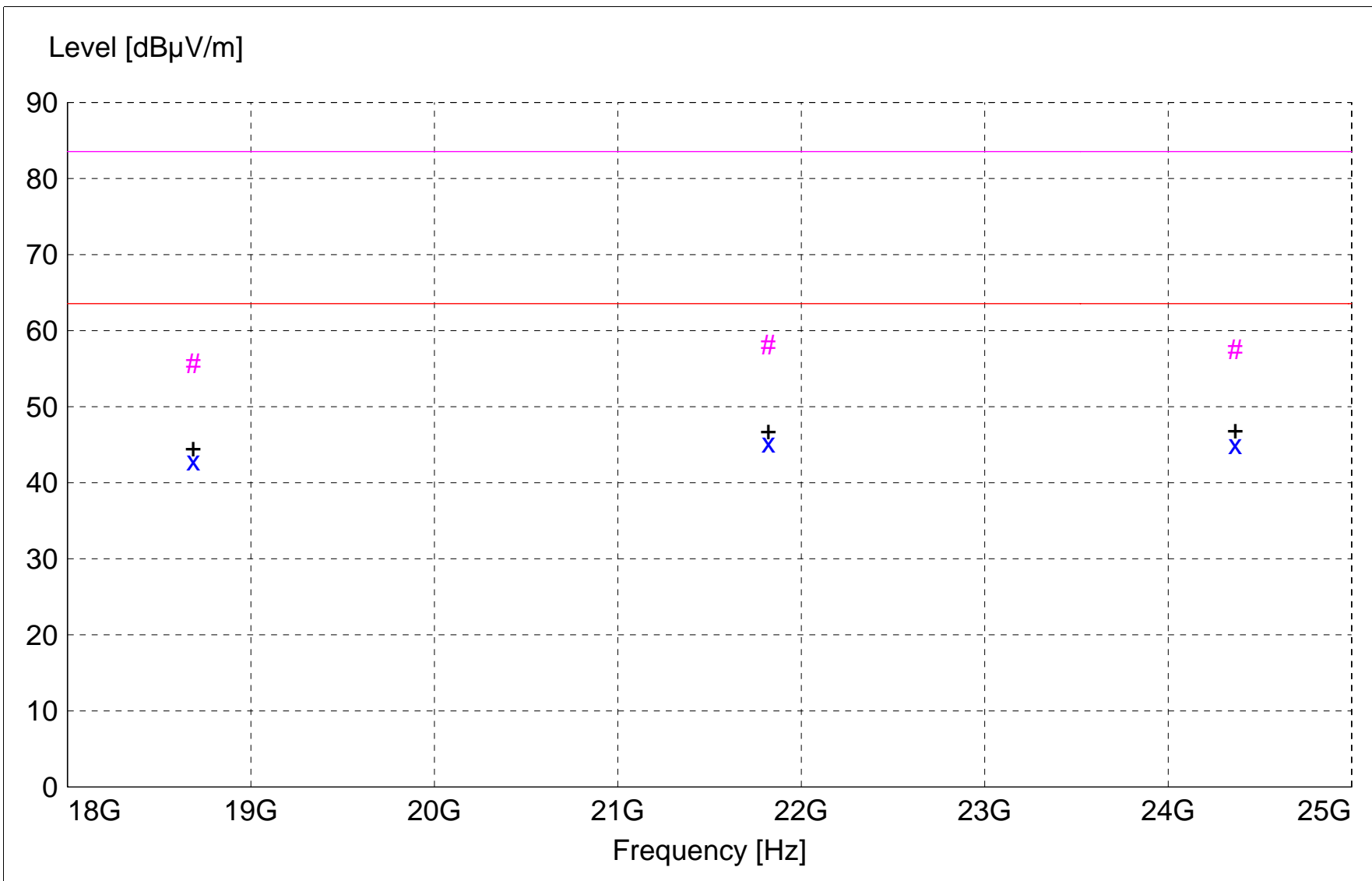
Short Description: Test Set-up

Test Set-up: EUT Measured at 1 Meters with VERTICAL Antenna Polarization

Sample Equations: Total Level(dBµV/m) = Level(dBµV) + System Loss(dB) + Antenna Factor(dBµV/m)
24.6 = 35.51 + (-22.1) + 11.20

Margin(dB) = Limit(dBµV/m) - Total Level(dBµV/m)
15.4 = 40 - 24.6

Graph Markers: + Frequency marker (Level of marker not related to final level)
| Final maximized level using Quasi-Peak detector
X Final maximized level using Average detector
Final maximized level using Peak detector



```

x x :MES A836c_sv_Average
# # :MES A836c_sv_Peak
+ + :MES A836c_sv_Peak_List
— LIM FCC 15.209 F 1m AVG Field Strength AVG Limit 1m
— LIM FCC 15.209 F 1m PK Field Strength Peak Limit 1m

```

MEASUREMENT RESULT: "A836c_sv_Final"

8/11/2023 11:26AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
21820.800000	39.25	46.59	-40.5	45.3	63.5	18.2	1.50	0	AVERAGE	noise floor
24365.700000	39.20	46.44	-40.6	45.0	63.5	18.5	1.50	0	AVERAGE	noise floor
18685.800000	37.11	45.06	-39.3	42.9	63.5	20.7	1.50	0	AVERAGE	noise floor
21820.800000	52.14	46.59	-40.5	58.2	83.5	25.3	1.50	0	MAX PEAK	noise floor
24365.700000	51.74	46.44	-40.6	57.6	83.5	26.0	1.50	0	MAX PEAK	noise floor
18685.800000	49.89	45.06	-39.3	55.7	83.5	27.9	1.50	0	MAX PEAK	noise floor

FCC Part 15.247 Restricted Bands

Electric Field Strength

EUT: 5" Underground Cable Cutter, Model: 2875
Manufacturer: Milwaukee Electric Tool Corporation
Operating Condition: 74 deg F 42% R.H.
Test Site: DLS Site 1
Operator: cbrandt; DLS Proj. #12836
Test Specification: Emissions in Restricted Frequency Bands
Comment: Transmit Low, Mid, High channels, 100% duty cycle
Date: 08-11-2023

