Prüfbericht-Nr.: *Test report no.*:	**CN23Q0C8 001**	**Auftrags-Nr.:** *Order no.*:	**244492092**	**Seite 1 von 40** *Page 1 of 40*
Kunden-Referenz-Nr.: *Client reference no.*:	**1288983**	**Auftragsdatum:** *Order date:*	**2022-11-01**	

Auftraggeber: *Client*:	**IKEA of Sweden AB** Box 702, SE-343 81 Älmhult, Sweden
Prüfgegenstand: *Test item*:	**TRIXIG Battery Pack**
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	**ICBL10.8-16-USBC-P1**
Auftrags-Inhalt: *Order content*:	**TÜV Rheinland EMC service**
Prüfgrundlage: *Test specification*:	**FCC 47 CFR Part 15, Subpart B:2021 Class B** **ICES-003:2020**

Wareneingangsdatum: *Date of sample receipt*:	**2022-10-30~2023-02-06**	Refer to the EUT photos file
Prüfmuster-Nr.: *Test sample no:*	**A003366654-011** **A003362716-041** **A003409310-005** **A003409310-006**	
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:*	Jessie Xu	**genehmigt von:** *authorized by*:	Xiaoyi Zhou
Datum: *Date:* 2023-07-30		**Ausstellungsdatum:** *Issue date:* 2023-07-30	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges /
Other: FCC ID: FHOICBL10816USBC1
Test Firm Registration Number: 958801

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*

V05

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. *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.*
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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. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen 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 bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. 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.

TEST SUMMARY

5.1.1 CONDUCTED EMISSION
Result:
Passed

5.2.1 RADIATED EMISSION (30-1000 MHz)
Result:
Passed

Contents

1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland (Shanghai) Co., Ltd.
Address: No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, 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 battery pack for household and similar use. For the further information, refer to the user's manual.

2.2 Ratings and System Details

Rated input voltage : DC 12 V
Protection class : III
Identities and difference**:** Above model has two kinds of pack cell, and each battery pack has two configurations. Therefore, the EMC tests were performed on the sample 1#, sample 2#, sample 3# and sample 4#.

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

Circuit diagrams, user's manuals and labels.

3 Test Set-up and Operation Modes

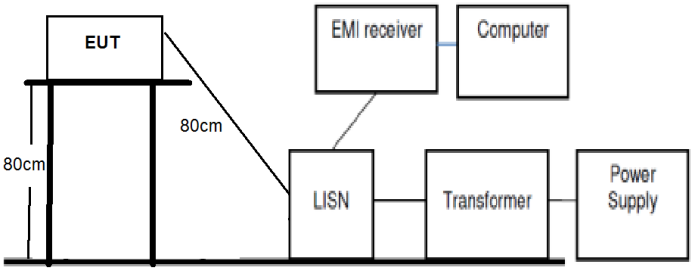
3.1 Principle of Configuration Selection

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.

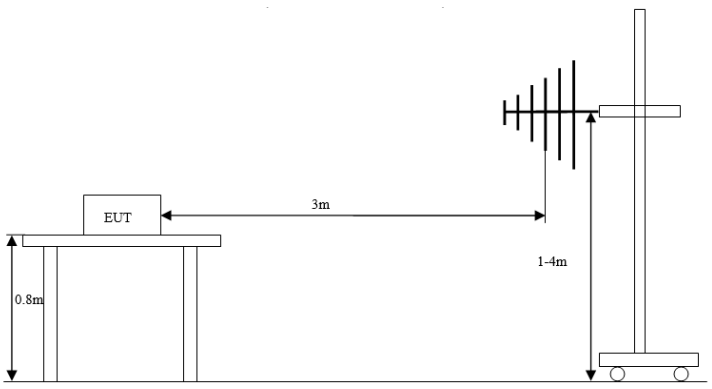
Refer to the related paragraph of this report.
The sequence of testing:
1. Radiated emission tests were performed on 2022-11-22~2023-03-01;
2. Conducted emission tests were performed on 2023-02-27.

