

Prüfbericht-Nr.: Test report no.:	CN257H0Q 001	Auftrags-Nr.: Order no.:	326068883	Seite 1 von 42 Page 1 of 42
Kunden-Referenz-Nr.: Client reference no.:	1288983	Auftragsdatum: Order date:	2024-12-16	
Auftraggeber: Client:	IKEA of Sweden AB Box 702, SE-343 81 Älmhult, Sweden			
Prüfgegenstand: Test item:	Self-ballasted LED lamps			
Bezeichnung / Typ-Nr.: Identification / Type no.:	LED2411G3NA			
Auftrags-Inhalt: Order content:	TÜV Rheinland EMC service			
Prüfgrundlage: Test specification:	FCC 47 CFR Part 15, Subpart B:2023 Class B ICES-005:2018 ICES-003:2020			
Wareneingangsdatum: Date of sample receipt:	2025-03-06	Refer to the EUT photos file		
Prüfmuster-Nr.: Test sample no.:	A003939748-015			
Prüfzeitraum: Testing period:	Refer to test report			
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:			
Datum: Date:	2025-05-08		Ausstellungsdatum: Issue date: 2025-05-08	
Stellung / Position:	Project engineer		Stellung / Position: Authorizer	
Sonstiges / Other:	FCC ID: FHO-LED2411G3NA Test Firm Name: TÜV Rheinland (Shanghai) Co., Ltd. Designation Number: CN1396 Test Firm Registration Number: 930979			
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. <i>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.</i>				

Prüfbericht-Nr.: CN257H0Q 001
Test report no.:

Seite 2 von 42
Page 2 of 42

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>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i>
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 115:2021, 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 115:2021, 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>

Prüfbericht - Nr.: CN257H0Q 001
Test Report No.:

Seite 3 von 42
Page 3 of 42

Revision history of test report:

Report number	Issue date	Contents and reason for change if appropriate
CN257H0Q 001	2025-05-08	Initial release.

Contents

1	TEST SITES	5
1.1	TEST FACILITIES.....	5
2	GENERAL PRODUCT INFORMATION	6
2.1	PRODUCT FUNCTION AND INTENDED USE	6
2.2	RATINGS AND SYSTEM DETAILS.....	6
2.3	INDEPENDENT OPERATION MODES.....	6
2.4	DESCRIPTION OF INTERCONNECTING CABLES	6
2.5	NOISE GENERATING AND NOISE SUPPRESSING PARTS	6
2.6	HIGHEST FREQUENCY GENERATED OR USED IN THE DEVICE OR ON WHICH THE DEVICE OPERATES OR TUNES ..	6
2.7	SUBMITTED DOCUMENTS.....	6
3	TEST SET-UP AND OPERATION MODES.....	7
3.1	PRINCIPLE OF CONFIGURATION SELECTION	7
3.2	EQUIPMENT AND CABLE ARRANGEMENT.....	7
3.3	TEST SOFTWARE	9
3.4	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	9
3.5	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	9
4	CONFORMITY DECISION RULE.....	10
5	TEST RESULTS EMISSION	11
5.1	EMISSION IN THE FREQUENCY RANGE UP TO 30 MHz	11
5.1.1	Conducted emission	11
5.2	EMISSION IN THE FREQUENCY RANGE ABOVE 30 MHz.....	21
5.2.1	Radiated emission (30-1000 MHz).....	21
5.2.2	Radiated Emission (1-18 GHz).....	31
6	PHOTOGRAPHS OF THE TEST SET-UP.....	40
7	LIST OF TEST AND MEASUREMENT INSTRUMENTS	41
8	LIST OF FIGURES.....	42

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 self-ballasted LED lamps for lighting and similar use. For the further information, refer to the user's manual.

2.2 Ratings and System Details

Rated input	: AC 120 V, 60 Hz, 37 mA
Rated power	: 3.3 W
RF IC	: SiMG301

2.3 Independent Operation Modes

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

The test mode as follows:

"On"

- Mode 1: Warm lighting with the max. lighting output.
- Mode 2: Warm lighting with the min. lighting output.
- Mode 3: White lighting with the max. lighting output.
- Mode 4: White lighting with the min. lighting output.

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 2480 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.

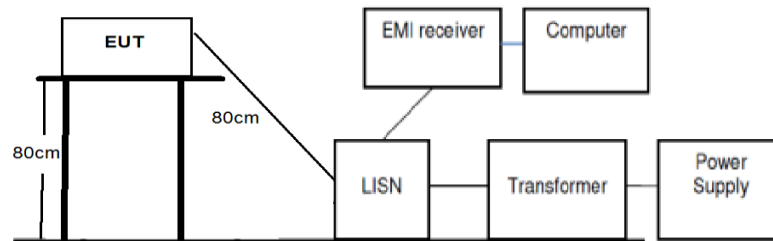
Refer to the related paragraph of this report.

The sequence of testing:

1. Conducted emission tests were performed on 2025-03-20.
2. Radiated emission tests were performed on 2025-03-24~2025-03-28.

3.2 Equipment and cable arrangement

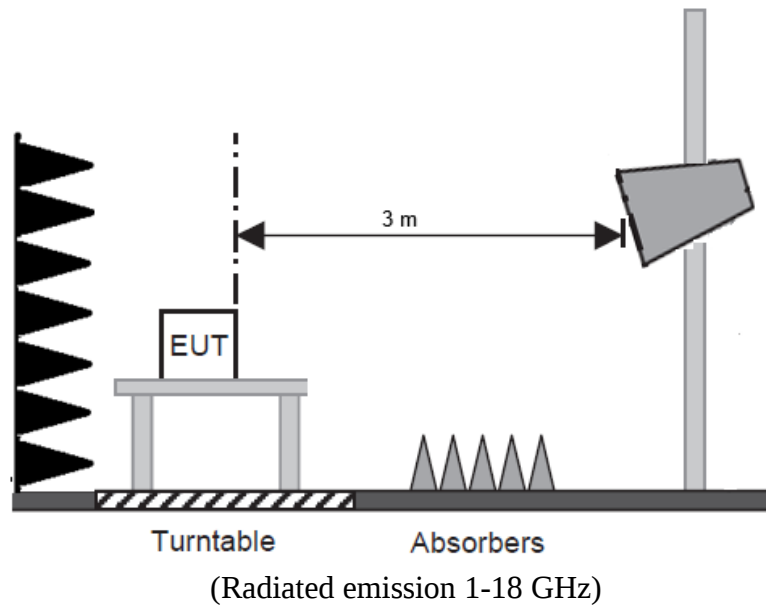
Block diagram for both conducted emission and radiated emission tests is as follows:



(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 test.

3.3 Test Software

The “Home” APP for iPhone was used during the tests.

3.4 Special Accessories and Auxiliary Equipment

During the tests, the following auxiliary equipment were used.

No.	Product	Model	Brand
1	Mobile phone	iPhone 15	Apple
2	Loudspeaker	HomePod mini	Apple
3	Remote control	E2489	IKEA

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 up to 30 MHz

5.1.1 Conducted emission

Result:		Passed
Date of testing	: 2025-03-20	
Test procedure	: FCC 47 CFR Part 15, Subpart B:2023, ICES-005:2018, ICES-003:2020, 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	: Mode 1: Warm lighting with the max. lighting output. Mode 2: Warm lighting with the min. lighting output. Mode 3: White lighting with the max. lighting output. Mode 4: White lighting with the min. lighting output.	
Ambient condition	: Temperature: 18.1 °C; Relative humidity: 52.1 %	
Expanded measurement uncertainty ($k=2$)	: 2.33 dB The minimum margin to the limit is 7.97 dB at 0.498750 MHz. The margin is higher than expanded measurement uncertainty.	

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.

Prüfbericht - Nr.: CN257H0Q 001

Test Report No.:

Seite 12 von 42

Page 12 of 42

The following figures and tables were those 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.

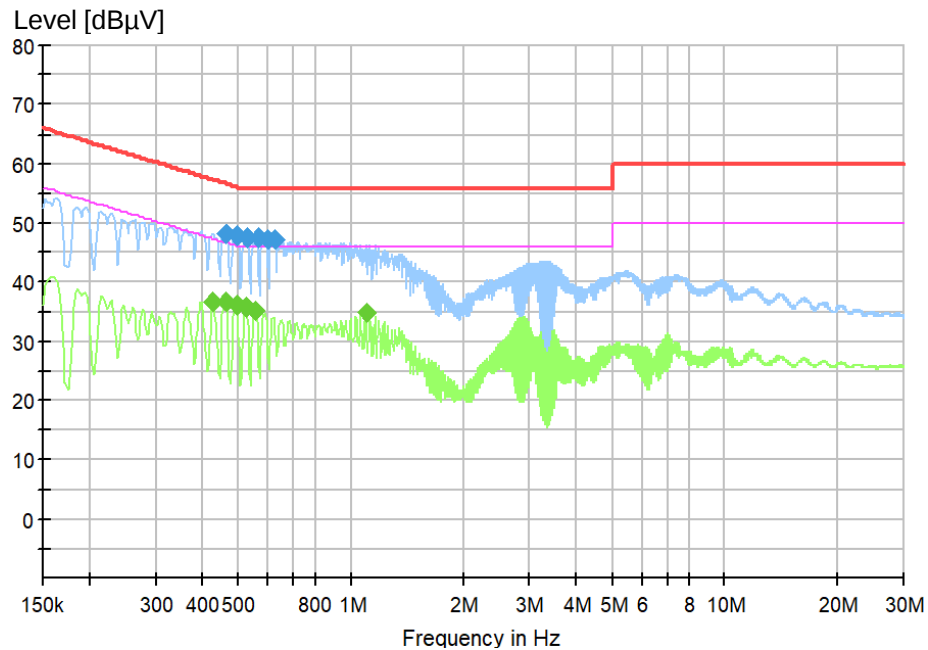
Notes on following tables of conducted emission results and conversions:

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, Mode 1



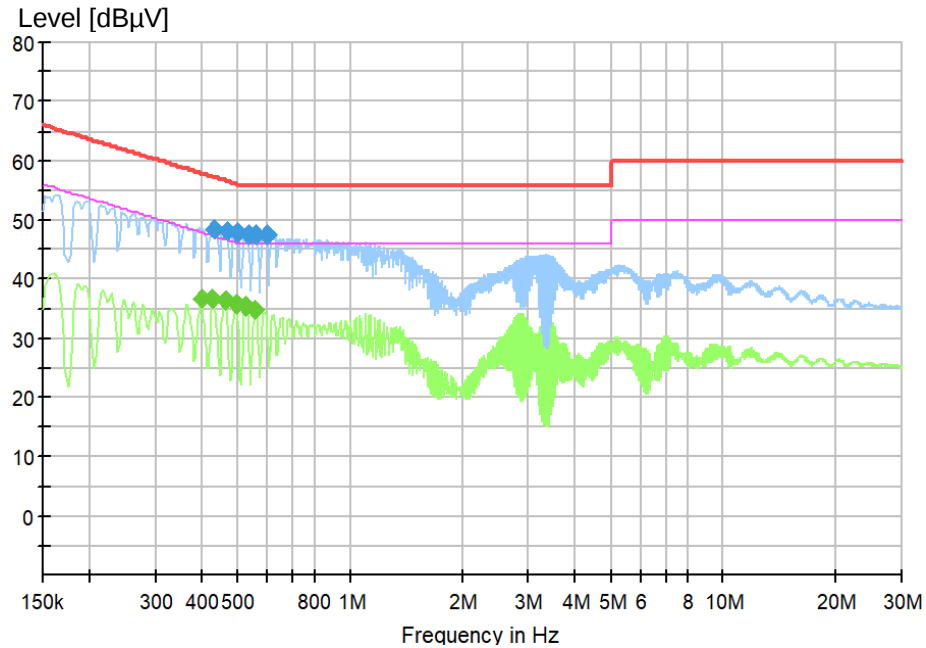
Final Quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.462750	48.02	56.64	8.62	1000.0	9.000	L1	10.3
0.496500	47.98	56.06	8.08	1000.0	9.000	L1	10.3
0.530250	47.65	56.00	8.35	1000.0	9.000	L1	10.3
0.564000	47.58	56.00	8.42	1000.0	9.000	L1	10.3
0.595500	47.36	56.00	8.64	1000.0	9.000	L1	10.3
0.629250	47.07	56.00	8.93	1000.0	9.000	L1	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.426750	36.81	47.32	10.50	1000.0	9.000	L1	10.3
0.460500	36.64	46.68	10.05	1000.0	9.000	L1	10.3
0.492000	36.07	46.13	10.06	1000.0	9.000	L1	10.3
0.521250	35.72	46.00	10.28	1000.0	9.000	L1	10.3
0.552750	35.10	46.00	10.90	1000.0	9.000	L1	10.3
1.095000	34.92	46.00	11.08	1000.0	9.000	L1	10.7

Figure 2: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 1



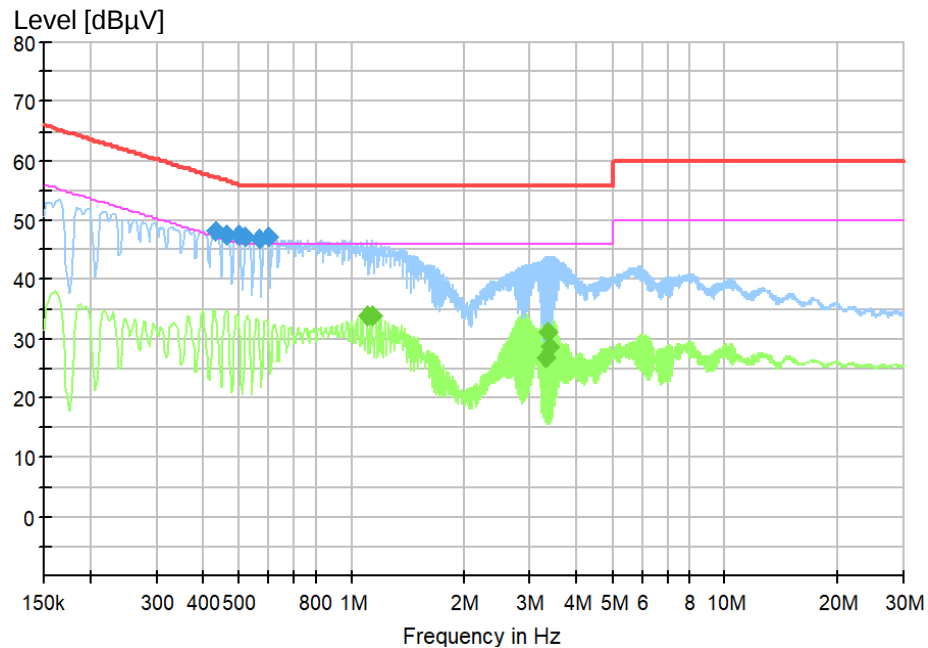
Final Quasi-peak measurement result:

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.397500	36.73	47.91	11.17	1000.0	9.000	N	10.3
0.429000	36.63	47.27	10.65	1000.0	9.000	N	10.3
0.460500	36.47	46.68	10.22	1000.0	9.000	N	10.3
0.492000	35.78	46.13	10.35	1000.0	9.000	N	10.2
0.523500	35.37	46.00	10.63	1000.0	9.000	N	10.2
0.555000	34.75	46.00	11.25	1000.0	9.000	N	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.397500	36.73	47.91	11.17	1000.0	9.000	N	10.3
0.429000	36.63	47.27	10.65	1000.0	9.000	N	10.3
0.460500	36.47	46.68	10.22	1000.0	9.000	N	10.3
0.492000	35.78	46.13	10.35	1000.0	9.000	N	10.2
0.523500	35.37	46.00	10.63	1000.0	9.000	N	10.2
0.555000	34.75	46.00	11.25	1000.0	9.000	N	10.3

Figure 3: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 2



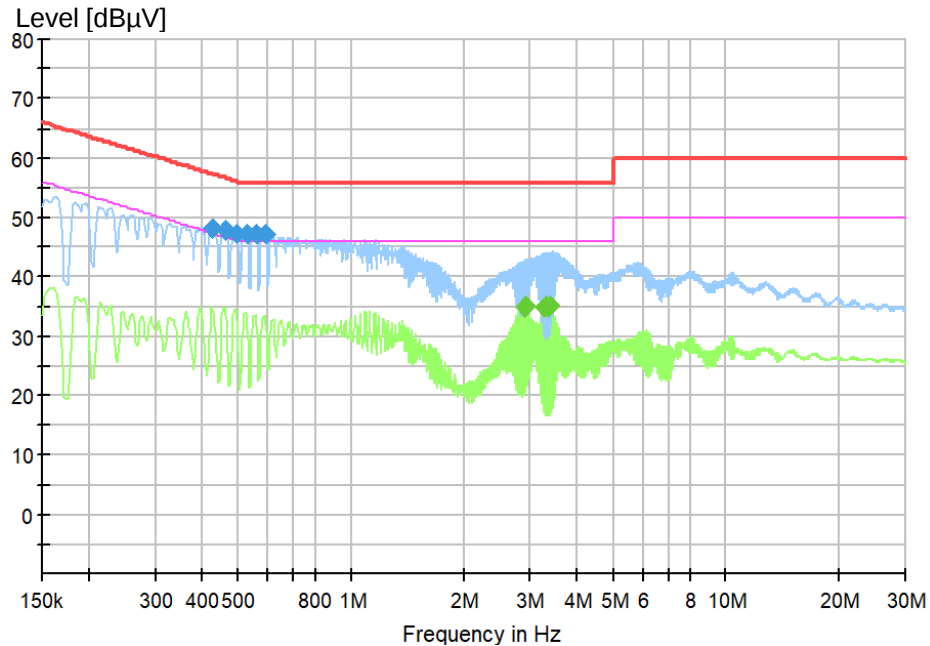
Final Quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.431250	48.27	57.23	8.96	1000.0	9.000	L1	10.3
0.462750	47.63	56.64	9.01	1000.0	9.000	L1	10.3
0.498750	47.66	56.02	8.36	1000.0	9.000	L1	10.3
0.519000	47.14	56.00	8.86	1000.0	9.000	L1	10.3
0.566250	46.76	56.00	9.24	1000.0	9.000	L1	10.3
0.597750	47.27	56.00	8.73	1000.0	9.000	L1	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
1.099500	33.84	46.00	12.16	1000.0	9.000	L1	10.6
1.131000	33.88	46.00	12.12	1000.0	9.000	L1	10.6
3.297750	26.82	46.00	19.18	1000.0	9.000	L1	10.2
3.329250	31.23	46.00	14.77	1000.0	9.000	L1	10.2
3.360750	31.10	46.00	14.90	1000.0	9.000	L1	10.2
3.394500	28.72	46.00	17.28	1000.0	9.000	L1	10.2

Figure 4: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 2



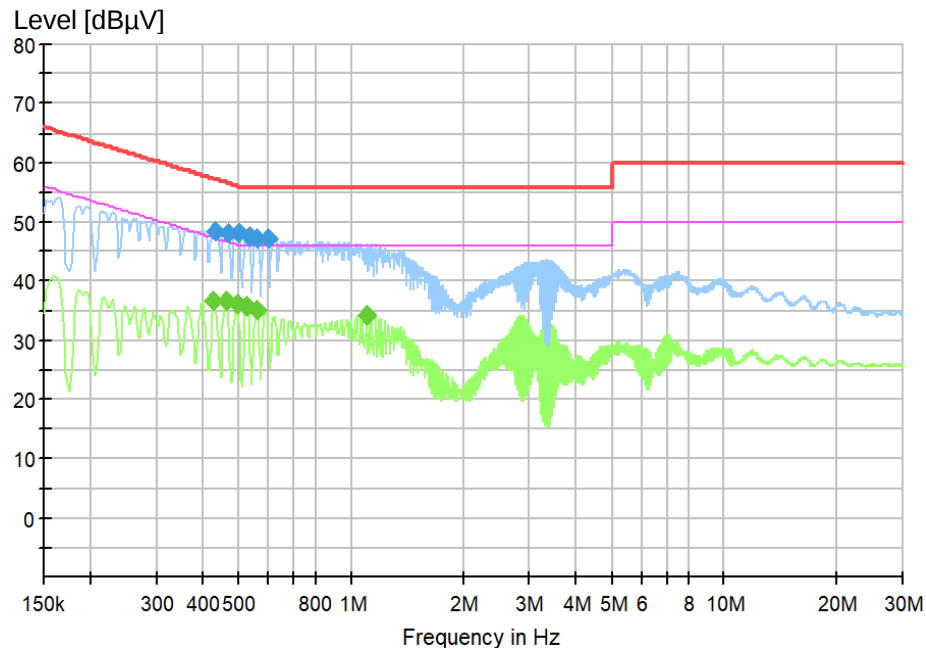
Final Quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.429000	48.17	57.27	9.10	1000.0	9.000	N	10.3
0.462750	47.73	56.64	8.91	1000.0	9.000	N	10.3
0.494250	47.26	56.10	8.84	1000.0	9.000	N	10.2
0.528000	47.24	56.00	8.76	1000.0	9.000	N	10.2
0.561750	47.19	56.00	8.81	1000.0	9.000	N	10.3
0.593250	47.19	56.00	8.81	1000.0	9.000	N	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
2.877000	34.88	46.00	11.12	1000.0	9.000	N	10.6
2.908500	35.07	46.00	10.93	1000.0	9.000	N	10.6
3.273000	34.91	46.00	11.09	1000.0	9.000	N	10.6
3.304500	35.19	46.00	10.81	1000.0	9.000	N	10.6
3.336000	34.94	46.00	11.06	1000.0	9.000	N	10.6
3.369750	35.13	46.00	10.87	1000.0	9.000	N	10.6

