



FCC Part 1 Subpart I
FCC Part 2 Subpart J
ISED RSS-102

RF EXPOSURE REPORT

FOR

ST MODULE

MODEL NUMBER: 14209440

FCC ID: P36-CDCBA1

IC: 25187-CDCBA1

REPORT NUMBER: R15092022-E16

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Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-07-31	Initial Issue	Chandler Stanley
V2	2024-10-08	Added 10g extremity SAR exclusion note.	B. Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Milwaukee Electric Tool Corporation
13135 W. Lisbon Road
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EUT DESCRIPTION: ST Module

MODEL: 1420940

SERIAL NUMBER: 7293828, 7293829, 7293832, 7349139, 7349140, 7349141,
7349142, 7349143

SAMPLE RECEIPT DATE: 2024-06-06, 2024-06-25, 2024-06-26

DATE TESTED: 2024-06-06 TO 2024-07-05, 2024-07-16

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 1 SUBPART I & PART 2 SUBPART J	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

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2. TEST METHODOLOGY

All calculations were made in accordance with FCC Parts 1.1310, 2.1091, 2.1093, KDB 447498 D01 v06, KDB 447498 D03 V01, IEEE Std C95.1-2005, and IEEE Std C95.3-2002, ISED RSS-102.

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer. Data provided by the customer includes:

- 1.) Maximum Declared Output Power (See section 7)
- 2.) Separation Distance (See section 7)
- 3.) Antenna Gain (See section 7.2)

3. REFERENCES

Output power, duty cycle and antenna gain is excerpted from the applicable test reports or client declarations.

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. DECISION RULES

For all tests where the applicable $U_{LAB} \leq U_{MAX}$ the Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2, where $U_{MAX} = 30\%$ (0.3) for RF Exposure evaluations. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

For all tests where the applicable $U_{LAB} > U_{MAX}$ the Decision Rule is based on Guarded Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.3.2, with a guard band equal to $(U_{LAB} - U_{MAX})$, where $U_{MAX} = 30\%$ (0.3) for RF Exposure evaluations. (Test results are adjusted by the value of the guard band to determine conformity with a specified requirement.)

6. DEVICE UNDER TEST

The Chip Down Carrier Board is a next-gen DTS solution to be used internally within Milwaukee Tool. It presents a fully certified and tuned off-the-shelf solution for future implementation within tools and contains a BLE radio.

Separation distances, maximum average output power, and antenna gain have been declared by the manufacturer and can be found in documentation provided.

7. FCC PORTABLE DEVICE TEST EXCLUSION CONSIDERATIONS

7.1. FCC Stand-alone test exclusion KDB 447498 D01 v6.

a) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

SAR Exclusion Calculations Table for Portable Devices (separation distance ≤ 50 mm)

Tx	Frequency (MHz)	Avg Output power		Separation Distances (mm)	Calculated Threshold
		dBm	mW		
BLE 2.4 GHz	2402	6.50	4	10	0.6

Conclusion:

The computed value is ≤ 3 (1-g SAR) and ≤ 7.5 (10-g extremity SAR) exclusion thresholds; therefore, EUT qualifies for Standalone SAR test exclusion using declared minimum separation distance of 10mm.

7.2. ISED CANADA

The SAR exclusion table from RSS-102 issue 6 is reproduced below:

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

The minimum antenna to user distance that will be encountered in normal use is 10mm. This results in an exemption limit of 7mW while in use at 2450 MHz.

Tx	Frequency (MHz)	Maximum Declared Average Power	Antenna Gain	1.50 dBi
			(dBm)	(mW)
BLE	2402	Conducted	6.50	4.47
		E.I.R.P	8.00	6.31

As the maximum average output power is 4.47 mW conducted and 6.31 mW EIRP, the DUT qualifies for SAR test exclusion.

END OF TEST REPORT