3.2 Equipment and cable arrangement

Block diagrams for conducted emission and radiated emission tests are as follows:



(Conducted emission)



(Radiated emission 30-1000 MHz)

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

3.3 Test Software

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

3.4 Special Accessories and Auxiliary Equipment

During the tests, a battery charger was used for charging mode, a 12 V cordless drill was used for discharging mode.

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 E M I S S I O N

5.1 Emission in the Frequency Range up to 30 MHz

5.1.1 Conducted Emission

Result:	**Passed**

Date of testing	:	2023-02-27
Test procedure	:	FCC 47 CFR Part 15, Subpart B:2021, 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 dBµV (decrease with the logarithm of frequency); 0.5 – 5 MHz, 56 dBµV; 5 – 30 MHz, 60 dBµV Average limit: 0.15 – 0.5 MHz, 56 to 46 dBµV (decrease with the logarithm of frequency); 0.5 – 5 MHz, 46 dBµV; 5 – 30 MHz, 50 dBµV
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 for battery charger on charging mode
Operational mode	:	Charging mode
Ambient condition	:	Temperature: 22.3 °C; Relative humidity: 41.3 %
Expanded measurement uncertainty (k=2)	:	3.39 dB

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.

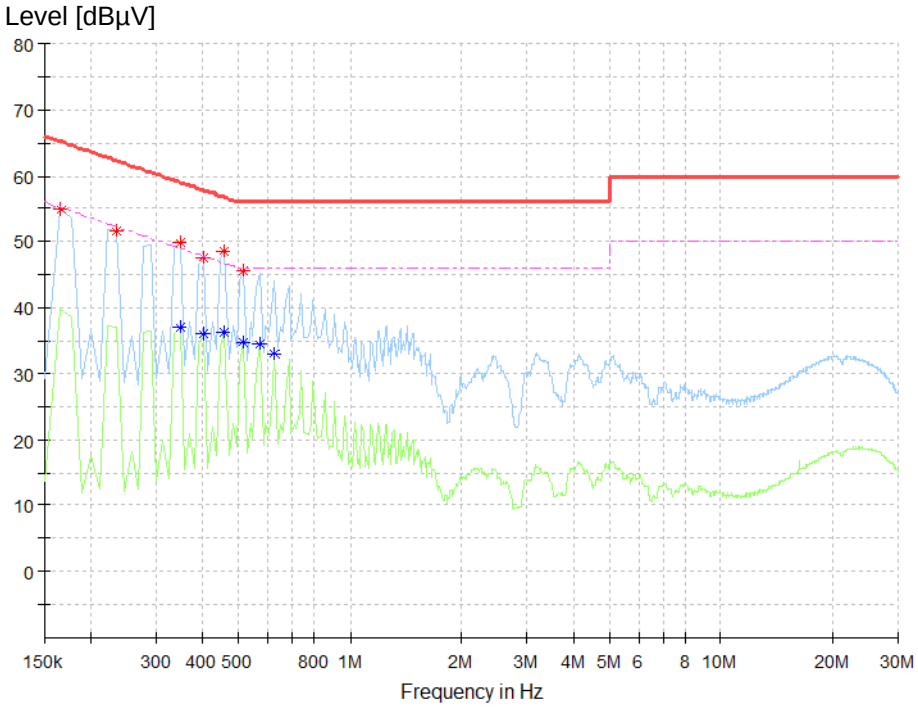
The following figures and tables were those measured by an automatic measuring system. Both quasi-peak and average measurements were performed. In the following spectral diagram, "✳" means Quasi-Peak Value and "✳" means Average Value results.

