

Prüfbericht-Nr.: Test report no.:	CN21G5HT 002	Auftrags-Nr.: Order no.:	326179636	Seite 1 von 20 Page 1 of 20
Kunden-Referenz-Nr.: Client reference no.:	1288983	Auftragsdatum: Order date:	2026-06-03	
Auftraggeber: Client:	IKEA of Sweden AB Box 702, SE-343 81 Älmhult, Sweden			
Prüfgegenstand: Test item:	Wall Lamp			
Bezeichnung / Typ-Nr.: Identification / Type no.:	V2028 Havsdun			
Auftrags-Inhalt: Order content:	TÜV Rheinland EMC service			
Prüfgrundlage: Test specification:	FCC 47 CFR Part 15, Subpart B:2024 Class B ICES-005:2018			
Wareneingangsdatum: Date of sample receipt:	2026-05-19	Refer to the EUT photos file		
Prüfmuster-Nr.: Test sample no:	A004108387 001			
Prüfzeitraum: Testing period:	2026-05-20~2026-05-26			
Ort der Prüfung: Place of testing:	Refer to clause 1.1			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	genehmigt von: authorized by:		Jacky C.L. Chen	
Datum: Date:	2026-06-08		Ausstellungsdatum: Issue date:	
Stellung / Position:	Project engineer	Stellung / Position:		Authorizer
Sonstiges / Other:	FCC ID: FHO-V2028 Test Firm Name: TUV 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: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* 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
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

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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
CN21G5HT 001	2015-05-17	Initial release.
CN21G5HT 002	2026-06-08	Adding an alternative LED driver

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1 Test Sites

1.1 Test Facilities

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

Address: Workshop14, North Half of Workshop 10 and Workshop 16, Pingqian (Taicang)
Modern Industrial Park, No.525, Yuewang Lingang South Road, Shaxi, Taicang, Jiangsu,
China

The used test equipment 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 wall lamp. For further information, refer to the user's manual.

2.2 Ratings and System Details

Rated input : AC 120 V, 50-60 Hz
Rated power : 6.7 W

1. The model V2028 Havsdun was already EMC tested as described in the report CN21G5HT 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 due to add an alternative LED driver ICPSW24-7-4.

Therefore, the conducted emission and radiated emission tests were performed on the model V2028 Havsdun with the new LED driver ICPSW24-7-4.

2.3 Independent Operation Modes

The basic operation modes are: "ON" and "OFF" with dimming.

The test modes are as follows:

"ON": Mode 1: Lighting on with max lighting output.

Mode 2: Lighting on with min lighting output.

2.4 Description of interconnecting cables

No.	Interface and name	Shielded or not	Specified length (mm)
1	Power supply line	Unshielded	200

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 less than 108 MHz.

2.7 Submitted Documents

Circuit diagram, user's manual and rating label.

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.

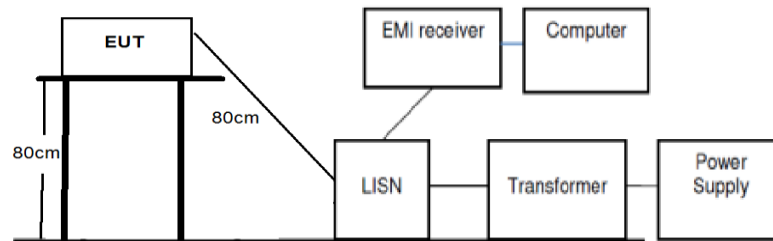
Refer to the related paragraph of this report.

The sequence of testing:

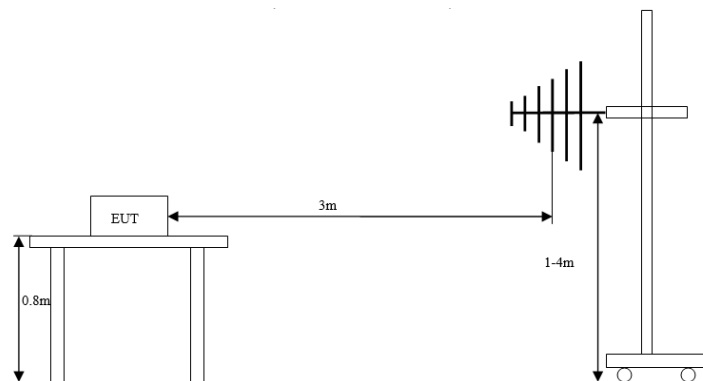
1. Conducted emission tests were performed on 2026-05-26.
2. Radiated emission tests were performed on 2026-05-20.