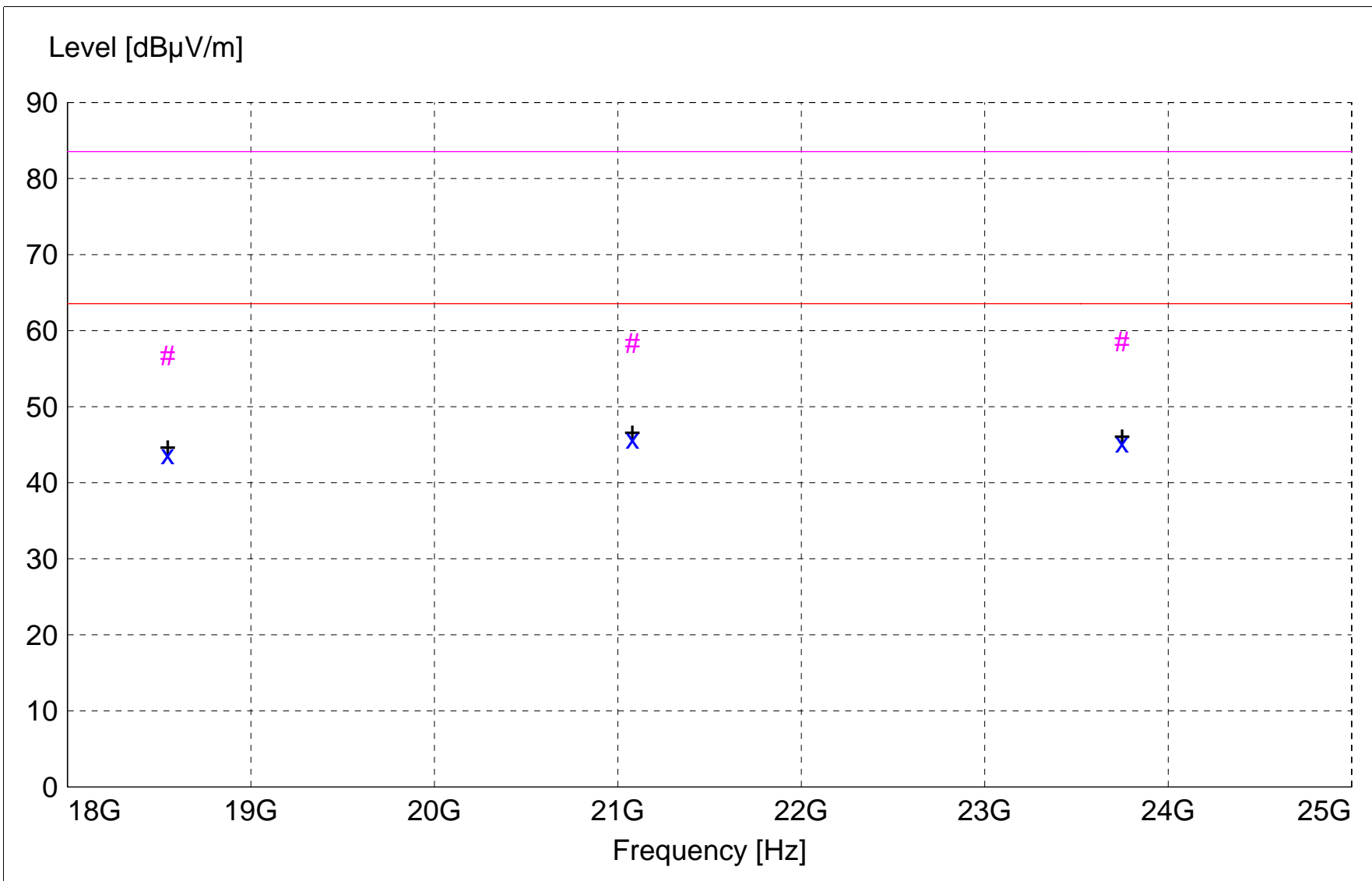
TEXT: "Horz 1 meters"

Short Description: Test Set-up

Test Set-up: EUT Measured at 1 Meters with HORIZONTAL Antenna Polarization

Sample Equations:
$$\begin{aligned} \text{Total Level(dB}\mu\text{V/m)} &= \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)} \\ 24.6 &= 35.51 + (-22.1) + 11.20 \end{aligned}$$
$$\begin{aligned} \text{Margin(dB)} &= \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)} \\ 15.4 &= 40 - 24.6 \end{aligned}$$

- Graph Markers: + Frequency marker (Level of marker not related to final level)
| Final maximized level using Quasi-Peak detector
X Final maximized level using Average detector
Final maximized level using Peak detector



```

x x :MES  A836c_sh_Average
# # :MES  A836c_sh_Peak
+ + :MES  A836c_sh_Peak_List
— — :LIM  FCC 15.209 F 1m AVG  Field Strength AVG Limit 1m
— — :LIM  FCC 15.209 F 1m PK   Field Strength Peak Limit 1m

```

MEASUREMENT RESULT: "A836c_sh_Final"

8/11/2023 11:29AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
21079.800000	36.91	47.09	-38.2	45.8	63.5	17.7	1.50	0	AVERAGE	noise floor
23748.800000	38.57	46.68	-40.0	45.3	63.5	18.2	1.50	0	AVERAGE	noise floor
18546.200000	37.78	44.90	-38.9	43.7	63.5	19.8	1.50	0	AVERAGE	noise floor
23748.800000	51.87	46.68	-40.0	58.6	83.5	24.9	1.50	0	MAX PEAK	noise floor
21079.800000	49.51	47.09	-38.2	58.4	83.5	25.1	1.50	0	MAX PEAK	noise floor
18546.200000	50.81	44.90	-38.9	56.8	83.5	26.8	1.50	0	MAX PEAK	noise floor



166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

A7.0 Authorized Band Edge – RF Conducted

Rule Part:

Section 15.247(d)

Test Procedure:

ANSI C63.10-2013, Sections 6.10.4 and 11.11.1(a)
Authorized-band band-edge measurements (relative method).
Maximum PEAK conducted power procedure.

Limit:

20 dB down from the highest emission level within the authorized band as measured with a 100 kHz resolution bandwidth (RBW).

Results:

Compliant

Notes:

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission, modulated, with a 100% duty cycle. This test was performed using the RF Conducted test configuration. The EUT was tested at the low and high channels of operation. The maximum level of the fundamental emission was measured with a span wide enough to capture the peak level of the emission as well as any modulation products that fell outside of the operating band. The marker-delta function of the spectrum analyzer was used to show that the level at the band-edge (including all modulation product outside of the authorized band) are greater than 20 dB below the peak level of the fundamental emission.



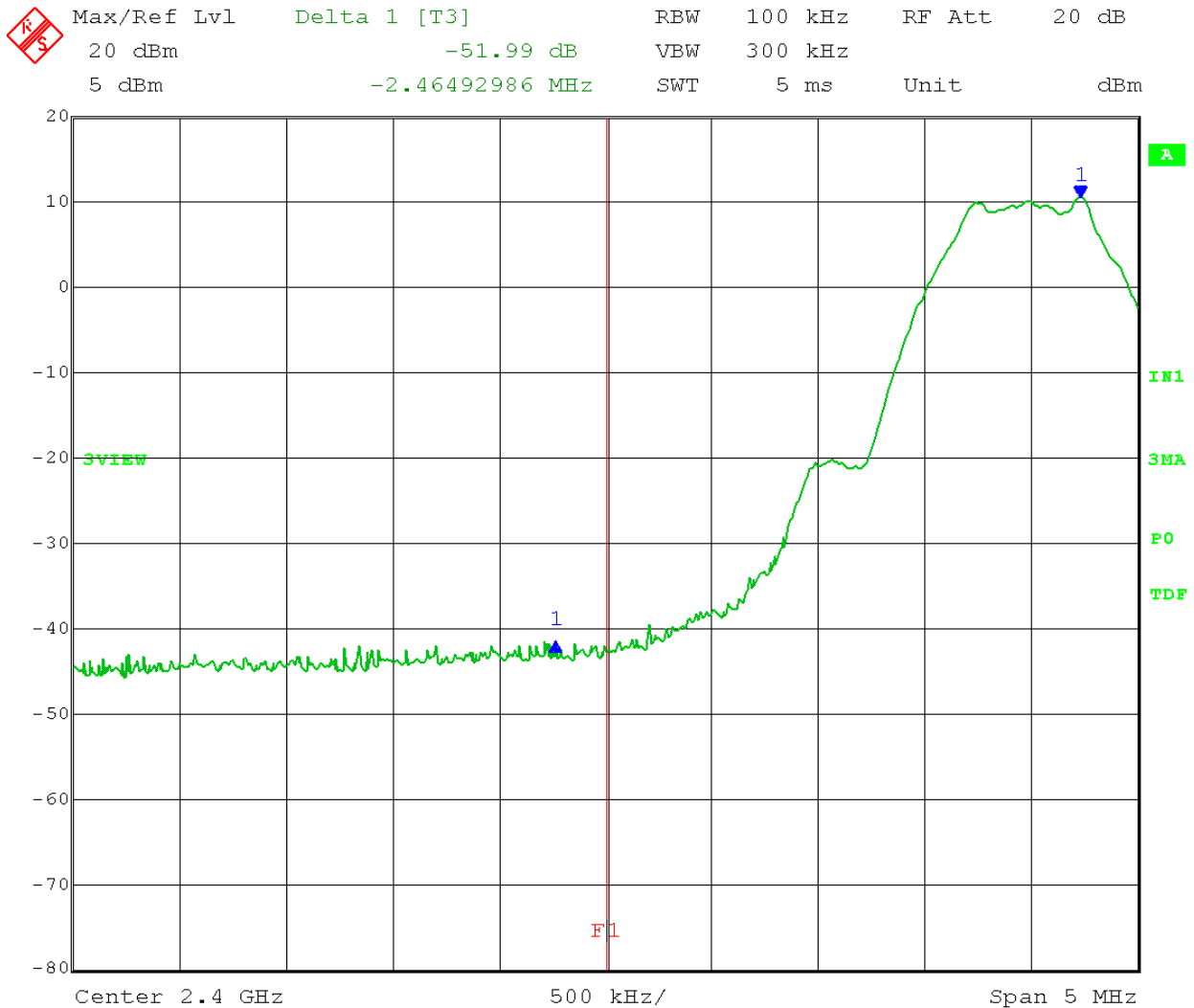
166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