Notes on following tables of conducted emission results and conversions:

Level (dBµV): 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 (dBµV) - Level (dBµV)

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



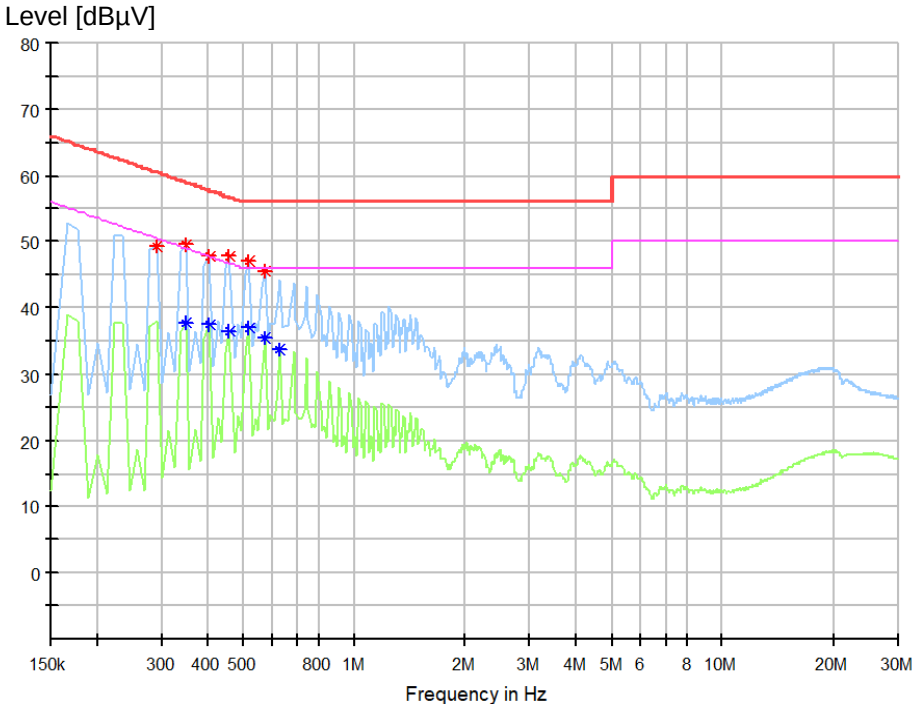
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.515625	45.47	56.00	10.53	L1
0.403125	47.68	57.79	10.11	L1
0.459375	48.52	56.70	8.18	L1
0.346875	49.72	59.04	9.32	L1
0.234375	51.60	62.29	10.69	L1
0.166875	54.87	65.12	10.24	L1

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.515625	34.78	46.00	11.22	L1
0.628125	33.06	46.00	12.94	L1
0.571875	34.46	46.00	11.54	L1
0.346875	36.94	49.04	12.10	L1
0.403125	35.90	47.79	11.89	L1
0.459375	36.23	46.70	10.47	L1

Figure 2: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N with sample 1#



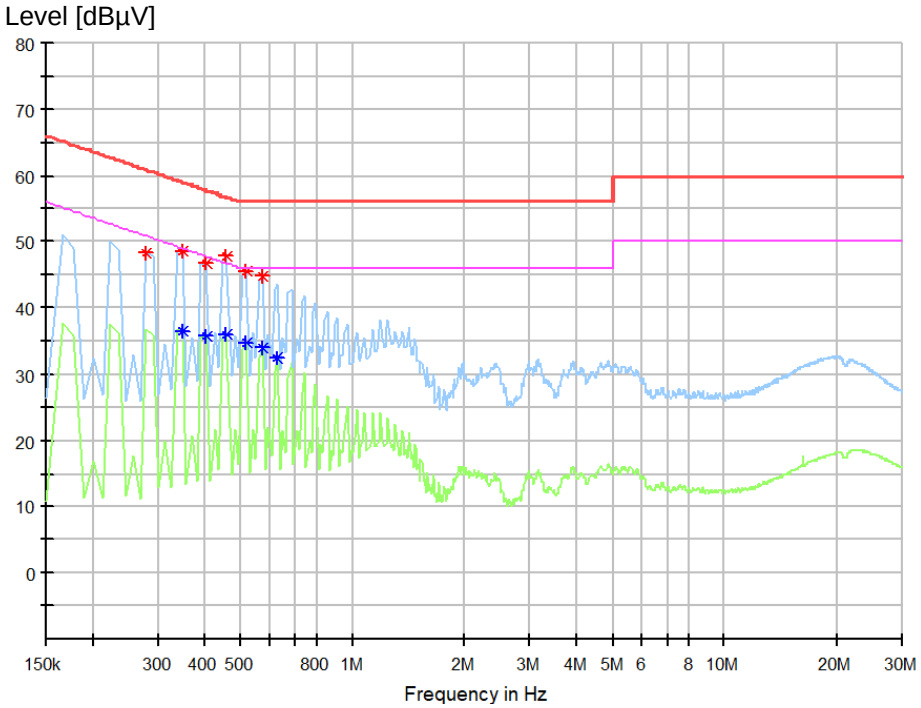
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.571875	45.48	56.00	10.52	N
0.515625	46.96	56.00	9.04	N
0.459375	47.73	56.70	8.97	N
0.403125	47.78	57.79	10.01	N
0.290625	49.37	60.51	11.13	N
0.346875	49.54	59.04	9.49	N