3.2 Equipment and cable arrangement

Block diagram for both conducted emission and radiated emission tests is as follows:



(Conducted emission)



(Radiated emission 30-1000 MHz)

Also refer to photographs on clause 6 for test setups for both conducted emission test and radiated emission tests.

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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

During tests, no special countermeasures was 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 up to 30 MHz

5.1.1 Conducted emission

Result:		Passed
Date of testing	: 2026-05-26	
Test procedure	: FCC 47 CFR Part 15, Subpart B:2024, ICES-005:2018, ANSI C63.4-2014 and CISPR 16-2-1	
Frequency range	: 0.15 – 30 MHz	
Limits	: Quasi-peak limit: 0.15 – 0.5 MHz, 66 to 56 dB μ V (decrease with the logarithm of frequency); 0.5 – 5 MHz, 56 dB μ V; 5 – 30 MHz, 60 dB μ V Average limit: 0.15 – 0.5 MHz, 56 to 46 dB μ V (decrease with the logarithm of frequency); 0.5 – 5 MHz, 46 dB μ V; 5 – 30 MHz, 50 dB μ V	
Bandwidth of EMI receiver for final measurement	: 9 kHz	
Measurement time for final measurement	: 1 s	
Kind of test site	: Shielded room	
Input voltage	: AC 120 V, 60 Hz	
Operational mode	: Lighting on with dimming, as defined in clause 2.3 (The EUT was measured with dimming function, only the worst case was recorded in the report respectively.)	
Ambient condition	: Temperature: 17.2 °C; Relative humidity: 46.8 %	
Expanded measurement uncertainty ($k=2$)	: 2.33 dB The minimum margin to the limit is 13.23 dB at 0.471750 MHz. The margin is higher than expanded measurement uncertainty.	
Test setup photo	: Photograph 1 of Attachment 3	

The measurement setup was made according to ANSI C63.4-2014 in a shielded room. The measurement equipment like test receivers, quasi-peak detector and artificial mains network (AMN) are in compliance with CISPR 16-1 series standards.

The tested object was set-up on a wooden support. The EUT was set 0.8 m away from the AMN. The cord longer than necessary to be connected to the AMN was folded forth and back parallel so as to form a bundle with a length between 0.3 m and 0.4 m. The disturbance voltage test was performed on the neutral line and phase line of the power supply of the EUT respectively.

The following figures and tables were measured by an automatic measuring system. Both quasi-peak and average measurements were performed. In the following spectral diagram, “*” means Quasi-Peak Value and “*” means Average Value results.

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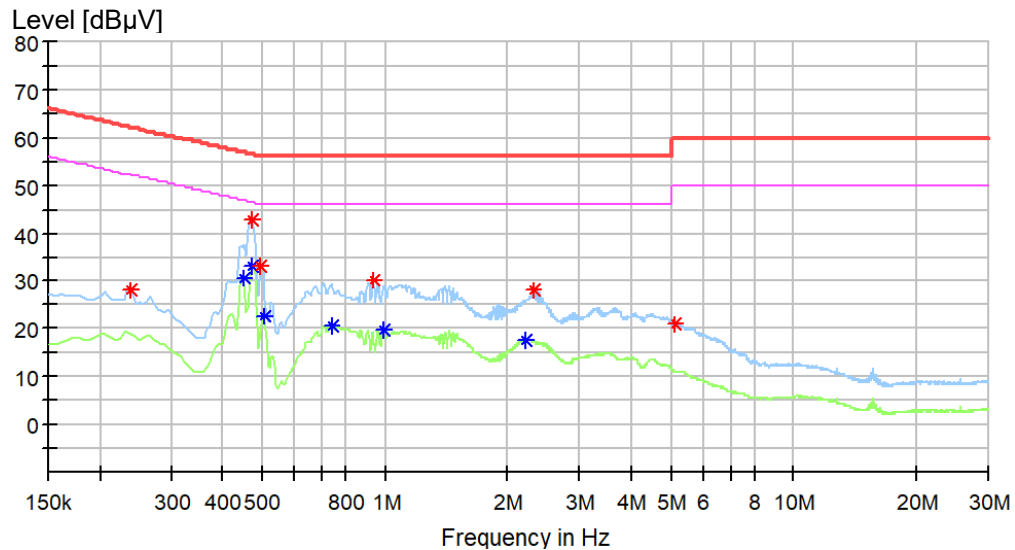
Notes on following tables of conducted emission results and conversions:

Level (dB μ V): final measurement results by using quasi-peak detector and average detector

Transd (dB): transducer factor including cable loss, insertion loss of artificial mains network and gain of pre-amplifier (if used)

Margin: Limit (dB μ V) - Level (dB μ V)

Figure 1: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L



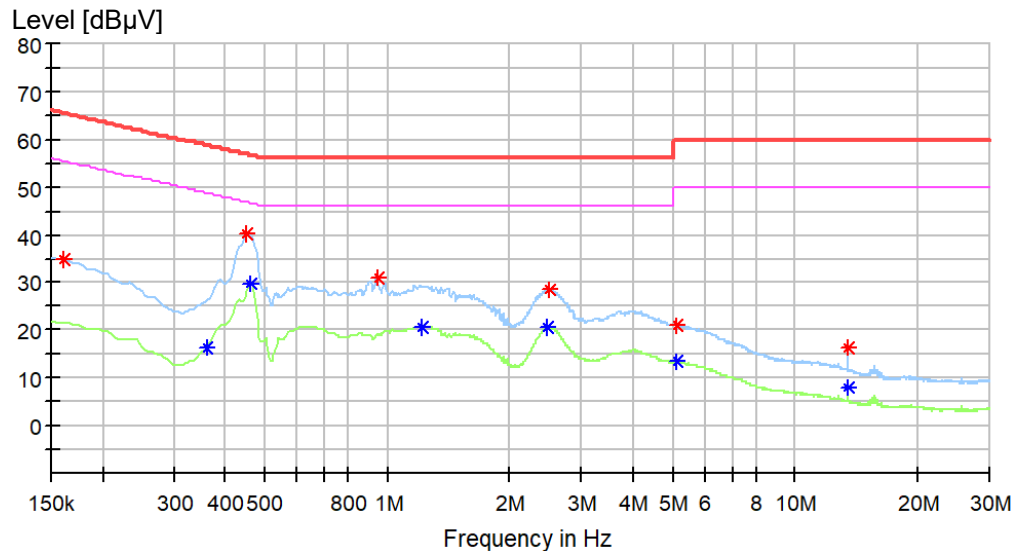
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.237750	28.20	62.17	33.97	L1	10.4
0.471750	42.73	56.48	13.75	L1	10.4
0.494250	33.17	56.10	22.92	L1	10.4
0.935250	30.03	56.00	25.97	L1	10.4
2.316750	28.06	56.00	27.94	L1	10.4
5.133750	20.89	60.00	39.11	L1	10.5

Final average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.449250	30.42	46.89	16.47	L1	10.4
0.471750	33.26	46.48	13.23	L1	10.4
0.503250	22.48	46.00	23.52	L1	10.4
0.737250	20.75	46.00	25.25	L1	10.4
0.989250	19.70	46.00	26.30	L1	10.4
2.217750	17.83	46.00	28.17	L1	10.4

Figure 2: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N



Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.161250	34.69	65.40	30.71	N	10.3
0.453750	40.28	56.81	16.52	N	10.3
0.944250	31.01	56.00	24.99	N	10.3
2.505750	28.51	56.00	27.49	N	10.4
5.133750	21.10	60.00	38.90	N	10.5
13.562250	16.39	60.00	43.61	N	10.9

Final average measurement result:

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.359250	16.53	48.75	32.21	N	10.3
0.462750	29.73	46.64	16.92	N	10.3
1.209750	20.73	46.00	25.27	N	10.3
2.469750	20.56	46.00	25.44	N	10.4
5.156250	13.25	50.00	36.75	N	10.5
13.562250	7.82	50.00	42.18	N	10.9