Test Date: 08-10-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Lower Band Edge Compliance – RF Conducted
 Operator: cbrandt
 Detector: Peak; max hold
 Comment: Power set to full power (not adjustable)
 Low Channel: 2402 MHz

Band-Edge Frequency = 2.4 GHz
 Limit at Band-Edge > 20 dB below Peak In-Band Emission
 Emission at Band-Edge is **51.99 dB** below the Peak in-band emission.





166 South Carter, Genoa City, WI 53128

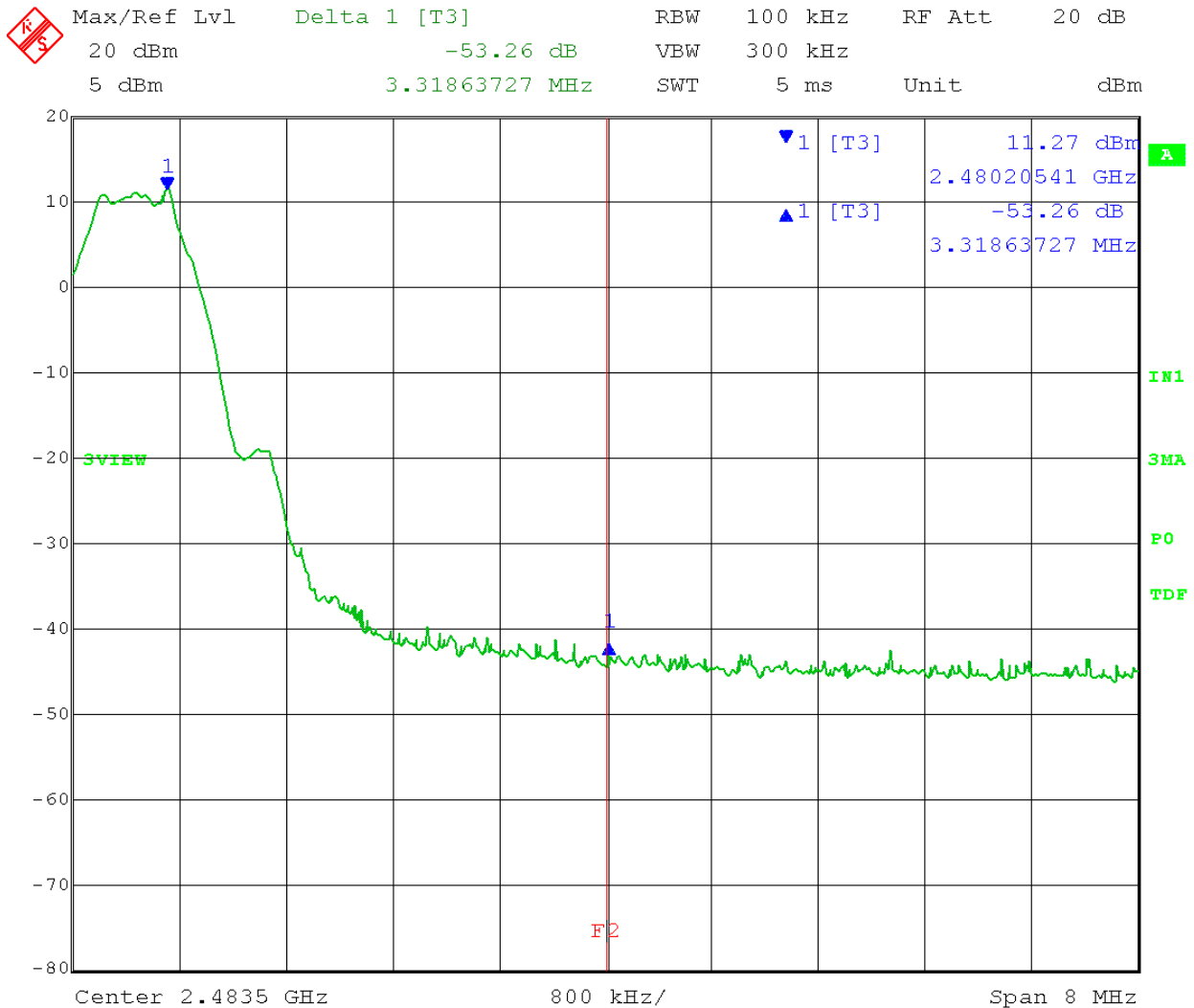
Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-07-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Upper Band Edge Compliance – RF Conducted
 Operator: cbrandt
 Detector: Peak; max hold
 Comment: Power set to full power (not adjustable)

High Channel: 2480 MHz

Band-Edge Frequency = 2.4835 GHz
 Limit at Band-Edge > 20 dB below Peak In-Band Emission
 Emission at Band-Edge is **53.26 dB** below the Peak in-band emission.





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section A

A8.0 Restricted Band Edge – Radiated

Rule Part:

Sections 15.247(d), 15.205(b), and 15.209(a)

Test Procedure:

ANSI C63.10-2013, Section 6.10.5.2
Restricted-band band-edge measurements.

Limit:

Table in FCC 15.209

Results:

Compliant

Sample Equation(s):

None

Notes:

This was a Radiated Emissions test. The EUT was tested while transmitting from the internal button antenna which is in the handle of the tool and connected to the RF circuit board via a short coaxial cable. The device was set up on a non-conductive table for testing purposes.

Per ANSI C63.10 Section 5.11, the EUT was programmed for continuous transmission (100% duty cycle). The EUT was tested at the low and high channels of operation and was tested in three orthogonal axes to find worst-case emission levels. The maximum field strength level at the band-edge (including all modulation products outside of the authorized band) was measured and recorded.