Figure 5: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 3



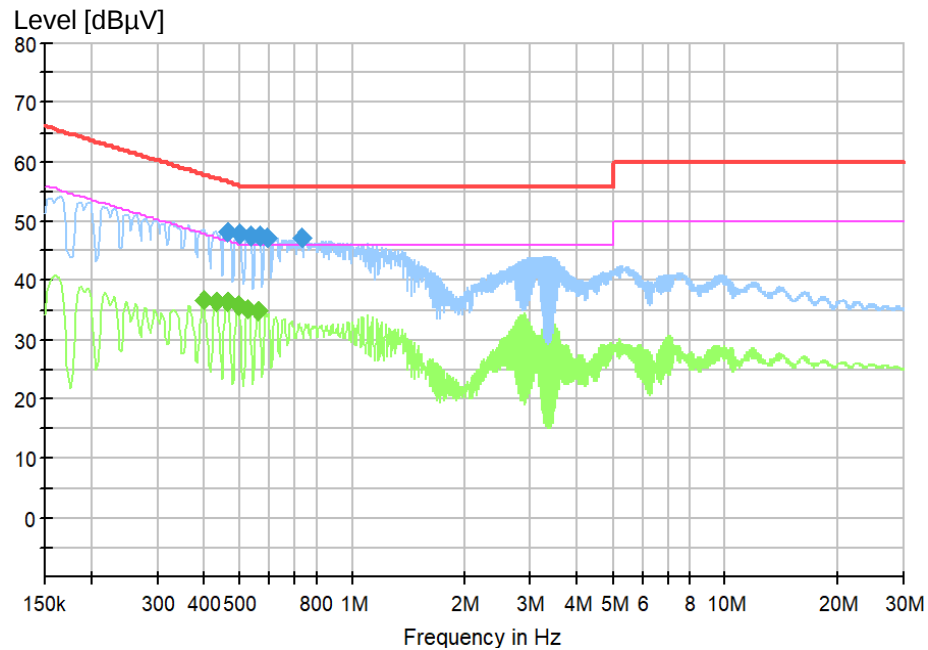
Final Quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.431250	48.40	57.23	8.83	1000.0	9.000	L1	10.3
0.465000	48.09	56.60	8.52	1000.0	9.000	L1	10.3
0.498750	48.06	56.02	7.97	1000.0	9.000	L1	10.3
0.532500	47.61	56.00	8.39	1000.0	9.000	L1	10.3
0.559500	47.25	56.00	8.75	1000.0	9.000	L1	10.3
0.597750	47.32	56.00	8.68	1000.0	9.000	L1	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.429000	36.70	47.27	10.57	1000.0	9.000	L1	10.3
0.460500	36.62	46.68	10.06	1000.0	9.000	L1	10.3
0.494250	36.01	46.10	10.08	1000.0	9.000	L1	10.3
0.523500	35.65	46.00	10.35	1000.0	9.000	L1	10.3
0.559500	35.01	46.00	10.99	1000.0	9.000	L1	10.3
1.097250	34.31	46.00	11.69	1000.0	9.000	L1	10.6

Figure 6: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 3



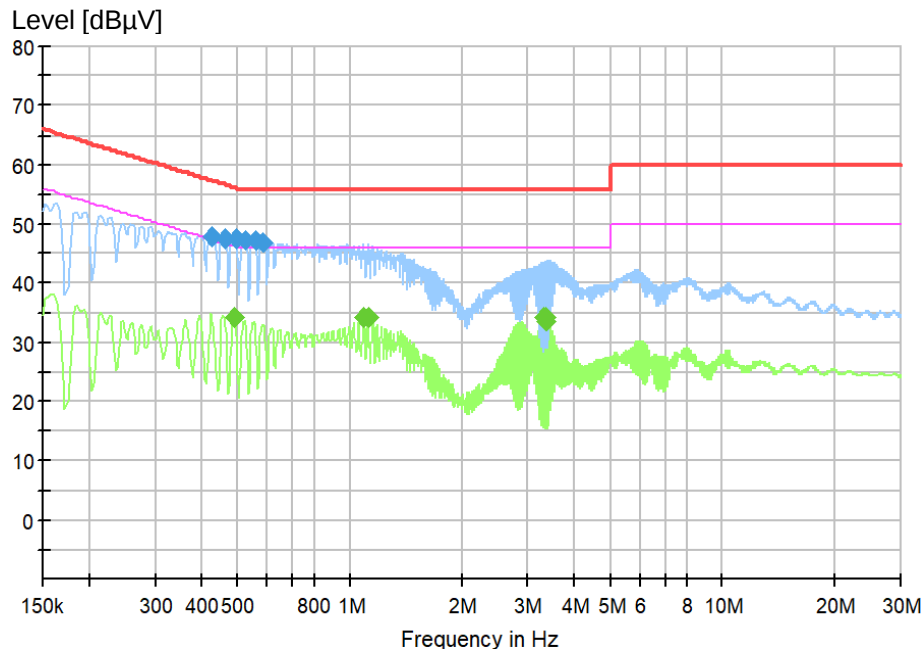
Final Quasi-peak measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.397500	36.66	47.91	11.25	1000.0	9.000	N	10.3
0.431250	36.47	47.23	10.76	1000.0	9.000	N	10.3
0.462750	36.40	46.64	10.24	1000.0	9.000	N	10.3
0.494250	35.69	46.10	10.40	1000.0	9.000	N	10.2
0.523500	35.22	46.00	10.78	1000.0	9.000	N	10.2
0.561750	34.77	46.00	11.23	1000.0	9.000	N	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.397500	36.66	47.91	11.25	1000.0	9.000	N	10.3
0.431250	36.47	47.23	10.76	1000.0	9.000	N	10.3
0.462750	36.40	46.64	10.24	1000.0	9.000	N	10.3
0.494250	35.69	46.10	10.40	1000.0	9.000	N	10.2
0.523500	35.22	46.00	10.78	1000.0	9.000	N	10.2
0.561750	34.77	46.00	11.23	1000.0	9.000	N	10.3

Figure 7: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 4



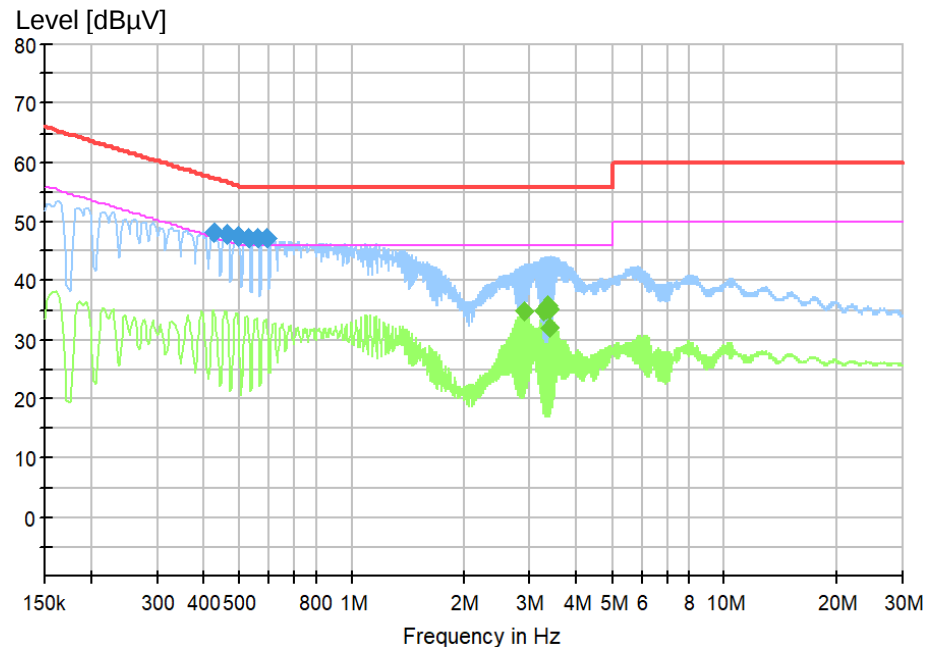
Final Quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.426750	47.98	57.32	9.34	1000.0	9.000	L1	10.3
0.460500	47.57	56.68	9.12	1000.0	9.000	L1	10.3
0.494250	47.62	56.10	8.48	1000.0	9.000	L1	10.3
0.525750	47.22	56.00	8.78	1000.0	9.000	L1	10.3
0.559500	47.09	56.00	8.91	1000.0	9.000	L1	10.3
0.586500	46.88	56.00	9.12	1000.0	9.000	L1	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.487500	34.29	46.21	11.92	1000.0	9.000	L1	10.3
1.088250	34.25	46.00	11.75	1000.0	9.000	L1	10.7
1.119750	34.12	46.00	11.88	1000.0	9.000	L1	10.6
3.295500	34.33	46.00	11.67	1000.0	9.000	L1	10.2
3.327000	33.69	46.00	12.31	1000.0	9.000	L1	10.2
3.358500	34.21	46.00	11.79	1000.0	9.000	L1	10.2

Figure 8: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 4



Final Quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.429000	48.17	57.27	9.10	1000.0	9.000	N	10.3
0.462750	47.71	56.64	8.94	1000.0	9.000	N	10.3
0.494250	47.41	56.10	8.69	1000.0	9.000	N	10.2
0.528000	47.21	56.00	8.79	1000.0	9.000	N	10.2
0.561750	47.16	56.00	8.84	1000.0	9.000	N	10.3
0.593250	47.13	56.00	8.87	1000.0	9.000	N	10.3

Final Average measurement result:

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
2.877000	34.98	46.00	11.02	1000.0	9.000	N	10.6
3.273000	34.93	46.00	11.07	1000.0	9.000	N	10.6
3.304500	35.01	46.00	10.99	1000.0	9.000	N	10.6
3.336000	35.69	46.00	10.31	1000.0	9.000	N	10.6
3.367500	35.08	46.00	10.92	1000.0	9.000	N	10.6
3.401250	32.21	46.00	13.79	1000.0	9.000	N	10.6

5.2 Emission in the Frequency Range above 30 MHz

5.2.1 Radiated emission (30-1000 MHz)

Result:	Passed
----------------	---------------

Date of testing	: 2025-03-24
Test procedure	: FCC 47 CFR Part 15, Subpart B:2023, ICES-005:2018, 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): 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)
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	: Mode 1: Warm lighting with the max. lighting output. Mode 2: Warm lighting with the min. lighting output. Mode 3: White lighting with the max. lighting output. Mode 4: White lighting with the min. lighting output.
Ambient condition	: Temperature: 22.5 °C; Relative humidity: 48.3 %
Expanded measurement uncertainty ($k=2$)	: 5.40 dB The minimum margin to the limit is 9.5 dB at 35.820000 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 was 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 those measured by an automatic measurement system. A preview test was firstly 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, “ $\times$ ” means quasi-peak test results.