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.403125	37.40	47.79	10.39	N
0.571875	35.49	46.00	10.51	N
0.628125	33.83	46.00	12.17	N
0.459375	36.41	46.70	10.30	N
0.346875	37.81	49.04	11.23	N
0.515625	37.07	46.00	8.93	N

Figure 3: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L with sample 2#



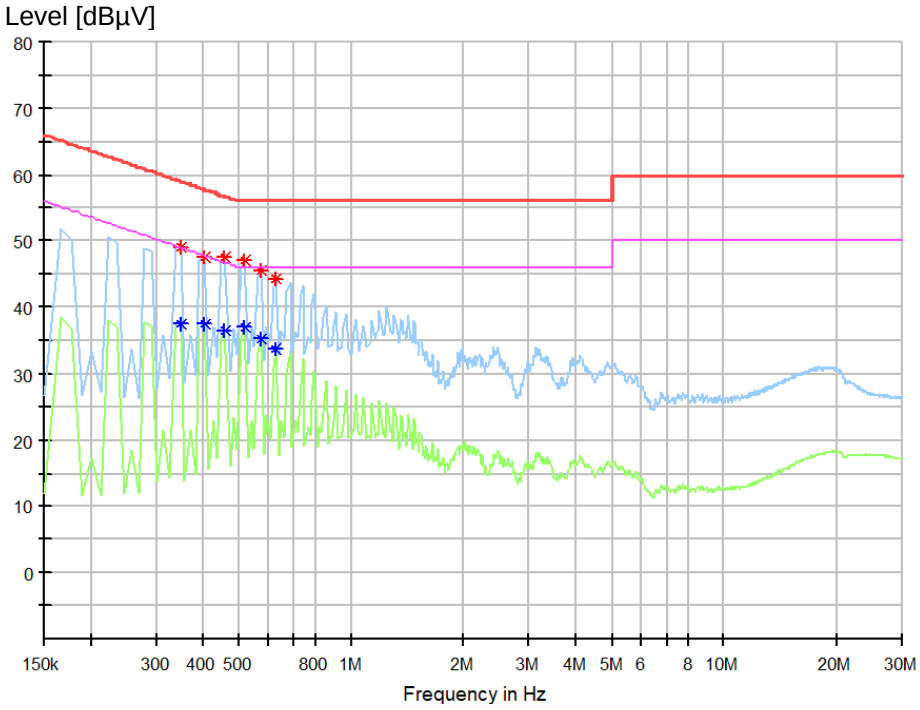
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.571875	44.69	56.00	11.31	L1
0.515625	45.45	56.00	10.55	L1
0.403125	46.78	57.79	11.01	L1
0.459375	47.72	56.70	8.98	L1
0.279375	48.32	60.83	12.51	L1
0.346875	48.46	59.04	10.58	L1

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.403125	35.68	47.79	12.11	L1
0.571875	34.10	46.00	11.90	L1
0.628125	32.45	46.00	13.55	L1
0.459375	36.12	46.70	10.58	L1
0.346875	36.47	49.04	12.57	L1
0.515625	34.81	46.00	11.19	L1