166 South Carter, Genoa City, WI 53128

Company:
Model Tested:
Project Number:
Report Number:

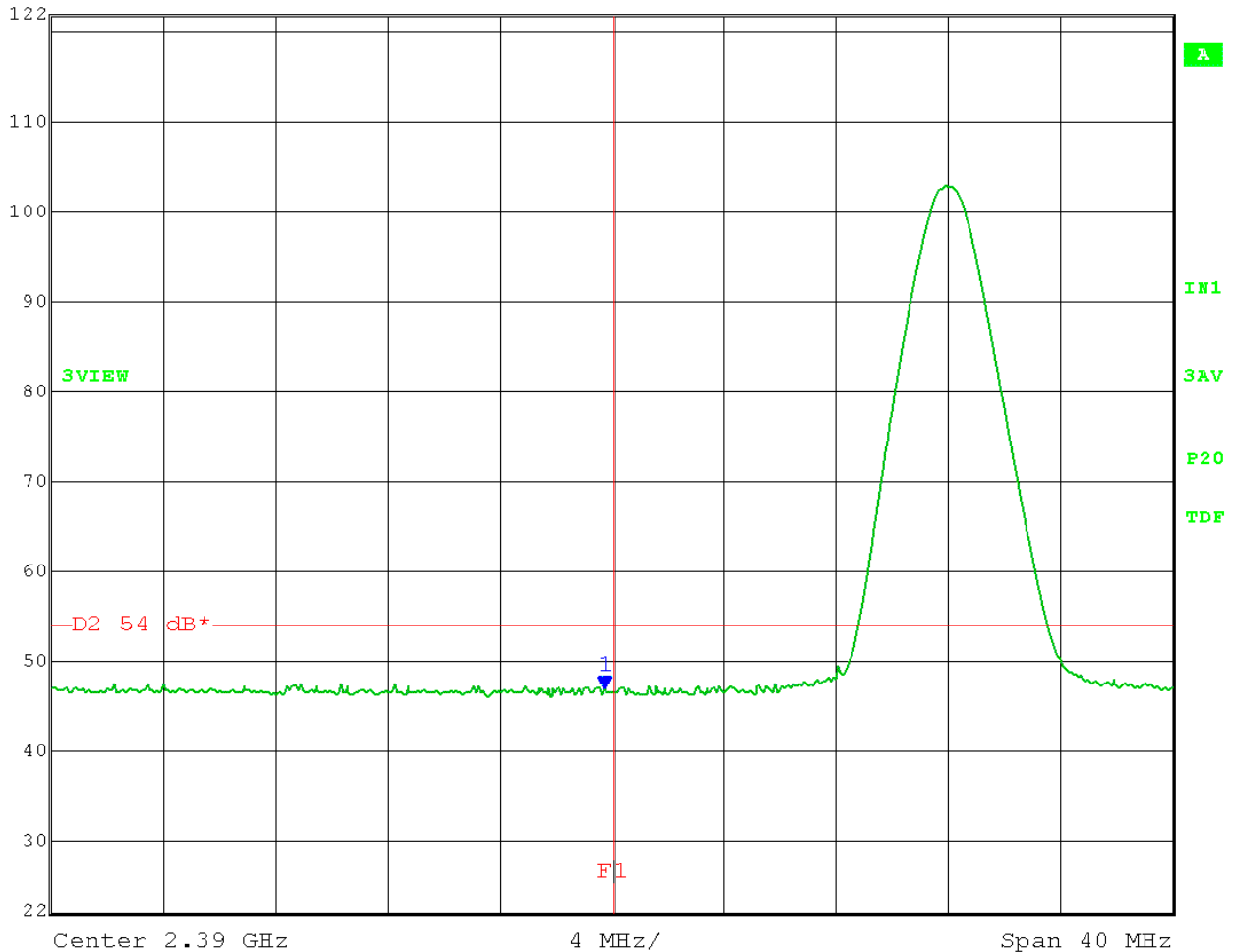
Milwaukee Electric Tool Corp.
2875R-20
12836
27967 rev1.1

Section A

Test Date: 08-09-2023
Company: Milwaukee Electric Tool Corporation
EUT: 5" Underground Cable Cutter, Model: 2875R-20
Test: Lower Restricted Band-Edge - Radiated
Operator: cbrandt
Comment: **Low Channel: 2402 MHz**
Lower Restricted Band-Edge frequency: 2.390 GHz
Transmit at 100% duty cycle, modulated.
Test Distance: 3 meters
Detector: Linear Average with max hold; Y-axis (worst-case)

VERTICAL: Average level at restricted band edge = **46.76 dB μ V/m**
AVERAGE: Limit: 54 dB μ V/m at 3 meters

	Max/Ref Lvl	Marker 1 [T3]	RBW	1 MHz	RF Att	10 dB
	122 dB*	46.76 dB μ V/m	VBW	3 MHz		
	82 dB*	2.38975952 GHz	SWT	5 ms	Unit	dB μ V/m





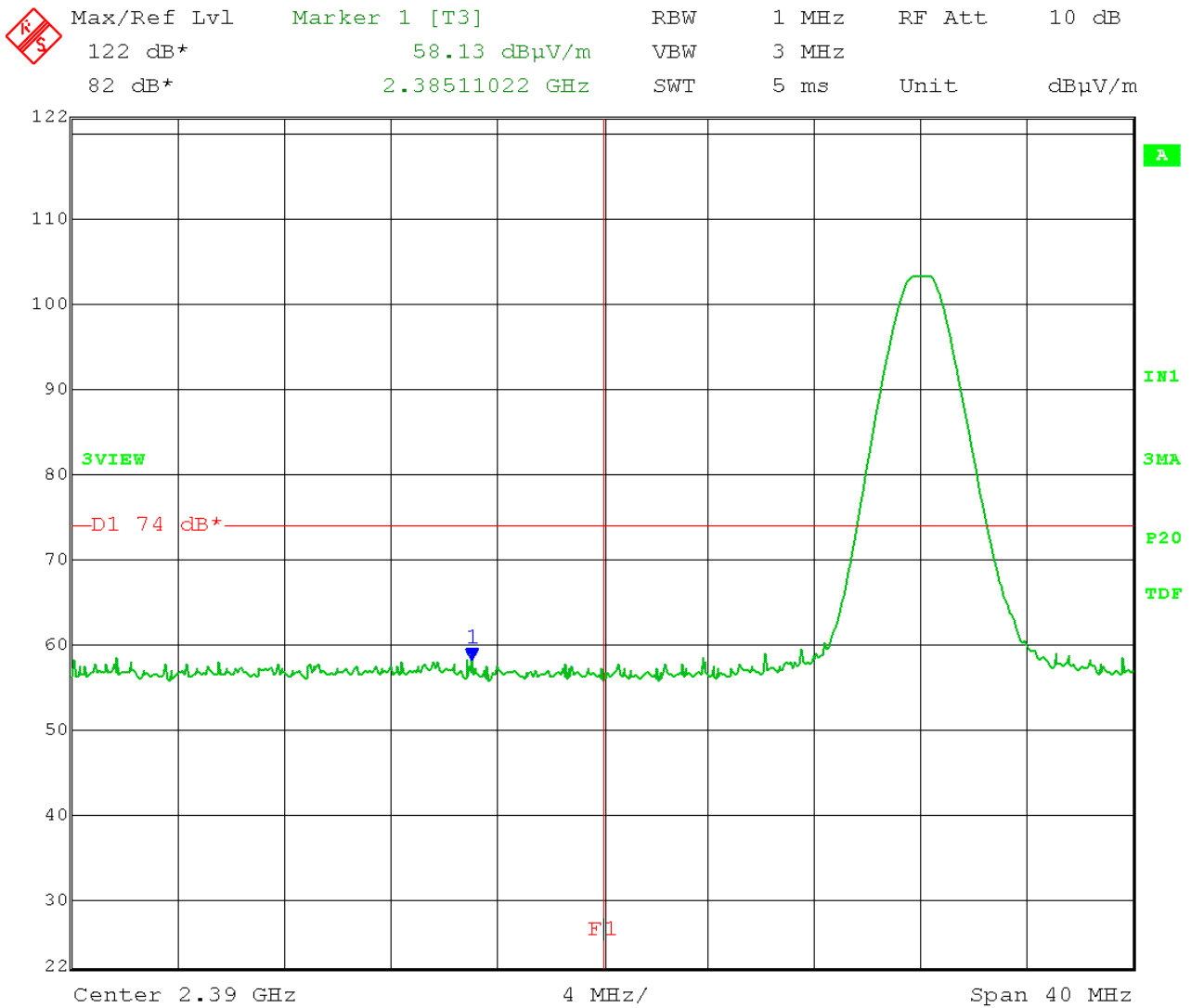
166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-09-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Lower Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **Low Channel: 2402 MHz**
 Lower Restricted Band-Edge frequency: 2.390 GHz
 Transmit at 100% duty cycle, modulated.
 Test Distance: 3 meters
 Detector: Peak with max hold; Y-axis (worst-case)