Prüfbericht - Nr.: CN257H0Q 001

Test Report No.:

Seite 22 von 42

Page 22 of 42

Notes on following tables of radiated emission results and conversions:

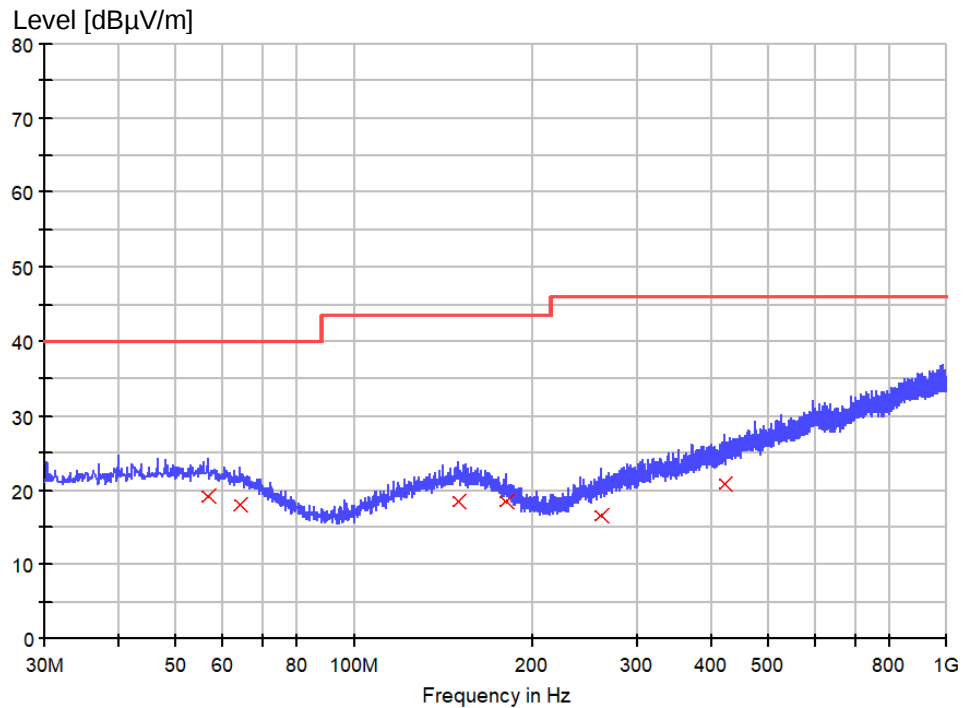
QuasiPeak (dB μ V/m): final measurement results by using quasi-peak detector

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)

Note: The class B limits of ICES-005:2018 is stricter than those FCC 47 CFR Part 15, Subpart B:2023 and ICES-003:2020 for 3 m test distance. Therefore, the former limits are used in following figures and tables.

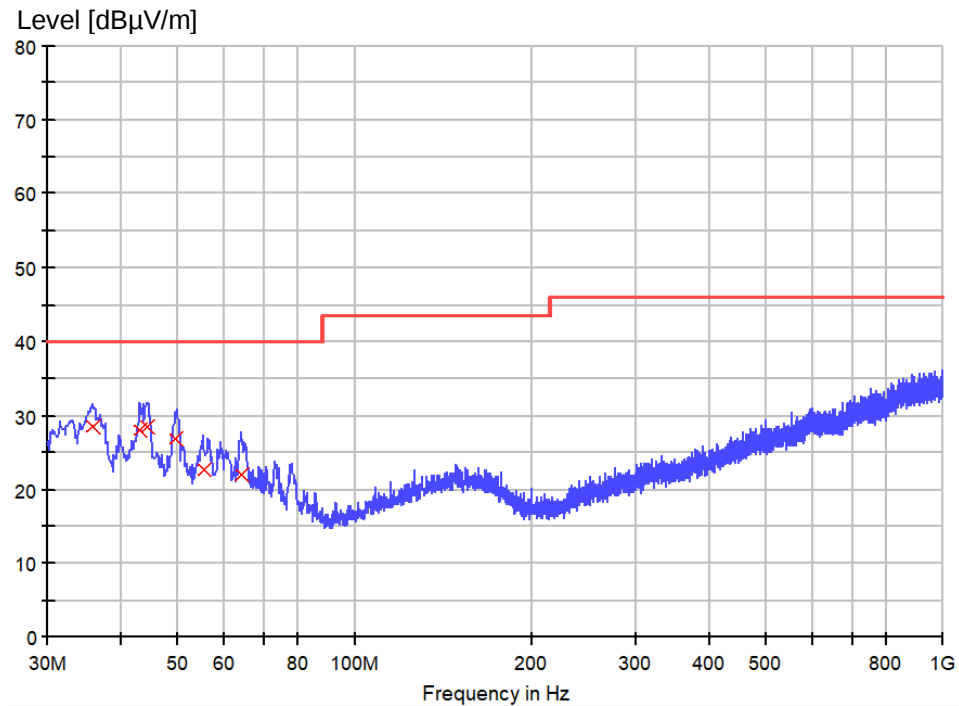
Figure 9: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 1



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)
56.432500	19.2	120.000	150.0	H	-71.0	14.1	20.9	40.0
64.192500	18.1	120.000	200.0	H	-39.0	13.3	21.9	40.0
149.552500	18.5	120.000	200.0	H	-142.0	14.4	25.0	43.5
179.743750	18.5	120.000	150.0	H	14.0	12.7	25.0	43.5
261.102500	16.7	120.000	150.0	H	-117.0	13.1	29.3	46.0
420.667500	20.7	120.000	150.0	H	43.0	17.5	25.3	46.0

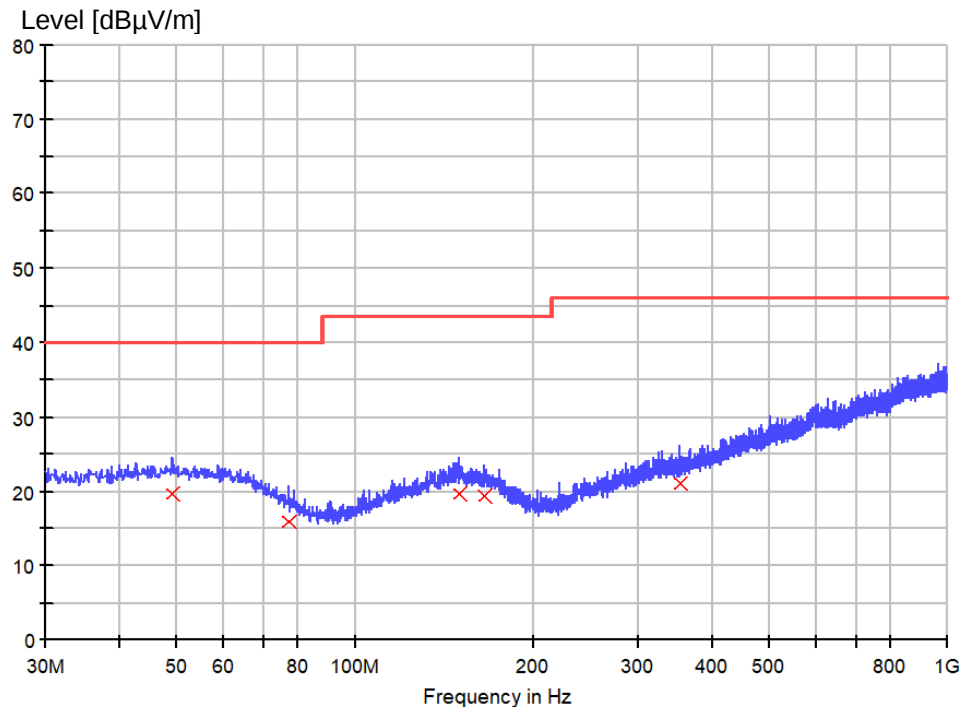
Figure 10: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 1



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)
35.698750	28.5	120.000	200.0	V	9.0	13.6	11.5	40.0
43.216250	28.1	120.000	200.0	V	-155.0	14.2	11.9	40.0
44.428750	28.5	120.000	150.0	V	-166.0	14.2	11.5	40.0
49.521250	26.8	120.000	100.0	V	-82.0	14.3	13.2	40.0
55.341250	22.8	120.000	150.0	V	59.0	14.1	17.2	40.0
64.071250	22.0	120.000	100.0	V	50.0	13.3	18.0	40.0

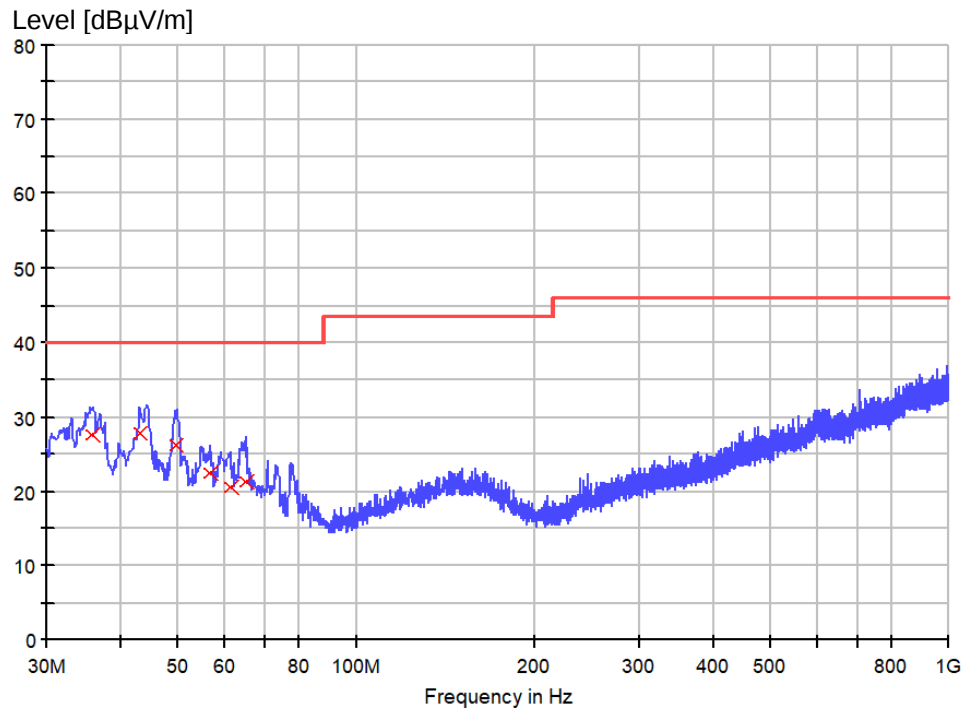
Figure 11: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 2



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)
49.278750	19.7	120.000	200.0	H	47.0	14.3	20.3	40.0
77.287500	15.8	120.000	100.0	H	7.0	10.6	24.2	40.0
150.158750	19.7	120.000	200.0	H	-101.0	14.4	23.8	43.5
164.951250	19.3	120.000	150.0	H	-28.0	14.2	24.2	43.5
354.222500	21.1	120.000	150.0	H	-119.0	15.7	24.9	46.0

