

Prüfbericht-Nr.: <i>Test report no.:</i>	CN228Q46 002	Auftrags-Nr.: <i>Order no.:</i>	326128970	Seite 1 von 16 <i>Page 1 of 16</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	1288983	Auftragsdatum: <i>Order date:</i>	2025-09-08	
Auftraggeber: <i>Client:</i>	IKEA of Sweden AB Box 702, SE-343 81 Älmhult, Sweden			
Prüfgegenstand: <i>Test item:</i>	Cordless Screwdriver			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	P2201 TRIXIG			
Auftrags-Inhalt: <i>Order content:</i>	TÜV Rheinland EMC service			
Prüfgrundlage: <i>Test specification:</i>	FCC 47 CFR Part 15, Subpart B:2023 Class B ICES-003:2020			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2025-10-28	Refer to the EUT photos file		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A004124229-009			
Prüfzeitraum: <i>Testing period:</i>	2025-11-06~2025-11-07			
Ort der Prüfung: <i>Place of testing:</i>	Refer to clause 1.1			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	Jessie Xu <i>Jessie Xu</i>		genehmigt von: <i>authorized by:</i>	HeXiong Liu <i>HeXiong Liu</i>
Datum: <i>Date:</i>	2025-12-08		Ausstellungsdatum: <i>Issue date:</i>	2025-12-08
Stellung / Position:	Project engineer		Stellung / Position:	Authorizer
Sonstiges / <i>Other:</i>	FCC ID: FHO-P2201 Test Firm Name: TÜV Rheinland (Shanghai) Co., Ltd. Designation Number: CN1396 Test Firm Registration Number: 930979 Refer to clause 2.2 for further information.			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
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Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

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Revision history of test report:

Report number	Issue date	Contents and reason for change if appropriate
CN228Q46 001	2023-06-30	Initial release.
CN228Q46 002	2025-12-08	PCB Layout changed.

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1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland (Shanghai) Co., Ltd.

Address: Workshop 14, North Half of Workshop 10 and Workshop 16, Pingqian (Taicang) Modern Industrial Park, No. 525, Yuewang Lingang South Road, Shaxi, Taicang, Jiangsu, China

The test equipment used is in accordance with CISPR 16-1 series standards for measurement of radio interference.

Refer to Clause 7 for test and measurement instruments.

2 General Product Information

2.1 Product Function and Intended Use

The EUT (equipment under test) is an ordinary cordless screwdriver for power tools and similar use. For further information, refer to the user's manual.

2.2 Ratings and System Details

Rated input voltage : DC 3.6 V, 1.5 Ah

Protection class : III

Identities and difference:

1. The model P2201 TRIXIG was already EMC tested in the test report CN228Q46 001.
Compared with the report, one of the above standards has been updated. However according to the content of update, no additional test is needed.
2. The report is also for the changes in the PCB layout. Therefore, the radiated emission test was performed on one sample with the new PCB.

2.3 Independent Operation Modes

The basic operation modes are: "On" and "Off".

2.4 Description of interconnecting cables

N/A.

2.5 Noise Generating and Noise Suppressing Parts

Refer to the circuit diagram for further information.

2.6 Highest frequency generated or used in the device or on which the device operates or tunes

The highest frequency used in the EUT is 16 MHz.

2.7 Submitted Documents

PCB layout.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible emission level. The test conditions were adapted accordingly in reference to the instructions for use.

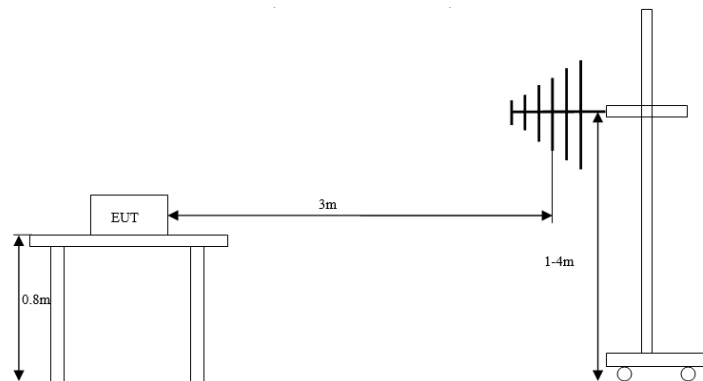
Refer to the related paragraph of this report.