VERTICAL: Peak level at restricted band edge = **58.13 dB μ V/m**
 PEAK: Limit: 74 dB μ V/m at 3 meters





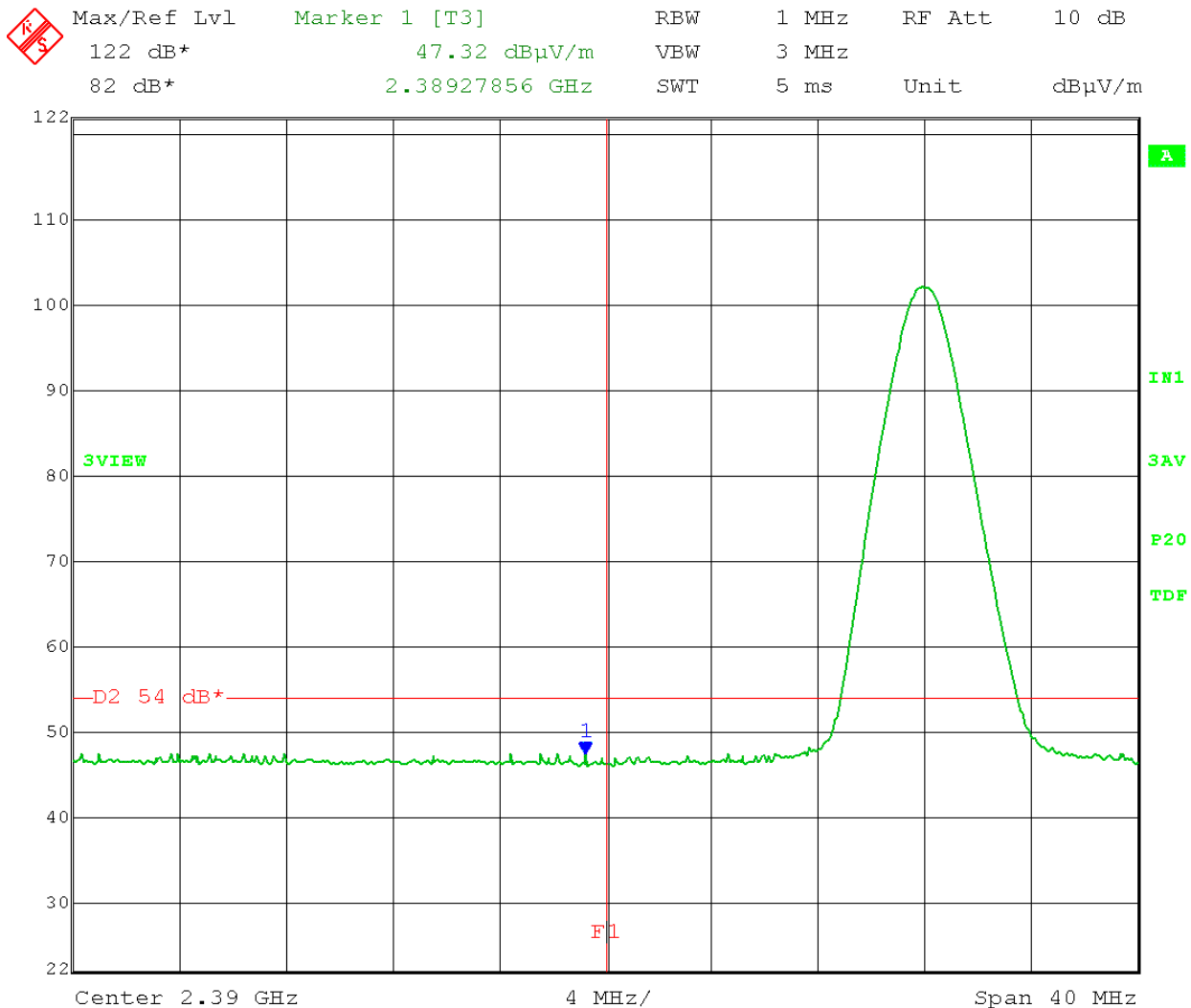
166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-09-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Lower Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **Low Channel: 2402 MHz**
 Lower Restricted Band-Edge frequency: 2.390 GHz
 Transmit at 100% duty cycle, modulated.
 Test Distance: 3 meters
 Detector: Linear Average with max hold; Z-axis (worst-case)

HORIZONTAL: Average level at restricted band edge = **47.32 dB μ V/m**
 AVERAGE: Limit: 54 dB μ V/m at 3 meters