Figure 4: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N with sample 2#



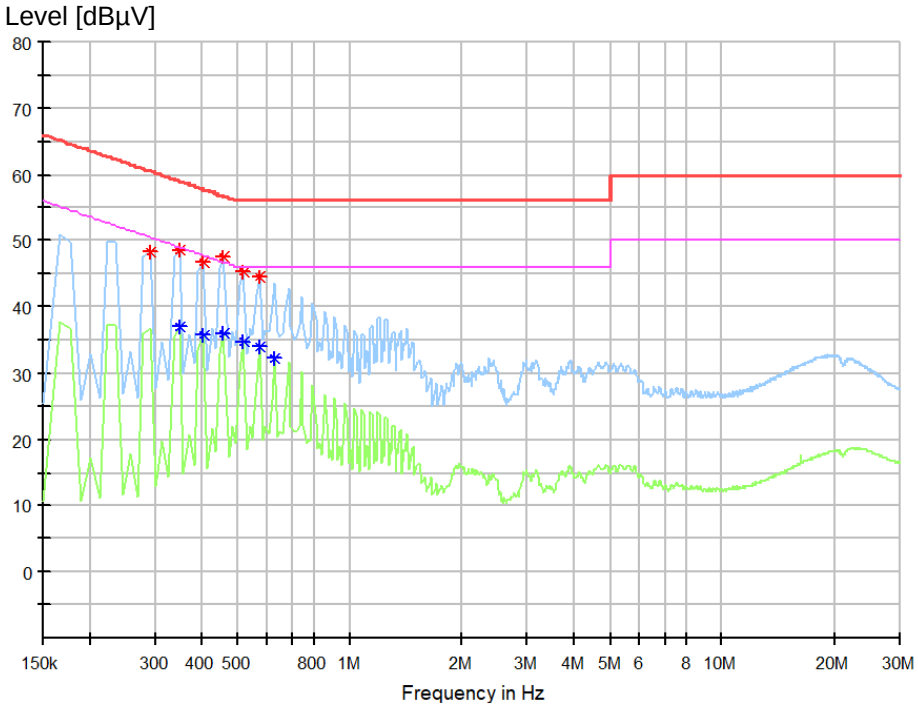
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.628125	44.31	56.00	11.69	N
0.571875	45.46	56.00	10.54	N
0.515625	46.95	56.00	9.05	N
0.403125	47.63	57.79	10.16	N
0.459375	47.67	56.70	9.04	N
0.346875	49.15	59.04	9.89	N

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.628125	33.80	46.00	12.20	N
0.571875	35.31	46.00	10.69	N
0.403125	37.41	47.79	10.38	N
0.346875	37.53	49.04	11.50	N
0.515625	36.98	46.00	9.02	N
0.459375	36.58	46.70	10.12	N

Figure 5: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L with sample 3#



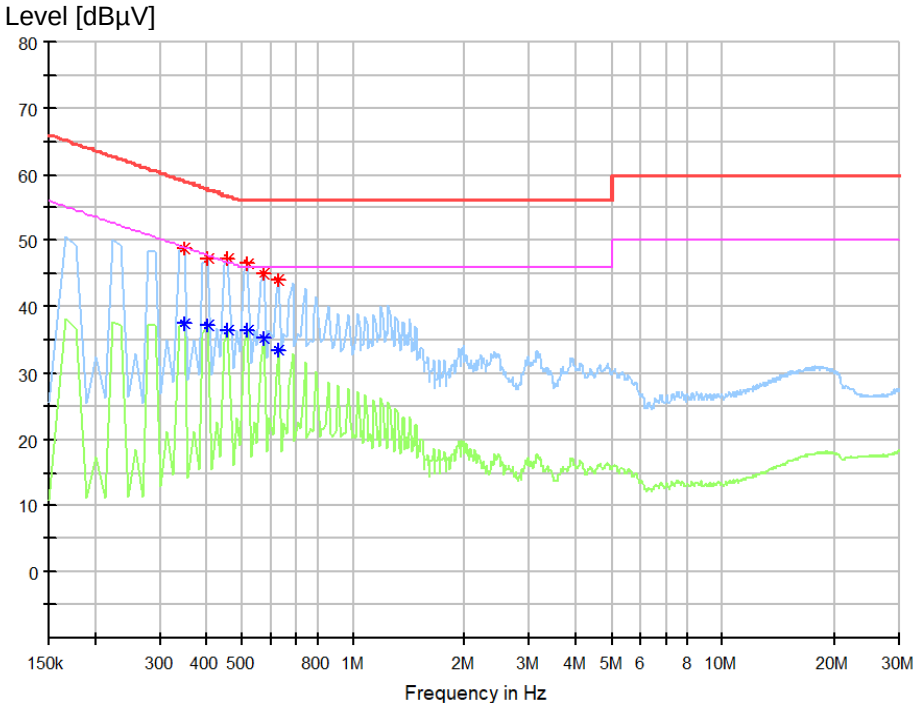
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.571875	44.61	56.00	11.39	L1
0.515625	45.38	56.00	10.62	L1
0.403125	46.72	57.79	11.07	L1
0.459375	47.58	56.70	9.13	L1
0.290625	48.29	60.51	12.22	L1
0.346875	48.69	59.04	10.35	L1