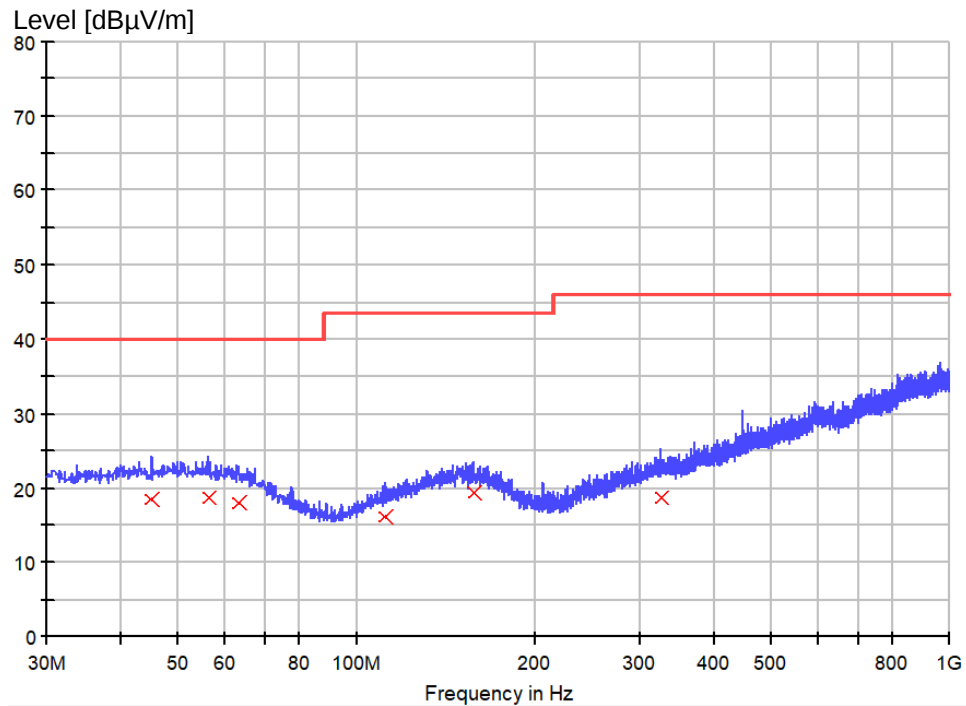
Figure 12: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 2



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)
35.941250	27.7	120.000	150.0	V	-107.0	13.7	12.3	40.0
43.216250	27.8	120.000	200.0	V	-106.0	14.2	12.2	40.0
49.400000	26.1	120.000	200.0	V	-118.0	14.3	13.9	40.0
56.432500	22.5	120.000	200.0	V	15.0	14.1	17.5	40.0
61.282500	20.6	120.000	100.0	V	-101.0	13.6	19.4	40.0
64.920000	21.3	120.000	100.0	V	-81.0	13.2	18.7	40.0

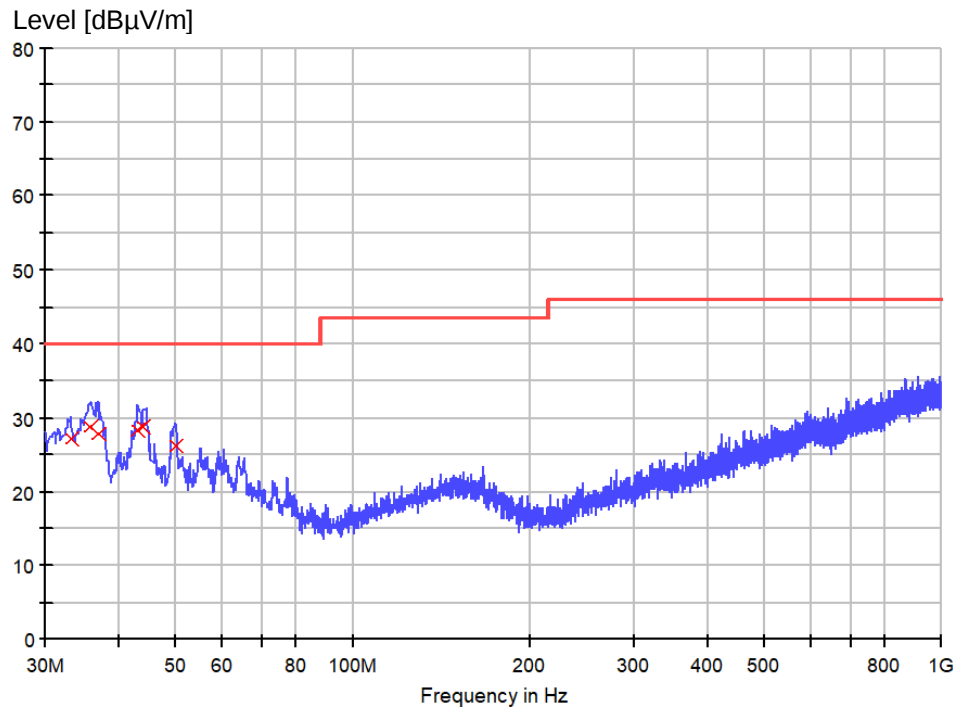
Figure 13: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 3



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)
45.156250	18.5	120.000	150.0	H	-17.0	14.2	21.5	40.0
56.068750	18.7	120.000	200.0	H	160.0	14.1	21.3	40.0
63.343750	18.0	120.000	150.0	H	57.0	13.4	22.0	40.0
111.358750	16.1	120.000	150.0	H	6.0	11.3	27.4	43.5
158.161250	19.5	120.000	100.0	H	-30.0	14.4	24.0	43.5
325.122500	18.6	120.000	100.0	H	-88.0	15.5	27.4	46.0

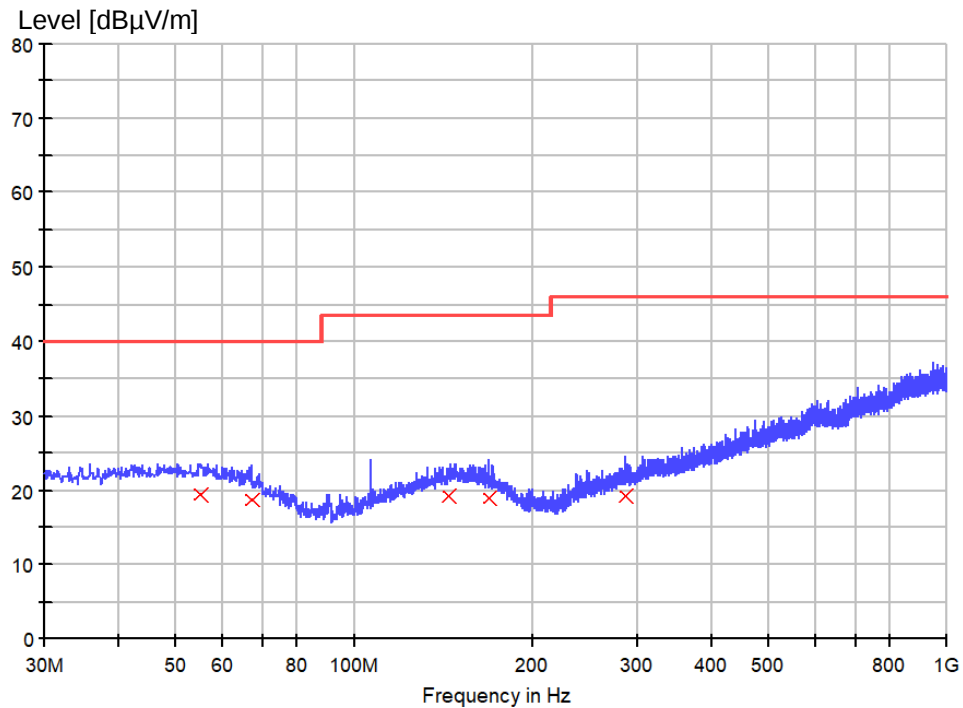
Figure 14: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 3



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)
33.152500	27.1	120.000	150.0	V	142.0	13.4	12.9	40.0
35.941250	28.7	120.000	200.0	V	-56.0	13.7	11.3	40.0
36.911250	27.8	120.000	150.0	V	103.0	13.7	12.2	40.0
43.216250	28.4	120.000	150.0	V	72.0	14.2	11.6	40.0
44.186250	28.8	120.000	200.0	V	2.0	14.2	11.2	40.0
49.763750	26.3	120.000	150.0	V	-52.0	14.3	13.7	40.0

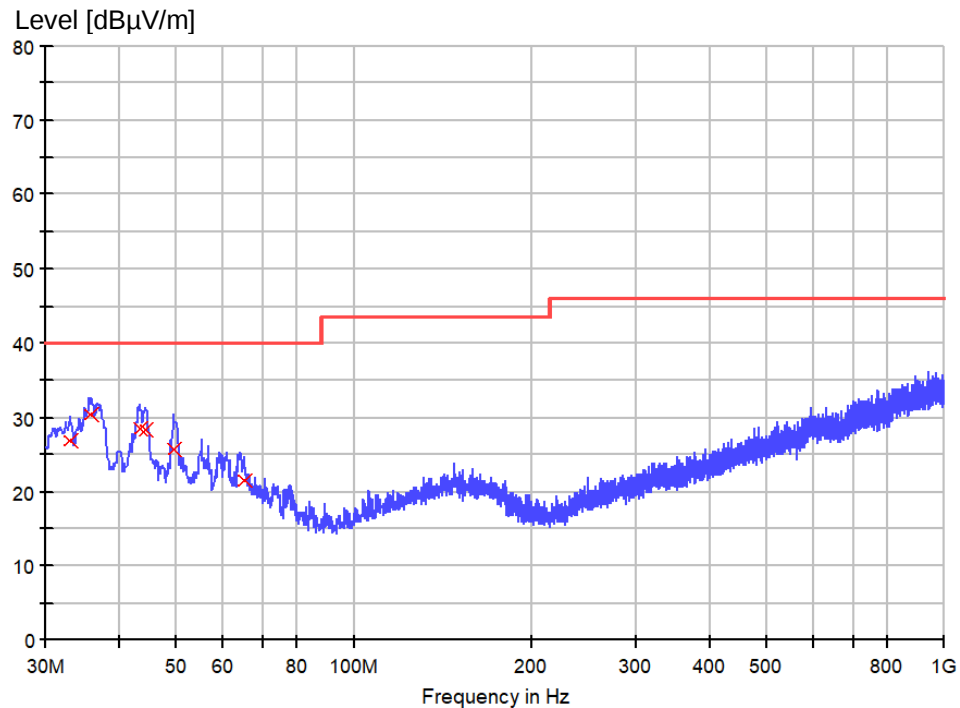
Figure 15: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 4



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)
54.856250	19.5	120.000	100.0	H	-160.0	14.1	20.6	40.0
66.860000	18.7	120.000	100.0	H	-41.0	12.9	21.3	40.0
144.338750	19.1	120.000	100.0	H	134.0	14.0	24.4	43.5
168.831250	18.9	120.000	150.0	H	-174.0	14.0	24.6	43.5
286.565000	19.2	120.000	200.0	H	-91.0	14.2	26.8	46.0