5.2 Emission in the Frequency Range above 30 MHz

5.2.1 Radiated emission (30-1000 MHz)

Result:	Passed
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Date of testing	: 2026-05-20
Test procedure	: FCC 47 CFR Part 15, Subpart B:2024, ICES-005:2018, ANSI C63.4-2014 and CISPR 16-2-3
Product classification	: Class B
Frequency range	: 30 – 1000 MHz (see Note 1)
Limits	: Quasi-peak limits (3 m distance): 30 – 88 MHz, 40 dB μ V/m; 88 – 216 MHz, 43.5 dB μ V/m; 216 – 1000 MHz, 46 dB μ V/m (see Note 2)
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	: AC 120 V, 60 Hz
Operational mode	: Lighting on with dimming, as defined in clause 2.3 (The EUT was measured with dimming function, only the worst case was recorded in the report respectively.)
Ambient condition	: Temperature: 17.4 °C; Relative humidity: 48.1 %
Expanded measurement uncertainty ($k=2$)	: 5.40 dB The minimum margin to the limit is 22.5 dB at 55.341250 MHz. The margin is higher than expanded measurement uncertainty.
Test setup photo	: Photograph 2 of Attachment 3

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.

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)

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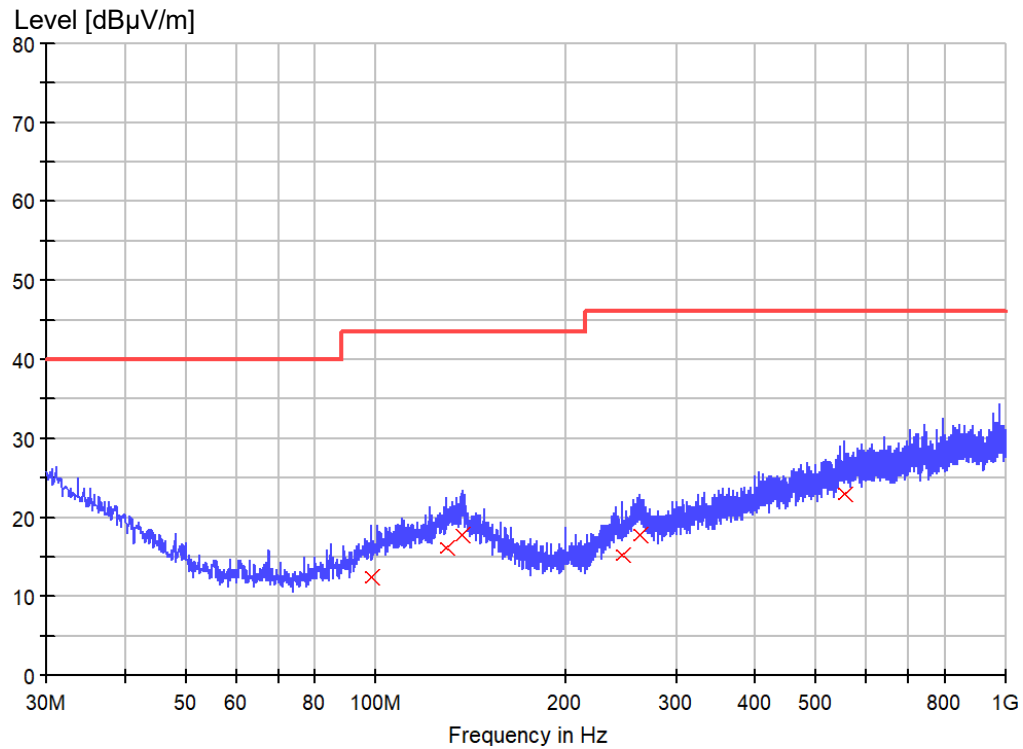
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Note 1: The highest frequency in the EUT is less than 108 MHz. According to FCC Part 15 subpart B §15.33 (b) (1), the upper frequency for radiated emission measurement is 1000 MHz.