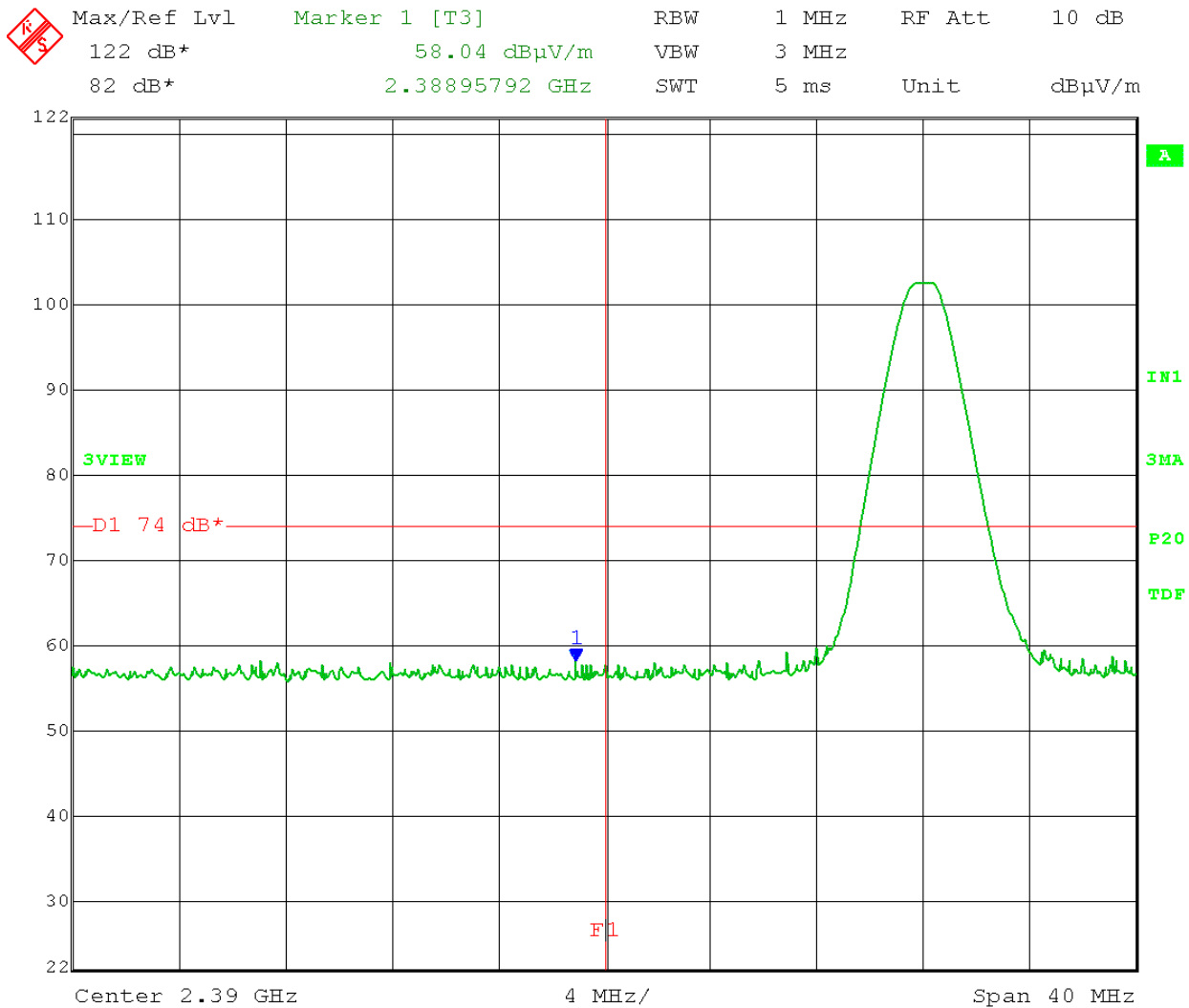
166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-09-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Lower Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **Low Channel: 2402 MHz**
 Lower Restricted Band-Edge frequency: 2.390 GHz
 Transmit at 100% duty cycle, modulated.
 Test Distance: 3 meters
 Detector: Peak with max hold; Z-axis (worst-case)

HORIZONTAL: Peak level at restricted band edge = **58.04 dB μ V/m**
 PEAK: Limit: 74 dB μ V/m at 3 meters





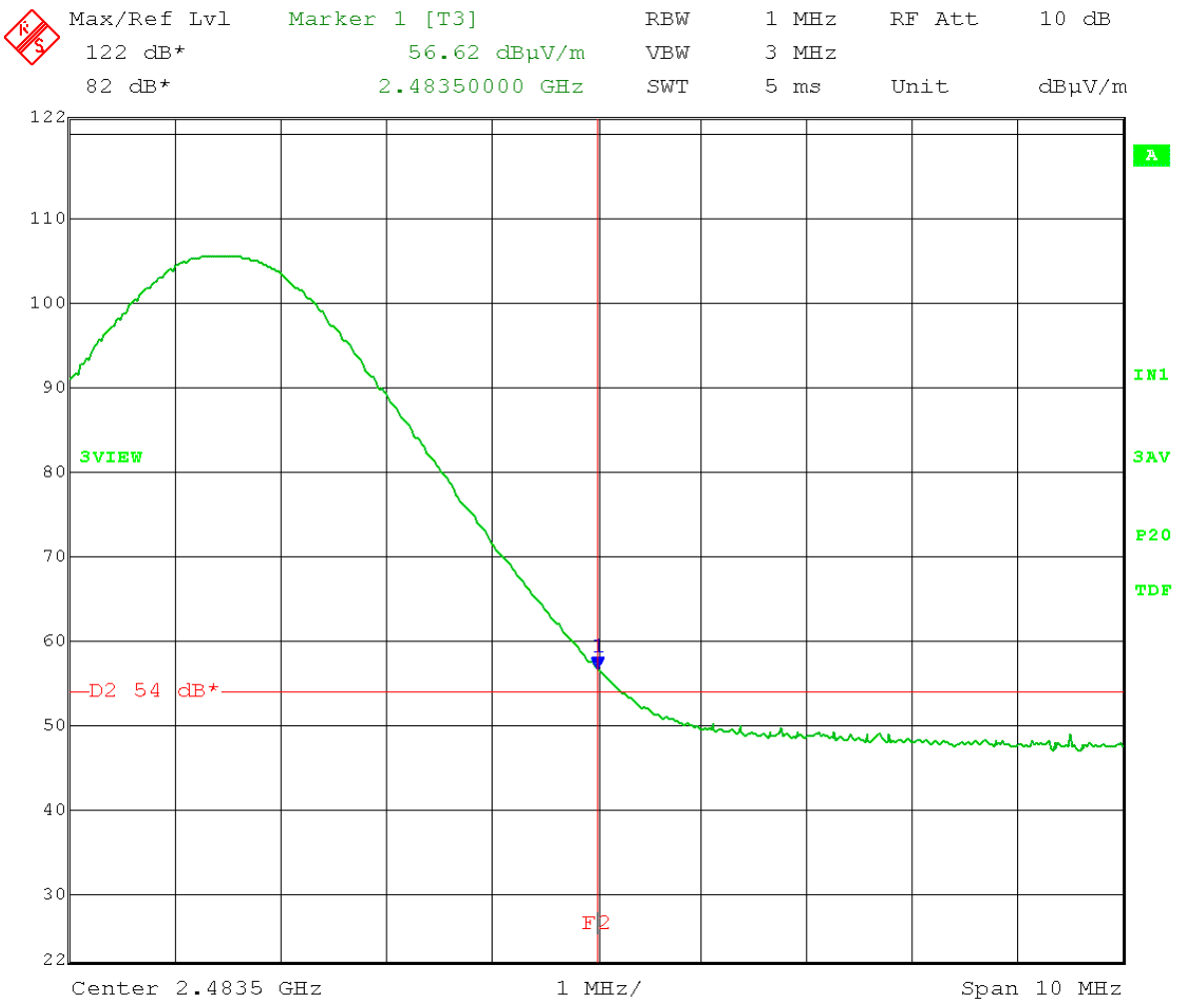
166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Upper Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **High Channel: 2480 MHz**
 Upper Restricted Band-Edge frequency: 2.4835 GHz
 Transmit at 100% duty cycle, modulated.
 Test Distance: 3 meters
 Detector: Linear Average with max hold; Z-axis (worst-case)

VERTICAL: Average level at measured at restricted band edge = 56.62 dBμV/m
 AVERAGE: Limit: 54 dBμV/m at 3 meters
Duty cycle correction per FCC KDB 558074 D01 15.247 Meas Guidance v05r02, Q&A #3 (see manufacturer's documented justification) = 6.26 dB with a maximum worst-case duty cycle of 48.64%.
 Duty cycle corrected level at restricted band edge = 56.62 dBμV/m - 6.26 dB = **50.36** dBμV/m