Figure 16: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 4



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)
32.910000	26.8	120.000	100.0	V	99.0	13.3	13.2	40.0
35.820000	30.5	120.000	100.0	V	-63.0	13.7	9.5	40.0
43.337500	28.6	120.000	200.0	V	65.0	14.2	11.4	40.0
44.307500	28.4	120.000	150.0	V	-88.0	14.2	11.6	40.0
49.521250	25.7	120.000	150.0	V	-159.0	14.3	14.3	40.0
65.162500	21.5	120.000	200.0	V	-152.0	13.1	18.5	40.0

5.2.2 Radiated Emission (1-18 GHz)

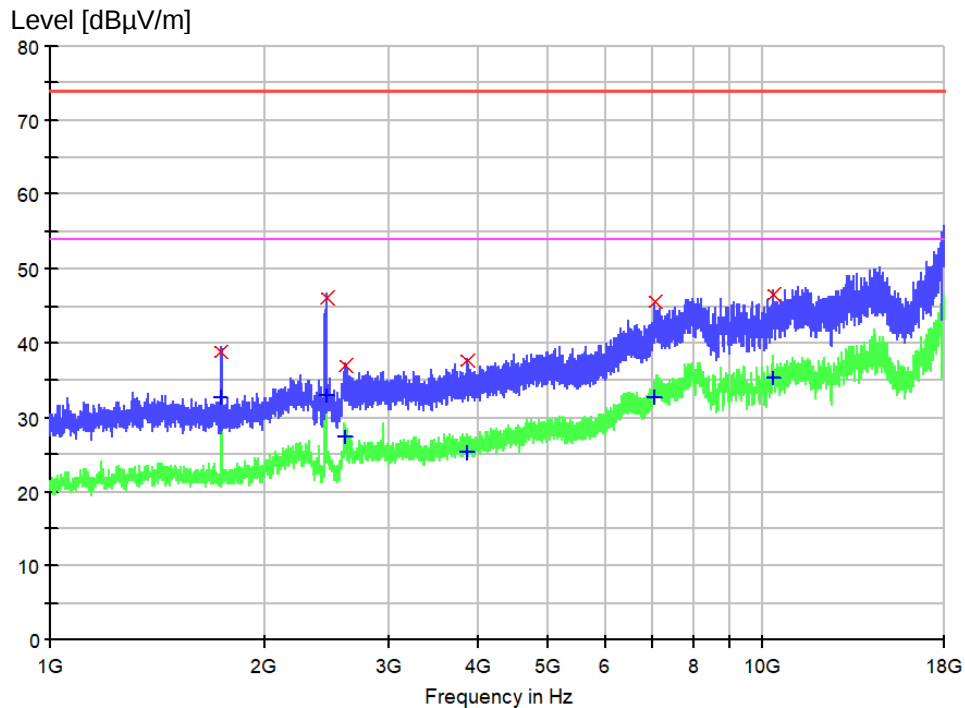
Result:
Passed

Date of testing	: 2025-03-28
Port	: Enclosure
Test procedure	: FCC 47 CFR Part 15, Subpart B:2023, ICES-005:2018, ICES-003:2020 and ANSI C63.4-2014 and CISPR 16-2-3
Product classification	: Class B
Limit	: Peak limits (3 m distance): 1–18 GHz, 74 dB μ V/m Average limits (3 m distance): 1–18 GHz, 54 dB μ V/m
Frequency range	: 1 – 18 GHz (see Note)
Kind of test site	: Semi-anechoic chamber with RF absorber material on the ground plane.
Test distance	: 3 m
Test voltage	: AC 120 V, 60 Hz
Operational mode	: Mode 1: Warm lighting with the max. lighting output. Mode 2: Warm lighting with the min. lighting output. Mode 3: White lighting with the max. lighting output. Mode 4: White lighting with the min. lighting output.
Earthing	: No earthing
Ambient condition	: Temperature: 17.3 °C; Relative humidity: 50.3 %
Expanded measurement uncertainty (k=2)	: 5.17 dB (1 GHz~6 GHz) 5.12 dB (6 GHz~18 GHz) The minimum margin to the limit is 14.8 dB at 14362.531250 MHz. The margin is higher than expanded measurement uncertainty.

The radiated disturbance test was carried out in the semi-anechoic chamber with RF absorber material on the ground plane. 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 supporting table. And the supporting table was rotated 360° around and the height of the antenna was 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 those measured by an automatic measurement system. The final test was performed with peak detector and average detector at those critical frequencies during the preview test. In the following figure, “×” and “+” means measurement results with peak detector and average detector.

Note: The highest frequency in the EUT is 2480 MHz. According to FCC Part 15 subpart B §15.33 (b) (1) and ICES-003:2020 table 3, the upper frequency for radiated emission measurement is 18 GHz.

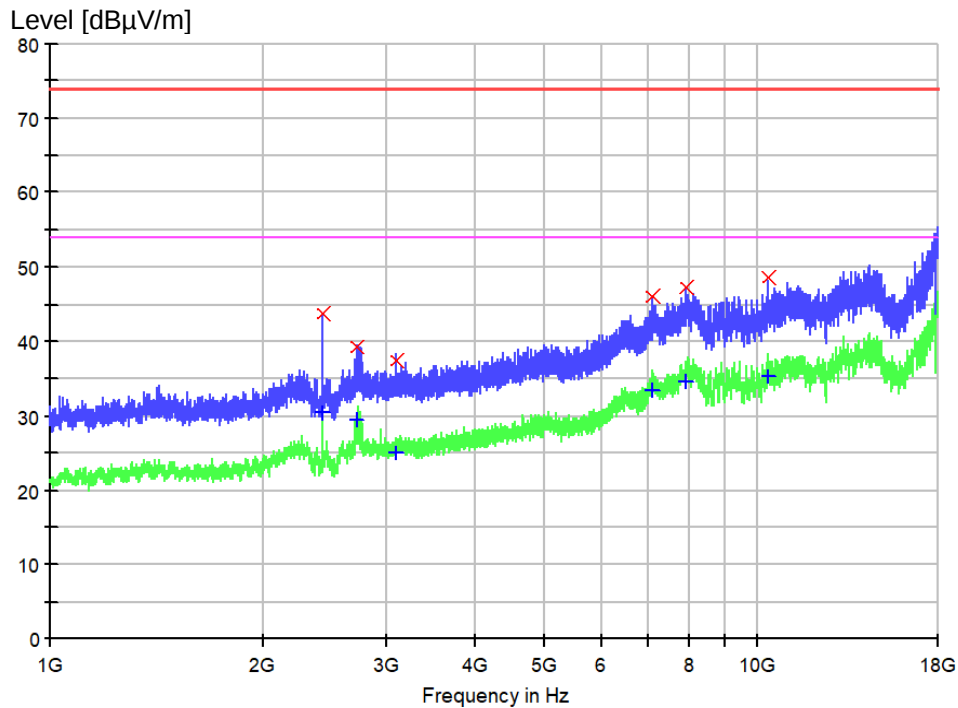
Figure 17: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 1

Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1736.843750	38.8	1000.0	1000.000	150.0	H	-48.0	-18.8	35.2	74.0
2439.156250	46.1	1000.0	1000.000	150.0	H	-10.0	-16.2	27.9	74.0
2595.343750	36.9	1000.0	1000.000	100.0	H	-68.0	-15.8	37.1	74.0
3843.781250	37.7	1000.0	1000.000	200.0	H	56.0	-13.7	36.3	74.0
7049.875000	45.5	1000.0	1000.000	150.0	H	66.0	-5.9	28.5	74.0
10363.281250	46.6	1000.0	1000.000	150.0	H	27.0	-2.7	27.4	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1736.843750	32.8	1000.0	1000.000	150.0	V	-48.0	-18.8	21.2	54.0
2439.156250	33.1	1000.0	1000.000	150.0	V	-10.0	-16.2	21.0	54.0
2595.343750	27.3	1000.0	1000.000	100.0	V	-68.0	-15.8	26.7	54.0
3843.781250	25.2	1000.0	1000.000	200.0	V	56.0	-13.7	28.8	54.0
7049.875000	32.7	1000.0	1000.000	150.0	V	66.0	-5.9	21.3	54.0
10363.281250	35.4	1000.0	1000.000	150.0	V	27.0	-2.7	18.6	54.0

Figure 18: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 1



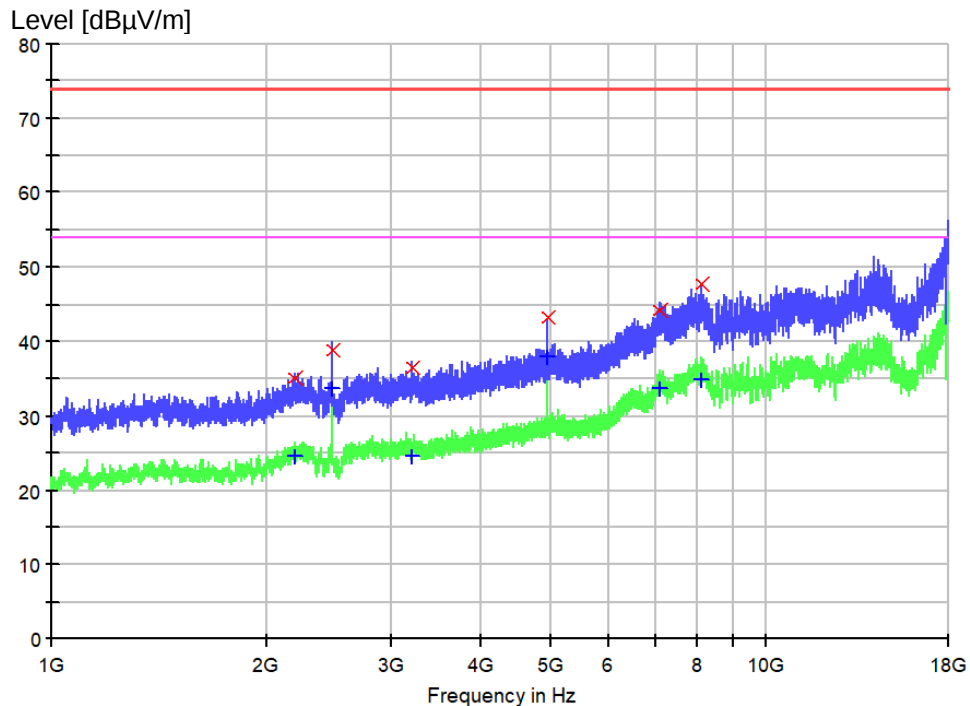
Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
2433.312500	43.7	1000.0	1000.000	200.0	V	-19.0	-16.1	30.3	74.0
2721.250000	39.4	1000.0	1000.000	200.0	V	93.0	-15.3	34.6	74.0
3091.000000	37.5	1000.0	1000.000	150.0	V	122.0	-14.8	36.5	74.0
7106.187500	46.1	1000.0	1000.000	200.0	V	-82.0	-5.2	27.9	74.0
7939.718750	47.2	1000.0	1000.000	150.0	V	-101.0	-3.7	26.8	74.0
10374.968750	48.6	1000.0	1000.000	100.0	V	-53.0	-2.7	25.4	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
2433.312500	30.5	1000.0	1000.000	200.0	V	-19.0	-16.1	23.5	54.0
2721.250000	29.5	1000.0	1000.000	200.0	V	93.0	-15.3	24.5	54.0
3091.000000	25.1	1000.0	1000.000	150.0	V	122.0	-14.8	28.9	54.0
7106.187500	33.5	1000.0	1000.000	200.0	V	-82.0	-5.2	20.5	54.0
7939.718750	34.7	1000.0	1000.000	150.0	V	-101.0	-3.7	19.3	54.0
10374.968750	35.4	1000.0	1000.000	100.0	V	-53.0	-2.7	18.7	54.0