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.403125	35.81	47.79	11.98	L1
0.571875	34.06	46.00	11.94	L1
0.628125	32.25	46.00	13.75	L1
0.459375	36.04	46.70	10.66	L1
0.346875	36.99	49.04	12.05	L1
0.515625	34.81	46.00	11.19	L1

Figure 6: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N with sample 3#



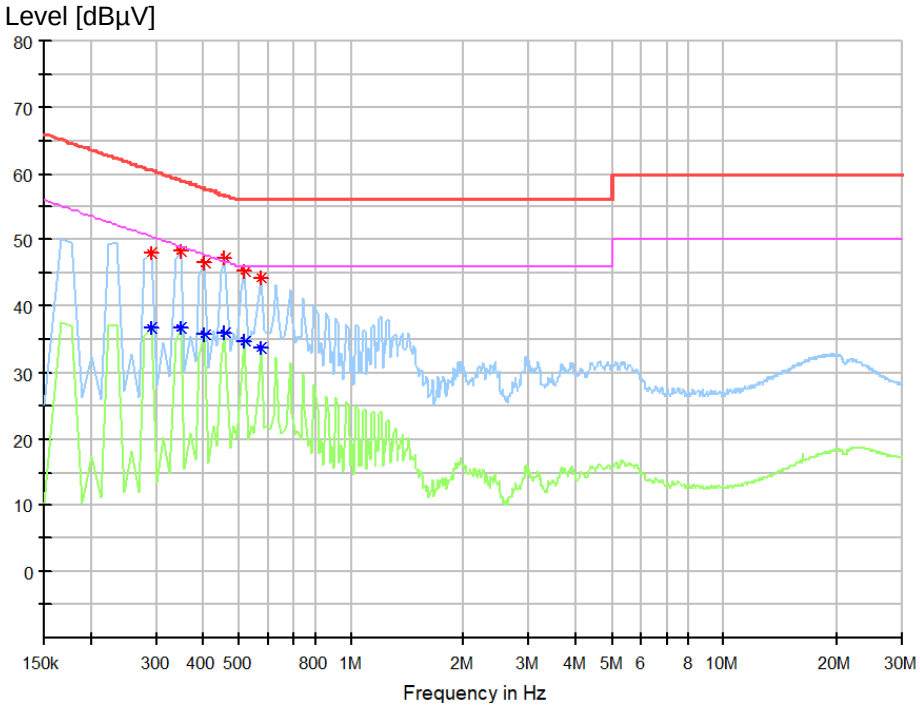
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.628125	44.13	56.00	11.87	N
0.571875	45.14	56.00	10.86	N
0.515625	46.56	56.00	9.44	N
0.403125	47.31	57.79	10.48	N
0.459375	47.37	56.70	9.33	N
0.346875	48.95	59.04	10.09	N