The sequence of testing:

1. Radiated emission tests were performed on 2025-11-06~2025-11-07;

3.2 Equipment and cable arrangement

Block diagrams for the radiated emission test is as follows:



(Radiated emission 30-1000 MHz)

Also refer to photograph on clause 6 for test setups for radiated emission test.

3.3 Test Software

Refer to the related paragraph of this report. No software was used.

3.4 Special Accessories and Auxiliary Equipment

None.

3.5 Countermeasures to achieve EMC Compliance

No other special measure is employed to achieve the requirement.

4 Conformity Decision Rule

For all EMI tests included in this report, as measurement uncertainties are less than the values U_{CISPR} given in CISPR 16-4-2, compliance with the limits is determined by comparing measurement results directly with corresponding limits without taking into consideration of measurement uncertainties.

5 Test Results EMISSION

5.1 Emission in the Frequency Range above 30 MHz

5.1.1 Radiated Emission (30-1000 MHz)

Result:		Passed
Date of testing	: 2025-11-06~2025-11-07	
Test procedure	: FCC 47 CFR Part 15, Subpart B:2023, ICES-003:2020, ANSI C63.4-2014 and CISPR 16-2-3	
Product classification	: Class B	
Frequency range	: 30 – 1000 MHz	
Limits	: Quasi-peak limits (3 m distance) (See Note 1) 30 – 88 MHz, 40 dB μ V/m; 88 – 216 MHz, 43.5 dB μ V/m; 216 – 960 MHz, 46 dB μ V/m; Above 960 MHz, 54 dB μ V/m.	
Bandwidth of EMI receiver for final measurement	: 120 kHz	
Measurement time for final measurement	: 1 s	
Kind of test site	: Semi-anechoic chamber	
Input voltage	: DC 3.6 V	
Operational mode	: Mode 1: Continuously working in forward direction Mode 2: Continuously working in backward direction	
Ambient condition	: Temperature: 21.7 °C; Relative humidity: 40.2 %	
Expanded measurement uncertainty ($k=2$)	: 5.40 dB The minimum margin to the limit is 9.8 dB at 488.931250 MHz. The margin is higher than expanded measurement uncertainty.	

The radiated disturbance test was carried out in a semi-anechoic chamber. The test distance from the receiving antenna to the EUT is 3 m. The normalized site attenuation of the semi-anechoic chamber is regularly calibrated to ensure the radiated disturbance test results are valid. During the test, the EUT was placed on an 80 cm wooden support above the reference ground plane. The wooden support was rotated 360° around and the height of the antenna varied from 1 m to 4 m to find the maximum disturbance. The test was performed with the antenna both in its horizontal and vertical polarizations.

The following figures and tables were measured by an automatic measurement system. A preview test was first performed with peak detector. The final test was performed with quasi-peak at those critical frequencies during the preview test. In the following spectral diagram, “x” means quasi-peak test results.

Note 1: The class B limits of FCC 47 CFR Part 15, Subpart B:2023 is stricter than those ICES-003:2023 Table 2 for 3 m test distance. Therefore, the former limits are used in following figures and tables.