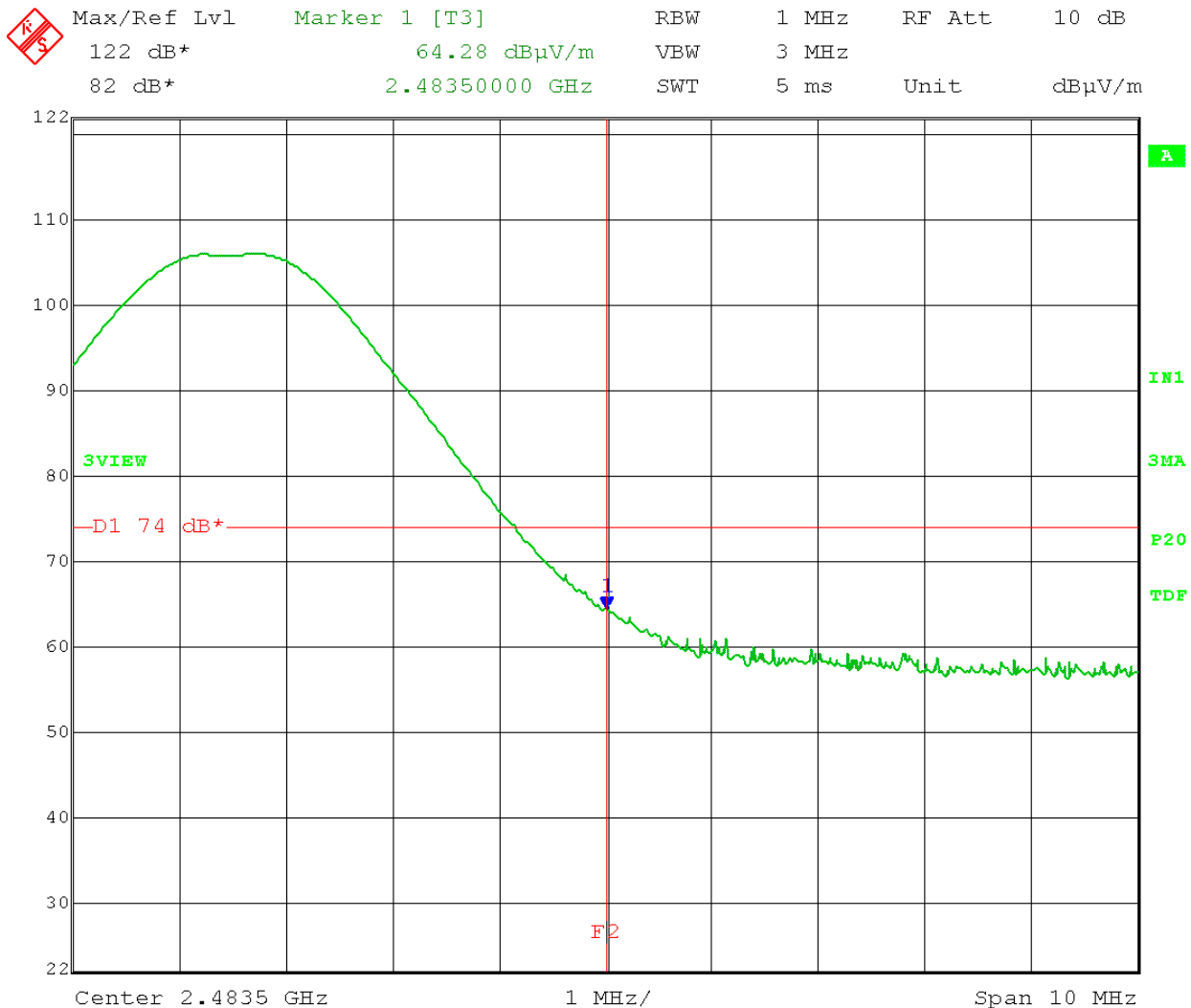
166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Upper Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **High Channel: 2480 MHz**
 Upper Restricted Band-Edge frequency: 2.4835 GHz
 Transmit at 100% duty cycle, modulated.
 Test Distance: 3 meters
 Detector: Peak with max hold; Z-axis (worst-case)

VERTICAL: Peak level at restricted band edge = **64.28 dB μ V/m**
 PEAK: Limit: 74 dB μ V/m at 3 meters





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
 Model Tested: 2875R-20
 Project Number: 12836
 Report Number: 27967 rev1.1

Section A

Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Upper Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **High Channel: 2480 MHz**
 Upper Restricted Band-Edge frequency: 2.4835 GHz
 Transmit at 100% duty cycle, modulated.

Test Distance: 3 meters

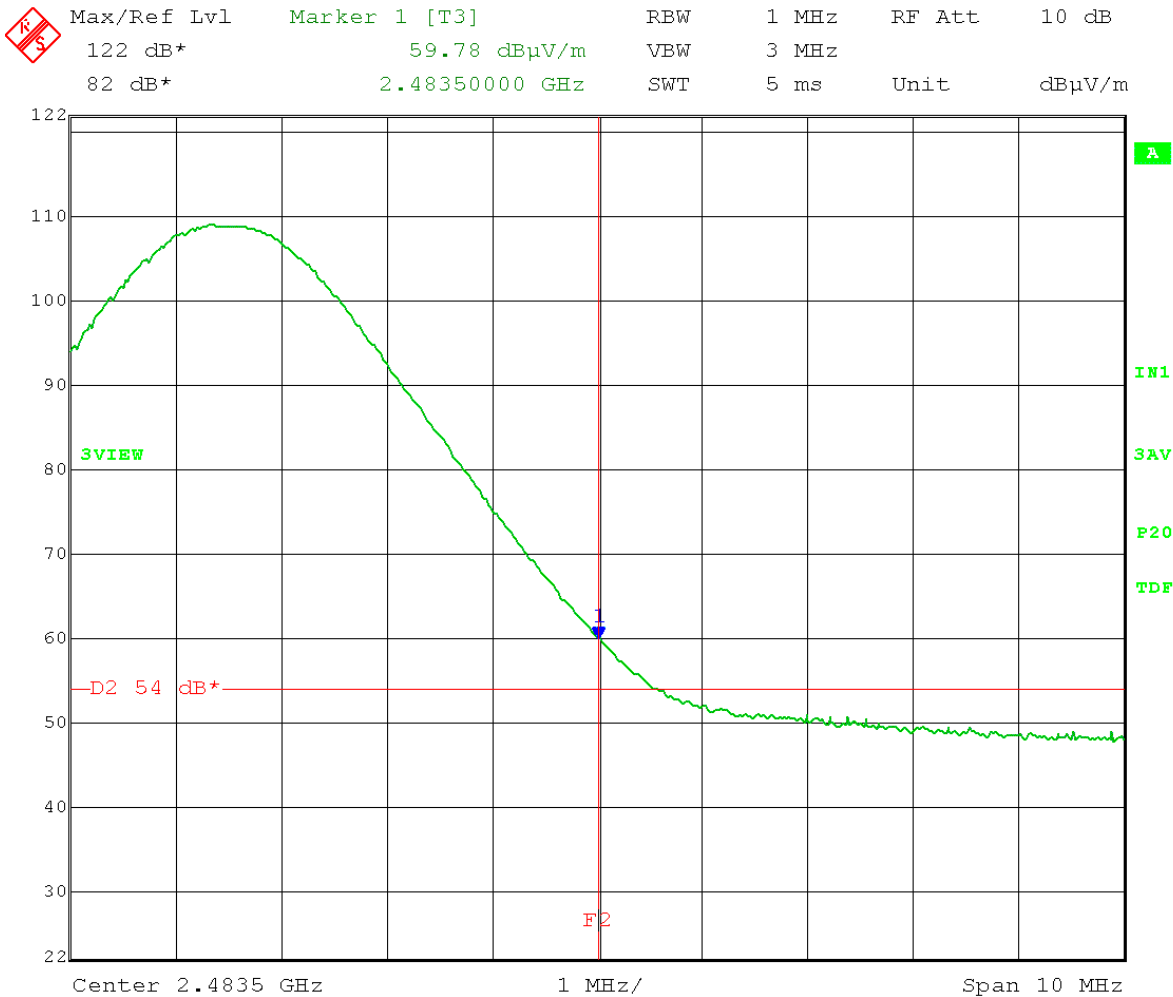
Detector: Linear Average with max hold; Z-axis (worst-case)