Figure 19: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 2

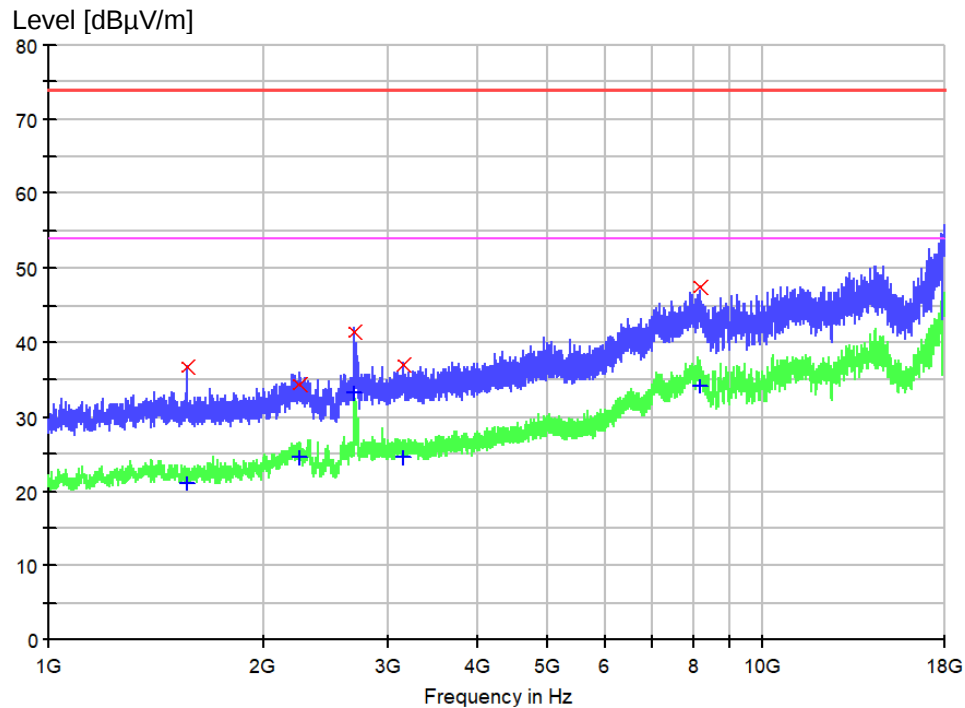


Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
2184.156250	35.1	1000.0	1000.000	150.0	H	-71.0	-15.9	38.9	74.0
2479.531250	38.9	1000.0	1000.000	200.0	H	103.0	-16.2	35.1	74.0
3206.812500	36.4	1000.0	1000.000	150.0	H	83.0	-14.7	37.6	74.0
4952.500000	43.2	1000.0	1000.000	150.0	H	157.0	-11.2	30.8	74.0
7106.718750	44.3	1000.0	1000.000	150.0	H	110.0	-5.2	29.7	74.0
8127.250000	47.7	1000.0	1000.000	200.0	H	-42.0	-4.2	26.3	74.0

Final average measurement result:

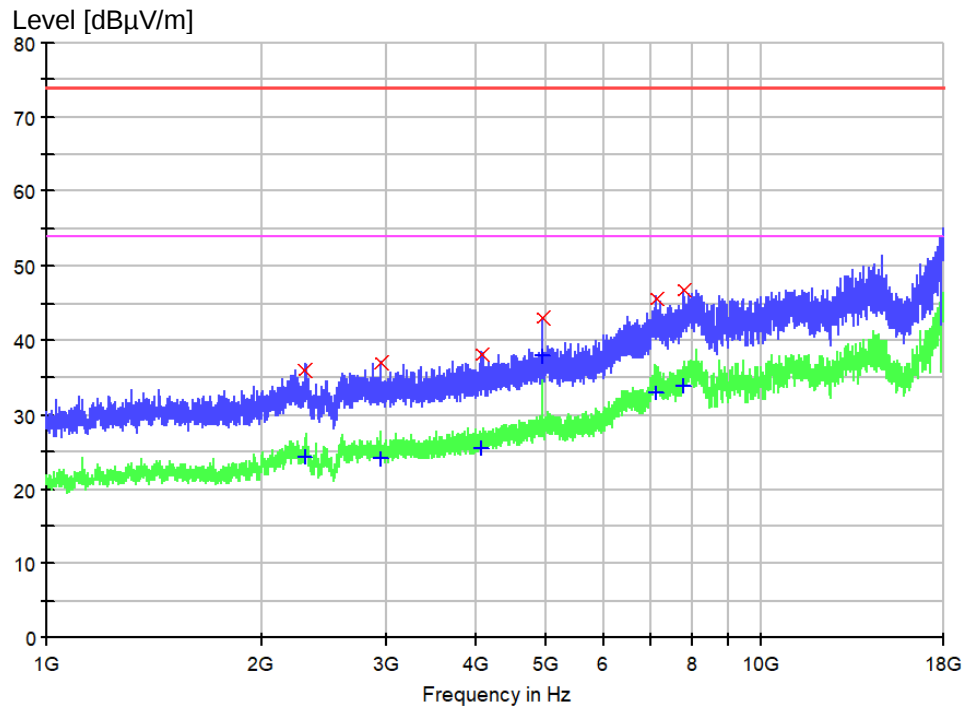
Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
2184.156250	24.5	1000.0	1000.000	150.0	H	-71.0	-15.9	29.5	54.0
2479.531250	33.8	1000.0	1000.000	200.0	H	103.0	-16.2	20.2	54.0
3206.812500	24.6	1000.0	1000.000	150.0	H	83.0	-14.7	29.4	54.0
4952.500000	38.0	1000.0	1000.000	150.0	H	157.0	-11.2	16.0	54.0
7106.718750	33.8	1000.0	1000.000	150.0	H	110.0	-5.2	20.2	54.0
8127.250000	34.8	1000.0	1000.000	200.0	H	-42.0	-4.2	19.2	54.0

Figure 20: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 2

Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1559.406250	36.8	1000.0	1000.000	200.0	V	56.0	-18.9	37.2	74.0
2243.125000	34.5	1000.0	1000.000	100.0	V	176.0	-15.6	39.5	74.0
2688.312500	41.3	1000.0	1000.000	100.0	V	-113.0	-15.4	32.7	74.0
3148.906250	37.1	1000.0	1000.000	150.0	V	154.0	-14.6	37.0	74.0
8177.718750	47.4	1000.0	1000.000	100.0	V	-19.0	-4.6	26.6	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1559.406250	21.0	1000.0	1000.000	200.0	V	56.0	-18.9	33.0	54.0
2243.125000	24.5	1000.0	1000.000	100.0	V	176.0	-15.6	29.5	54.0
2688.312500	33.2	1000.0	1000.000	100.0	V	-113.0	-15.4	20.9	54.0
3148.906250	24.6	1000.0	1000.000	150.0	V	154.0	-14.6	29.4	54.0
8177.718750	34.3	1000.0	1000.000	100.0	V	-19.0	-4.6	19.7	54.0

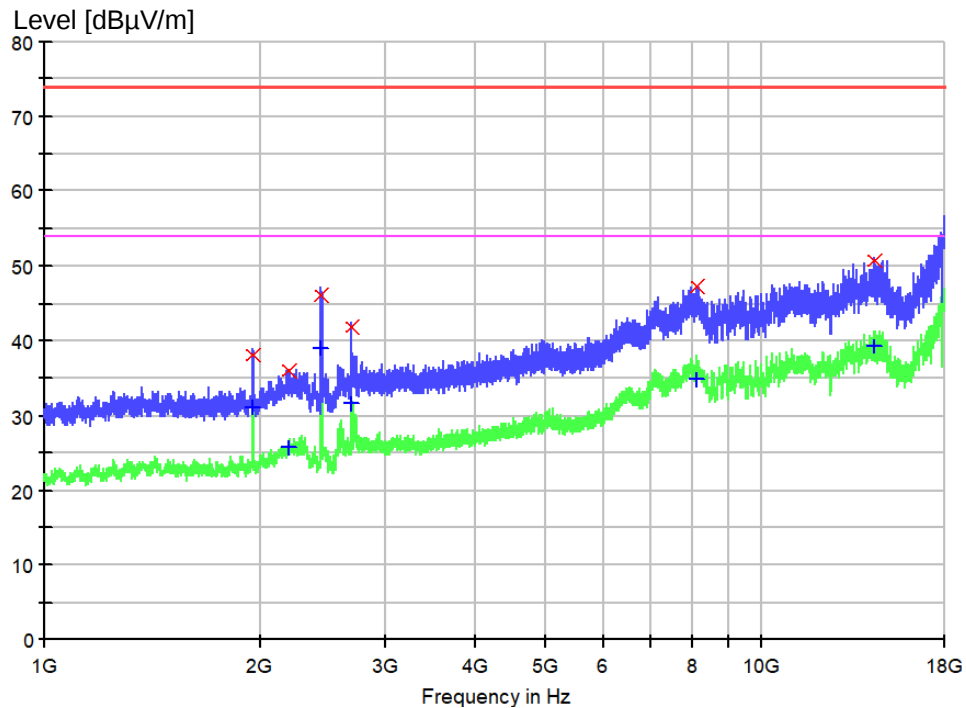
Figure 21: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 3

Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
2303.156250	36.1	1000.0	1000.000	100.0	H	-180.0	-15.8	37.9	74.0
2944.375000	37.0	1000.0	1000.000	200.0	H	178.0	-15.1	37.0	74.0
4077.000000	38.1	1000.0	1000.000	100.0	H	-152.0	-13.2	35.9	74.0
4952.500000	43.1	1000.0	1000.000	200.0	H	-166.0	-11.2	30.9	74.0
7127.968750	45.7	1000.0	1000.000	150.0	H	-53.0	-5.3	28.3	74.0
7795.750000	46.7	1000.0	1000.000	200.0	H	-20.0	-5.0	27.3	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
2303.156250	24.4	1000.0	1000.000	100.0	H	-180.0	-15.8	29.6	54.0
2944.375000	24.1	1000.0	1000.000	200.0	H	178.0	-15.1	29.9	54.0
4077.000000	25.4	1000.0	1000.000	100.0	H	-152.0	-13.2	28.6	54.0
4952.500000	38.0	1000.0	1000.000	200.0	H	-166.0	-11.2	16.0	54.0
7127.968750	33.1	1000.0	1000.000	150.0	H	-53.0	-5.3	20.9	54.0
7795.750000	33.9	1000.0	1000.000	200.0	H	-20.0	-5.0	20.1	54.0

