

EMC Test Results for WNR-EC Columbus Wheel nutrunner

1. Machine Information

- Machine Name: WNR-EC Columbus Wheel nutrunner
 - Manufacturer: Columbusmaskiner AB
 - Tested Product Description: Wheel nutrunner for Trucks and Busses
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2. EMC Test Report

2.1 General Information on Tests

- Test Date: 2024-12-18
- Test Time Interval: 12:11:01 - 12:11:23
- Test Leader: Jari Palosaari
- Responsible for Machine 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 away from the machine during the test.
- Test Duration: The test was conducted for approximately 1 minute to measure average electromagnetic fields.
- Measurement Range: Frequency range 10 Hz - 400 kHz
- Standards Applied:
 - o EN 61000-6-2 (Immunity)
 - o EN 61000-6-4 (Emission Requirements)

2.2 Test Equipment and Methodology

- Measurement Equipment Used: [Combinova FD 10]
 - Test Method:
 - o Frequency Range: 10 Hz - 400 kHz
 - o Measurement Speed: 1
 - o Measurement Mode: B
 - o Gain: 1
 - o Test Duration: Approximately 1 minute
 - o Average Field Measurements: The measurement includes averages for the electromagnetic fields within the specified frequency range.
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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	1.6015	0.5900	0.8776	1.4747	1.1147	0.2794	0.5272	0.9416	0
2	OK	4.6246	2.0125	3.3264	3.3690	0.9377	0.2770	0.5845	0.6789	27
3	OK	1.6569	0.8736	1.1793	1.2702	0.9070	0.4658	0.4402	0.6418	0
4	OK	4.0069	1.2119	3.1401	2.4169	0.9014	0.4565	0.5301	0.5685	40
5	OK	4.6693	1.0307	3.0089	3.5360	0.8450	0.2134	0.5237	0.6279	0
6	OK	1.7004	0.5910	1.0693	1.5081	1.1140	0.2750	0.5369	0.9365	0
7	OK	4.2892	0.8714	3.0540	3.3273	0.8864	0.1561	0.5473	0.6796	26
8	OK	5.3229	1.2981	3.0227	4.2558	1.0079	0.1942	0.6274	0.7646	25
9	OK	4.5791	1.1551	3.5294	2.8161	0.8335	0.3572	0.4981	0.5648	33
10	OK	2.2542	1.0102	1.5913	1.4786	0.8378	0.4374	0.4235	0.5756	0
11	OK	4.7335	1.6674	3.6151	2.9957	0.9551	0.4189	0.6185	0.5952	0
12	OK	1.3108	0.6821	0.8874	1.0262	0.3308	0.1614	0.1804	0.2254	0
13	OK	4.0351	1.0270	2.5384	3.2447	1.2095	0.2857	0.6515	0.9782	48
14	OK	1.5424	0.5784	0.8279	1.4399	1.0695	0.2642	0.5086	0.9030	0
15	OK	4.4061	0.8715	3.2268	3.3635	0.9596	0.1593	0.6005	0.7314	32
16	OK	4.0547	0.9816	2.6509	3.2336	0.7298	0.1285	0.4674	0.5456	20
17	OK	4.2857	1.4652	3.3200	2.6192	0.9371	0.4429	0.5285	0.6346	46
18	OK	4.2572	1.2816	3.2824	2.6373	0.8399	0.3673	0.5409	0.5271	0
19	OK	5.5029	1.4614	2.9760	4.4079	0.3942	0.1134	0.2104	0.3135	0
20	OK	3.4317	0.8027	2.3915	2.8129	1.2406	0.2885	0.6558	1.0128	0
21	OK	4.6911	1.0518	3.3352	3.5302	1.1625	0.2470	0.6930	0.9001	38
22	OK	4.4488	1.3848	2.7667	3.5823	1.0815	0.2125	0.6649	0.8260	35

Measurement Uncertainty:

The measurement uncertainty for the measured electromagnetic fields is estimated at $\pm 5\%$, based on the specifications of the test equipment and standard measurement uncertainty for this type of test.

3. Conclusion

- Test Results: The machine MD-EL Columbus Wheel Nut Wrench has passed EMC tests within the specified frequency range of 10 Hz to 400 kHz, and the results have been documented.
- Approval: The machine complies with the electromagnetic compatibility requirements according to applicable standards.

4. Approval

- Test Leader (Name, Title): Jari Palosaari, Test Leader

Date: 2024-12-20

- Responsible for Machine CE Marking: Alexander Österström, Technical Manager

Date: 2024-12-20

Columbusmaskiner AB

Hejargatan 13

632 29 Eskilstuna

Sweden

Email: info@columbusmaskiner.se

Phone: +46-724 544 244