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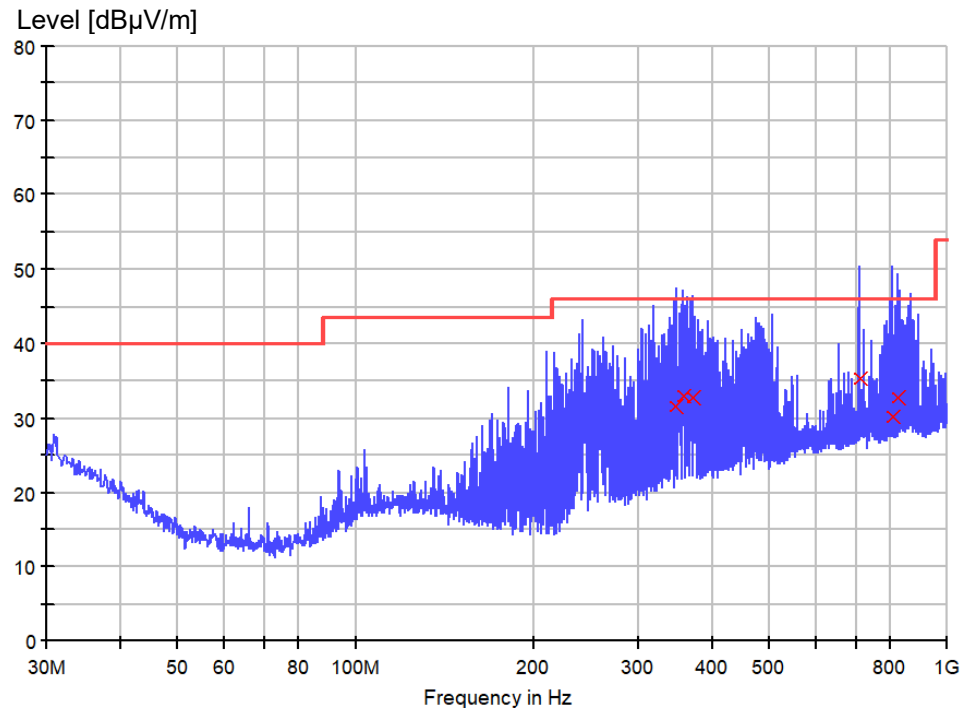
Notes on following tables of radiated emission results and conversions:

QuasiPeak (dB μ V/m): final measurement results by using quasi-peak detector

Corr. (dB): correction factor including: antenna factor, cable loss, and gain of pre-amplifier (if used)

Margin: Limit (dB μ V/m) - QuasiPeak (dB μ V/m)

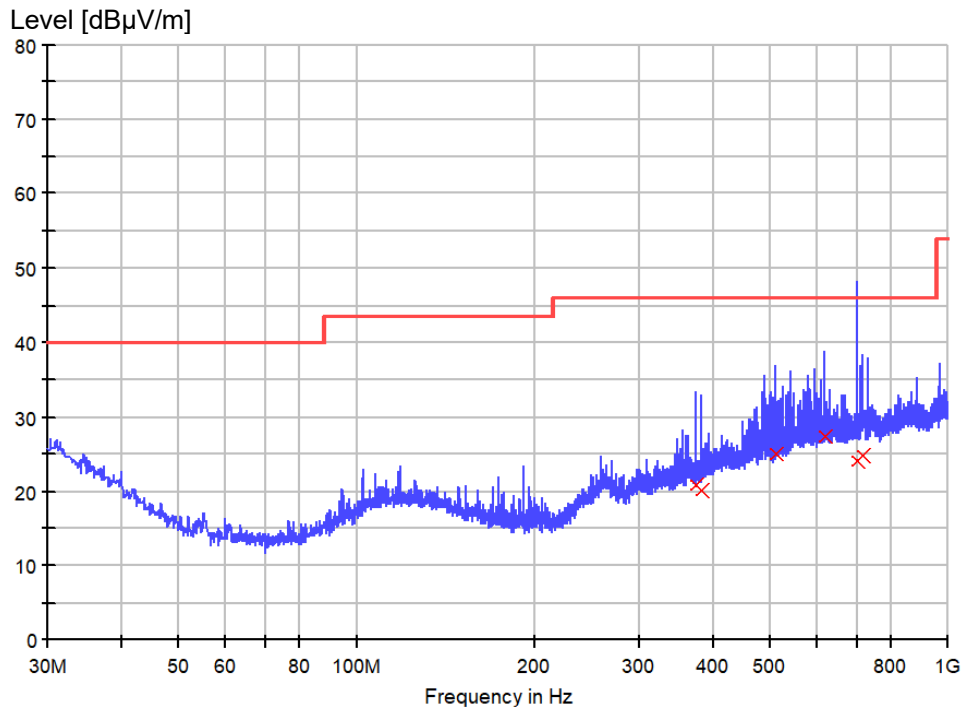
Figure 1: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 1



Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
347.675000	31.7	1000.0	120.000	100.0	H	180.0	14.3	46.0
357.132500	33.1	1000.0	120.000	100.0	H	-180.0	13.0	46.0
371.682500	32.7	1000.0	120.000	100.0	H	180.0	13.3	46.0
711.546250	35.3	1000.0	120.000	100.0	H	-180.0	10.7	46.0
805.272500	30.3	1000.0	120.000	100.0	H	180.0	15.7	46.0
826.006250	32.8	1000.0	120.000	100.0	H	-180.0	13.2	46.0

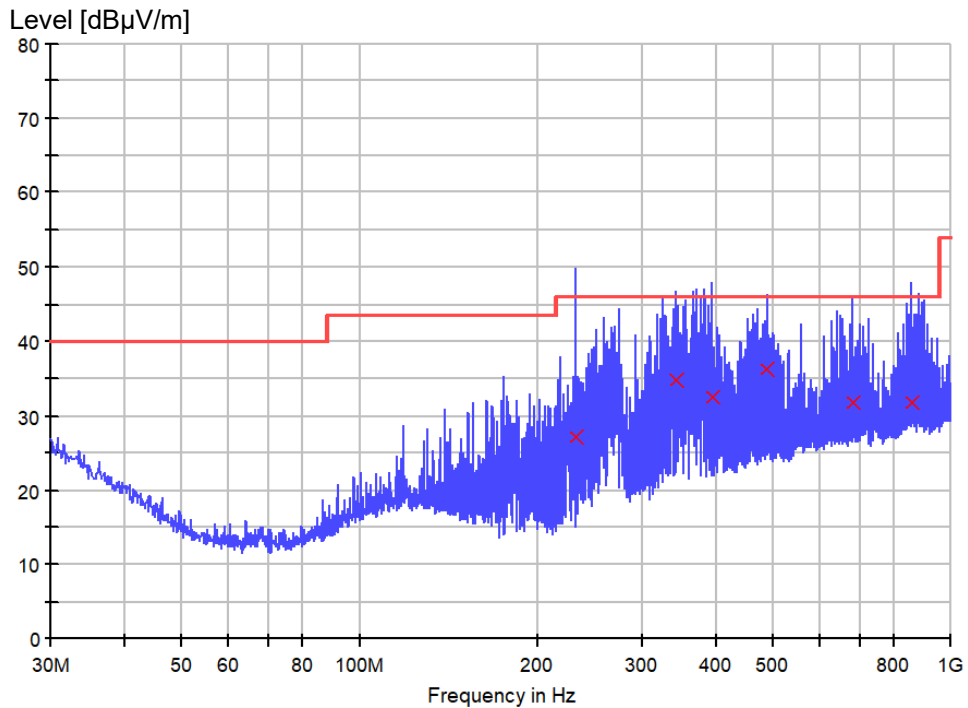
Figure 2: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 1



Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
375.077500	20.9	120.000	136.0	V	-172.0	22.1	25.1	46.0
383.443750	20.0	120.000	201.0	V	18.0	22.4	26.0	46.0
509.786250	25.0	120.000	155.0	V	-88.0	25.0	21.0	46.0
617.820000	27.4	120.000	137.0	V	167.0	26.7	18.6	46.0
703.907500	24.1	120.000	192.0	V	-132.0	27.2	21.9	46.0
719.306250	24.9	120.000	102.0	V	80.0	28.1	21.1	46.0