Figure 22: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 3

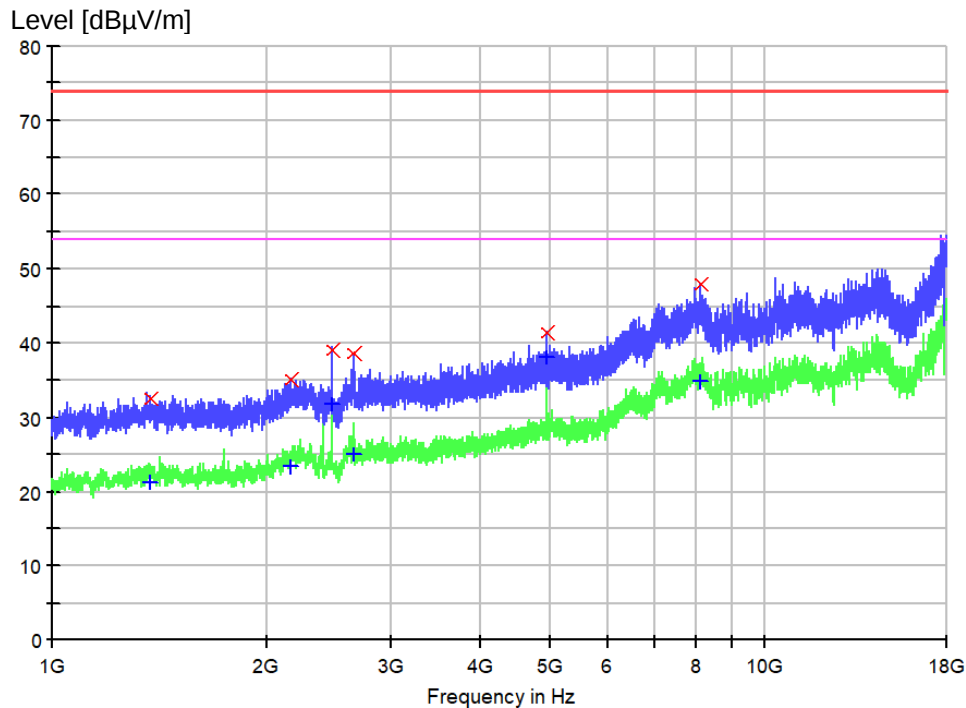


Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1955.187500	38.1	1000.0	1000.000	200.0	V	-57.0	-18.1	35.9	74.0
2185.750000	36.1	1000.0	1000.000	100.0	V	-101.0	-15.9	37.9	74.0
2435.968750	46.1	1000.0	1000.000	150.0	V	111.0	-16.2	27.9	74.0
2687.250000	41.9	1000.0	1000.000	150.0	V	-115.0	-15.4	32.1	74.0
8126.718750	47.2	1000.0	1000.000	150.0	V	137.0	-4.2	26.8	74.0
14362.531250	50.9	1000.0	1000.000	100.0	V	156.0	2.3	23.2	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1955.187500	31.2	1000.0	1000.000	200.0	V	-57.0	-18.1	22.8	54.0
2185.750000	25.7	1000.0	1000.000	100.0	V	-101.0	-15.9	28.3	54.0
2435.968750	39.1	1000.0	1000.000	150.0	V	111.0	-16.2	14.9	54.0
2687.250000	31.5	1000.0	1000.000	150.0	V	-115.0	-15.4	22.5	54.0
8126.718750	34.9	1000.0	1000.000	150.0	V	137.0	-4.2	19.1	54.0
14362.531250	39.2	1000.0	1000.000	100.0	V	156.0	2.3	14.8	54.0

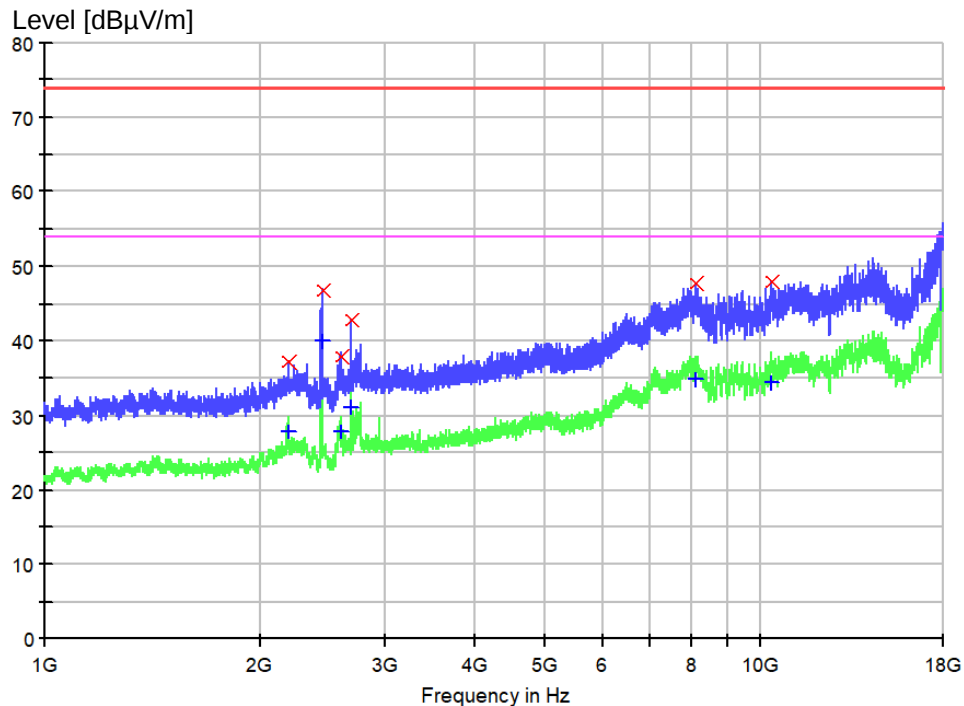
Figure 23: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 4

Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1376.656250	32.4	1000.0	1000.000	100.0	H	-110.0	-18.7	41.6	74.0
2169.281250	35.1	1000.0	1000.000	150.0	H	-171.0	-16.0	38.9	74.0
2480.062500	39.1	1000.0	1000.000	200.0	H	71.0	-16.2	34.9	74.0
2649.531250	38.6	1000.0	1000.000	150.0	H	-62.0	-15.6	35.4	74.0
4951.968750	41.4	1000.0	1000.000	200.0	H	119.0	-11.2	32.6	74.0
8110.781250	47.9	1000.0	1000.000	200.0	H	82.0	-4.1	26.1	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1376.656250	21.4	1000.0	1000.000	100.0	H	-110.0	-18.7	32.6	54.0
2169.281250	23.4	1000.0	1000.000	150.0	H	-171.0	-16.0	30.6	54.0
2480.062500	31.7	1000.0	1000.000	200.0	H	71.0	-16.2	22.3	54.0
2649.531250	24.9	1000.0	1000.000	150.0	H	-62.0	-15.6	29.1	54.0
4951.968750	38.1	1000.0	1000.000	200.0	H	119.0	-11.2	15.9	54.0
8110.781250	34.8	1000.0	1000.000	200.0	H	82.0	-4.1	19.3	54.0

Figure 24: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 4



Final peak measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
2186.281250	37.1	1000.0	1000.000	200.0	V	-20.0	-15.9	36.9	74.0
2439.687500	46.8	1000.0	1000.000	200.0	V	48.0	-16.2	27.2	74.0
2598.531250	37.8	1000.0	1000.000	100.0	V	-49.0	-15.8	36.2	74.0
2686.718750	42.9	1000.0	1000.000	200.0	V	-121.0	-15.4	31.1	74.0
8140.000000	47.7	1000.0	1000.000	150.0	V	107.0	-4.3	26.4	74.0
10397.281250	48.1	1000.0	1000.000	200.0	V	-45.0	-2.7	25.9	74.0

Final average measurement result:

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
2186.281250	27.8	1000.0	1000.000	200.0	V	-20.0	-15.9	26.2	54.0
2439.687500	40.1	1000.0	1000.000	200.0	V	48.0	-16.2	13.9	54.0
2598.531250	27.8	1000.0	1000.000	100.0	V	-49.0	-15.8	26.2	54.0
2686.718750	31.1	1000.0	1000.000	200.0	V	-121.0	-15.4	22.9	54.0
8140.000000	34.8	1000.0	1000.000	150.0	V	107.0	-4.3	19.2	54.0
10397.281250	34.5	1000.0	1000.000	200.0	V	-45.0	-2.7	19.5	54.0

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-C-195	EMI test receiver	ESR3	102794	Rohde & Schwarz	2024-08-03	2025-08-03
EMC-C-366	Thermohygrometer	608-H1	2485149174	testo	2024-07-26	2025-07-26
EMC-S-028	EMI measurement software	EMC32-E+ (10.60.20)	100150	Rohde & Schwarz	N/A	N/A
EMC-C-190	Artificial mains network	ENV432	101514	Rohde & Schwarz	2024-10-11	2025-10-11
EMC-C-066	EMI test receiver	ESCI	100280	Rohde & Schwarz	2024-10-17	2025-10-17
EMC-C-001	3 m semi-anechoic chamber	SAC3	FJ129002	Frankonia	2023-12-03	2026-12-03
EMC-S-032	EMI measurement software	EMC32-MEB (10.60.20)	100697	Rohde & Schwarz	N/A	N/A
EMC-C-373	Trilog broadband antenna	VULB 9168	1771	Schwarzbeck	2024-11-23	2025-11-23
EMC-C-121	Thermohygrometer	608-H1	1241320265	testo	2024-06-25	2025-06-25
EMC-C-176	Preamplifier	EMC184045SE	980596	EMCI Taiwan	2024-07-24	2025-07-24
EMC-C-019	Double ridged horn antenna	BBHA 9120 D	9120D-433	Schwarzbeck	2025-02-28	2026-02-28
EMC-C-175	Preamplifier	EMC051845SE	980612	EMCI Taiwan	2024-07-24	2025-07-24
EMC-C-161	Spectrum analyser	FSV40	101258	Rohde & Schwarz	2024-07-15	2025-07-15

8 List of Figures

Figure 1: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 1.....	13
Figure 2: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 1	14
Figure 3: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 2.....	15
Figure 4: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 2.....	16
Figure 5: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 3.....	17
Figure 6: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 3	18
Figure 7: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L, Mode 4.....	19
Figure 8: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N, Mode 4	20
Figure 9: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 1	23
Figure 10: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 1	24
Figure 11: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 2	25
Figure 12: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 2	26
Figure 13: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 3	27
Figure 14: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 3	28
Figure 15: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization, Mode 4	29
Figure 16: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization, Mode 4	30
Figure 17: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 1	32
Figure 18: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 1	33
Figure 19: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 2	34
Figure 20: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 2	35
Figure 21: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 3	36
Figure 22: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 3	37
Figure 23: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Horizontal polarization, Mode 4	38
Figure 24: Spectral Diagrams, Radiated Emission, 1 GHz – 18 GHz, Vertical polarization, Mode 4	39

End of test report