HORIZONTAL: Average level at measured at restricted band edge = 59.78 dB μ V/m

AVERAGE: Limit: 54 dB μ V/m at 3 meters

Duty cycle correction per FCC KDB 558074 D01 15.247 Meas Guidance v05r02, Q&A #3 (see manufacturer's documented justification) = 6.26 dB with a maximum worst-case duty cycle of 48.64%.

Duty cycle corrected level at restricted band edge = 59.78 dB μ V/m - 6.26 dB = **53.52** dB μ V/m





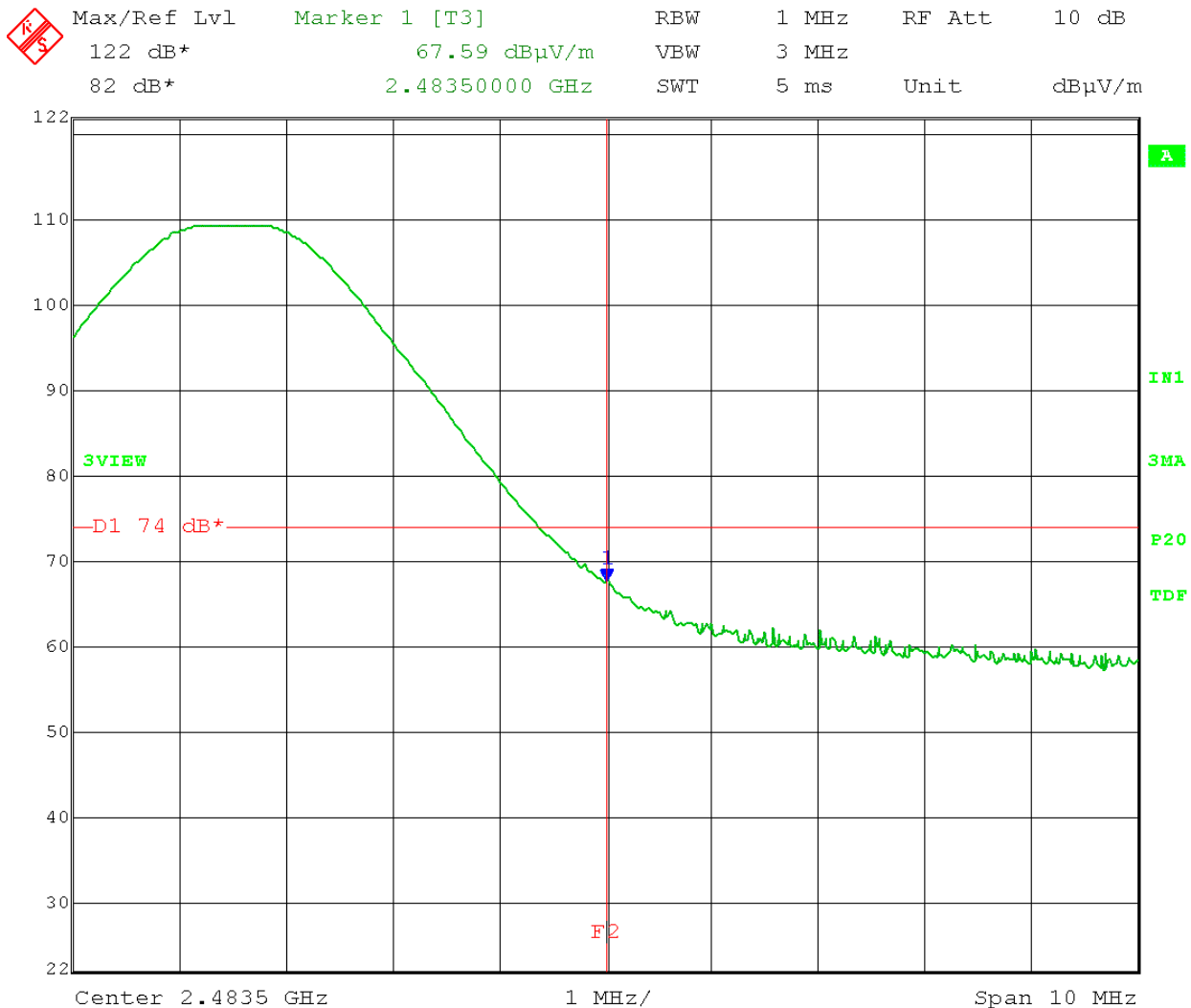
166 South Carter, Genoa City, WI 53128

Company:	Milwaukee Electric Tool Corp.
Model Tested:	2875R-20
Project Number:	12836
Report Number:	27967 rev1.1

Section A

Test Date: 08-08-2023
 Company: Milwaukee Electric Tool Corporation
 EUT: 5" Underground Cable Cutter, Model: 2875R-20
 Test: Upper Restricted Band-Edge - Radiated
 Operator: cbrandt
 Comment: **High Channel: 2480 MHz**
 Upper Restricted Band-Edge frequency: 2.4835 GHz
 Transmit at 100% duty cycle, modulated.
 Test Distance: 3 meters
 Detector: Peak with max hold; Z-axis (worst-case)

HORIZONTAL: Peak level at restricted band edge = **67.59 dB μ V/m**
 PEAK: Limit: 74 dB μ V/m at 3 meters





166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

Section B – Measurement Uncertainty

Compliance with the limits in this standard are based on the results of the compliance measurement. Our calculated measurement uncertainty including the measurement instrumentation, associated connections between the various instruments in the measurement chain, and other contributions, are provided in this section of the test report.

Radiated & RF Conducted Emission 30 MHz to 25 GHz Uncertainty

Parameter	Expanded Uncertainty (K=2)
Occupied Channel Bandwidth	+/- 1.14%
RF Output Power, Conducted	+/- 0.89 dB
Unwanted Emissions, Conducted	+/- 2.62 dB
All Emissions, Radiated	+/- 4.95 dB
DC and Low Frequency Voltages	+/- 2.42%
Time	+/- 0.01%
Duty Cycle	+/- 0.05%



166 South Carter, Genoa City, WI 53128

Company: Milwaukee Electric Tool Corp.
Model Tested: 2875R-20
Project Number: 12836
Report Number: 27967 rev1.1

END OF REPORT

Revision #	Date	Comments	By
1.0	08-18-2023	Initial Release	CB
1.1	02-05-2024	Updated FCC 15.203 Antenna Requirement statement Added FCC 15.109 Class B statement to Introduction Updated Model Number	CB