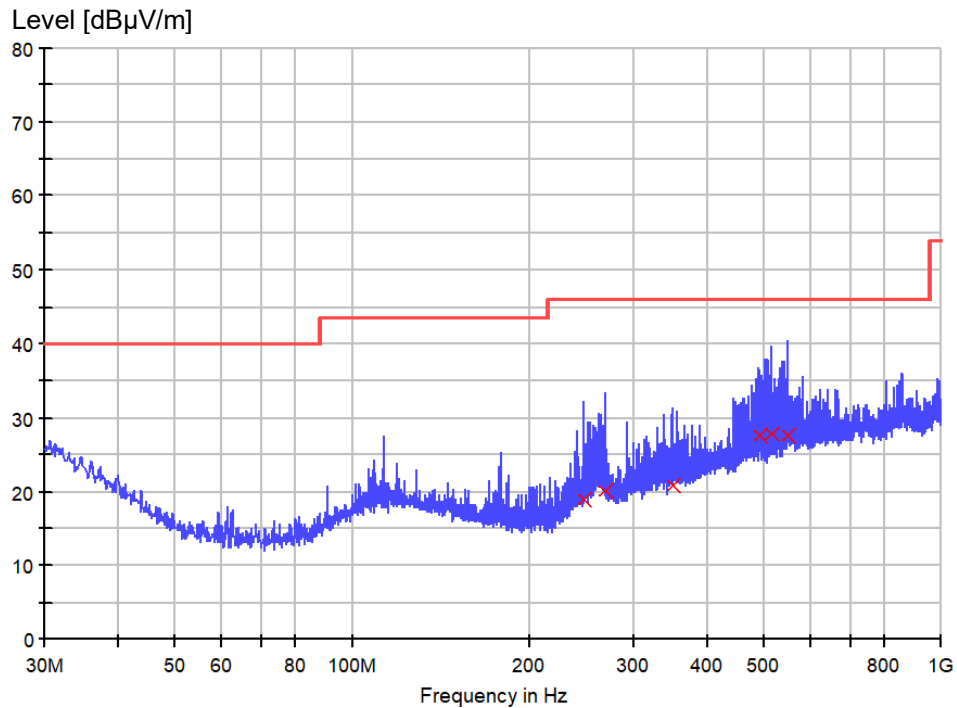
Figure 3: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 2



Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
232.366250	27.2	120.000	103.0	H	180.0	17.6	18.8	46.0
343.795000	34.8	120.000	117.0	H	-66.0	21.0	11.2	46.0
394.477500	32.4	120.000	205.0	H	21.0	22.9	13.6	46.0
488.931250	36.3	120.000	172.0	H	-180.0	25.4	9.8	46.0
682.325000	31.7	120.000	134.0	H	55.0	27.0	14.3	46.0
857.288750	31.9	120.000	192.0	H	-37.0	29.0	14.1	46.0

Figure 4: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 2



Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
247.522500	19.0	120.000	107.0	V	177.0	19.2	27.0	46.0
269.468750	20.1	120.000	219.0	V	-131.0	20.4	25.9	46.0
351.555000	20.9	120.000	157.0	V	69.0	21.8	25.1	46.0
493.053750	27.7	120.000	131.0	V	-18.0	25.6	18.3	46.0
513.545000	27.9	120.000	166.0	V	82.0	25.2	18.1	46.0
550.768750	27.5	120.000	155.0	V	10.0	26.4	18.5	46.0

6 Photographs of the Test Set-Up

Refer to the test setup file.

7 List of Test and Measurement Instruments

Equip. no.	Equipment name	Model	Serial no.	Manufacturer	Cal. date	Due date
EMC-S-032	EMI measurement software	EMC32-MEB (10.60.20)	100697	Rohde & Schwarz	N/A	N/A
EMC-C-155	BiLog antenna	CBL 6112D	40530	Teseq	2025-03-24	2026-09-24
EMC-C-121	Thermohygrometer	608-H1	1241320265	testo	2025-06-05	2026-06-05
EMC-C-066	EMI test receiver	ESCI	100280	Rohde & Schwarz	2025-09-28	2026-09-28
EMC-C-001	3 m semi-anechoic chamber	SAC3	FJ129002	Frankonia	2023-12-03	2026-12-03

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End of test report