EMC Test Results for WNR-EC2 Columbus Wheel Nut Wrench

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1. Machine Information

- **Machine Name**: WNR-EC2 Columbus Wheel Nut Wrench
- **Manufacturer**: Columbusmaskiner AB
- **Tested Product Description**: Wheel nut wrench for heavy trucks

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2. EMC Test Report

2.1 General Information about the Tests

- **Test Date**: December 18, 2024
- **Test Time Interval**: 12:13:42 - 12:14:02
- **Test Leader**: Jari Palosaari
- **Responsible for Machine's CE Marking**: Alexander Österström
- **Test Type**: Electromagnetic Compatibility (EMC)
- **Test Setup**: The test equipment (Combinova FD 10) was placed on a stand approximately 20 cm from the machine during the test.
- **Test Duration**: The test was conducted for about 1 minute to measure average electromagnetic fields.
- **Measurement Range**: Frequency range 10 Hz - 400 kHz
- **Standards Applied**:
    - EN 61000-6-2 (Immunity)
    - EN 61000-6-4 (Emission Requirements)

2.2 Test Equipment and Methodology

- **Measurement Equipment Used**: [Combinova FD 10]
- **Test Method**:
    - Frequency Range: 10 Hz - 400 kHz
    - Measurement Speed: 1
    - Measurement Mode: B
    - Gain: 1
    - Test Duration: Approximately 1 minute
    - Average Field Measurements: The measurement includes averages for the electromagnetic fields within the specified frequency range.

2.3 Test Results

Order No	Status	Peak Value (µT)	X (µT)	Y (µT)	Z (µT)	RMS (µT)	X (µT) RMS	Y (µT) RMS	Z (µT) RMS	Frequency (Hz)
1	Range change	3.2930	1.6612	2.6962	1.5825	0.4959	0.1888	0.3690	0.2722	0
2	OK	2.9749	1.4422	2.5579	1.8429	0.7238	0.2631	0.6116	0.2839	35
3	OK	2.1640	1.1030	1.9453	1.1959	0.5470	0.1964	0.4734	0.1912	17
4	OK	4.8429	4.0862	2.1656	1.7709	0.8291	0.5413	0.5333	0.3316	42
5	OK	4.6136	3.5987	2.4883	1.6282	0.8555	0.5219	0.6279	0.2555	32
6	OK	2.2719	1.0294	1.9373	1.1332	0.4710	0.1516	0.3699	0.2492	40
7	OK	2.0247	0.8183	2.0145	0.8742	0.7829	0.2831	0.6758	0.2758	0
8	OK	2.6769	0.9472	2.3110	1.3124	0.6737	0.2413	0.5766	0.2515	0
9	OK	4.5201	3.6141	2.3413	1.7023	0.8020	0.5383	0.5134	0.2998	36
10	OK	4.1493	3.5244	2.6421	1.7284	0.8032	0.4825	0.5841	0.2670	29
11	OK	4.3693	3.5969	2.2150	1.7087	0.8318	0.4885	0.6194	0.2636	0
12	OK	2.6129	1.4577	2.2211	1.4085	0.5497	0.1820	0.4362	0.2807	41
13	OK	2.0159	0.8097	1.9091	0.5171	0.6818	0.2840	0.5660	0.2526	0
14	OK	2.7382	1.2226	2.1018	1.6412	0.7467	0.2498	0.6417	0.2886	0
15	OK	2.6271	1.3040	2.2340	1.3720	0.5497	0.1854	0.4549	0.2466	34
16	OK	2.1585	0.7444	2.0166	0.5933	0.6282	0.2066	0.5386	0.2487	0
17	OK	4.6503	3.9139	1.8698	1.7882	0.6064	0.4333	0.3207	0.2777	28
18	OK	4.7065	3.6635	2.5428	1.6455	0.7575	0.4771	0.5313	0.2527	28
19	OK	2.1099	1.1803	1.9372	0.6277	0.7673	0.4504	0.5542	0.2806	0
20	OK	4.7674	3.8686	2.0812	1.8985	0.8131	0.5056	0.5759	0.2718	32

Measurement Uncertainty: The measurement uncertainty for the recorded electromagnetic fields is estimated to be ±5%, based on the test equipment specifications and standard measurement uncertainty for this type of test.

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3. Conclusion

- **Test Results**: The MD-EL2 machine has passed EMC testing within the specified frequency range of 10 Hz to 400 kHz, and the results have been documented according to the standard.
- **Approval**: The machine meets the electromagnetic compatibility requirements according to applicable standards.

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4. Approval

- **Test Leader (Name, Title)**: Jari Palosaari,
- Date: December 20, 2024
- **Responsible for Machine's CE Marking**: Alexander Österström, Technical Manager
  Date: December 20, 2024

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