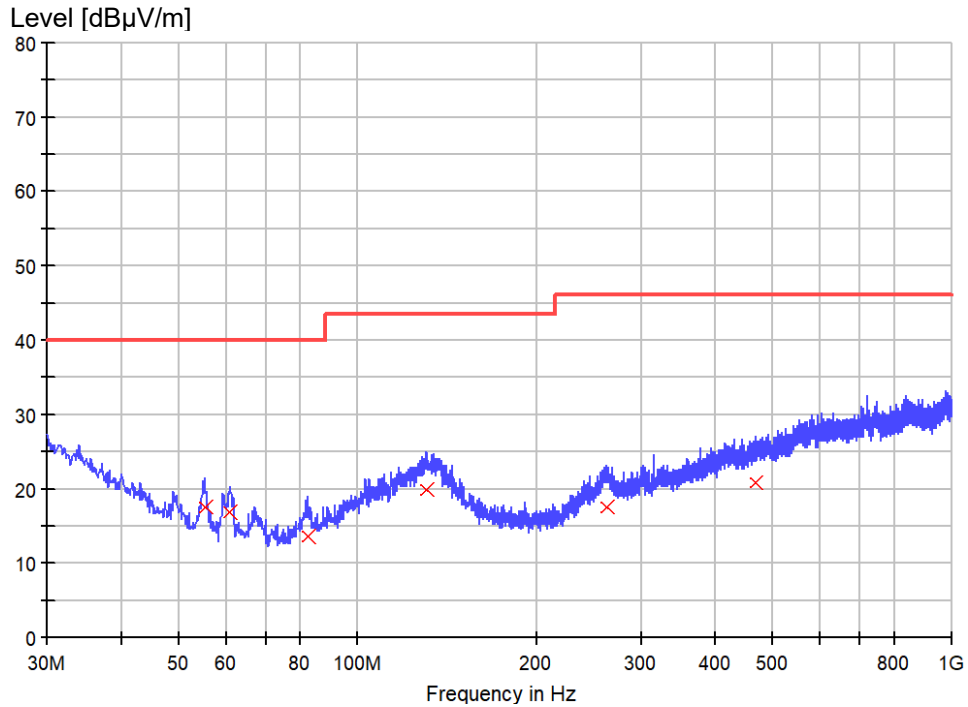
Note 2: The class B limits of ICES-005:2018 is stricter than those FCC 47 CFR Part 15, Subpart B:2024 for 3 m test distance. Therefore, the former limits are used in following figures and tables.

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


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)
98.263750	12.4	120.000	131.0	H	1.0	17.0	31.1	43.5
129.303750	16.2	120.000	178.0	H	110.0	18.6	27.4	43.5
136.821250	17.8	120.000	110.0	H	154.0	18.2	25.8	43.5
245.461250	15.3	120.000	136.0	H	23.0	19.2	30.7	46.0
262.678750	17.8	120.000	148.0	H	-98.0	21.6	28.2	46.0
554.648750	22.9	120.000	110.0	H	158.0	26.5	23.1	46.0

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



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)
55.341250	17.5	120.000	153.0	V	102.0	13.2	22.5	40.0
60.797500	16.9	120.000	104.0	V	138.0	12.6	23.1	40.0
82.380000	13.6	120.000	146.0	V	61.0	14.1	26.4	40.0
130.758750	19.8	120.000	190.0	V	-85.0	18.5	23.7	43.5
263.285000	17.4	120.000	155.0	V	-30.0	21.5	28.6	46.0
467.348750	20.8	120.000	139.0	V	36.0	24.7	25.2	46.0

6 Photographs of the Test Set-Up

Refer to the test setup file.

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7 List of Test and Measurement Instruments

Equip. no.	Equipment name	Model	Serial no.	Manufacturer	Cal. date	Due date
EMC-S-028	EMI measurement software	EMC32-E+ (10.60.20)	100150	Rohde & Schwarz	N/A	N/A
EMC-C-366	Thermohygrometer	608-H1	2485149174	testo	2025-07-11	2026-07-11
EMC-C-195	EMI test receiver	ESR3	102794	Rohde & Schwarz	2025-08-02	2026-08-02
EMC-C-190	Artificial mains network	ENV432	101514	Rohde & Schwarz	2025-09-02	2026-09-02
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	2026-05-19	2027-05-19
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