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.628125	33.56	46.00	12.44	N
0.571875	35.15	46.00	10.85	N
0.403125	37.25	47.79	10.54	N
0.346875	37.62	49.04	11.42	N
0.515625	36.39	46.00	9.61	N
0.459375	36.53	46.70	10.18	N

Figure 7: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, L with sample 4#



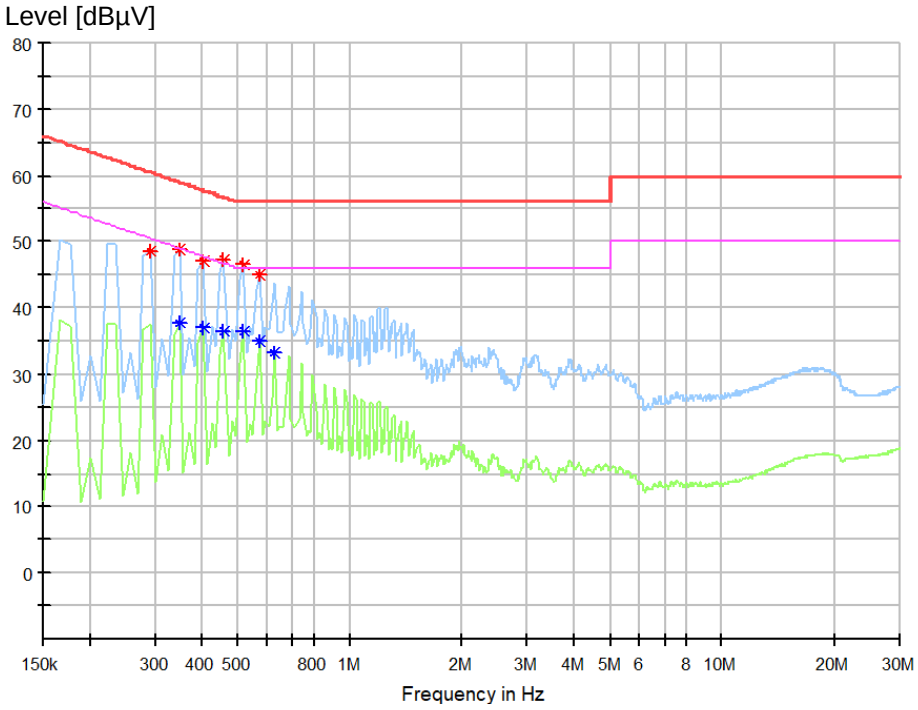
Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.571875	44.35	56.00	11.65	L1
0.515625	45.21	56.00	10.79	L1
0.403125	46.57	57.79	11.22	L1
0.459375	47.33	56.70	9.37	L1
0.290625	48.14	60.51	12.36	L1
0.346875	48.44	59.04	10.59	L1

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.515625	34.66	46.00	11.34	L1
0.571875	33.72	46.00	12.28	L1
0.346875	36.85	49.04	12.19	L1
0.290625	36.83	50.51	13.68	L1
0.459375	36.03	46.70	10.67	L1
0.403125	35.78	47.79	12.01	L1

Figure 8: Spectral Diagrams, Conducted Emission, 150 kHz – 30 MHz, N with sample 4#



Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.571875	45.11	56.00	10.89	N
0.515625	46.46	56.00	9.54	N
0.403125	47.12	57.79	10.67	N
0.459375	47.23	56.70	9.48	N
0.290625	48.48	60.51	12.03	N
0.346875	48.92	59.04	10.12	N

Final average measurement result:

Frequency (MHz)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line
0.403125	36.98	47.79	10.81	N
0.571875	34.99	46.00	11.01	N
0.628125	33.20	46.00	12.80	N
0.459375	36.40	46.70	10.31	N
0.346875	37.66	49.04	11.38	N
0.515625	36.48	46.00	9.52	N

5.2 Emission in the Frequency Range above 30 MHz

5.2.1 Radiated Emission (30-1000 MHz)

Result:	**Passed**

Date of testing	:	2022-11-22~2023-03-01
Test procedure	:	FCC 47 CFR Part 15, Subpart B:2021, 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 dBμV/m; 88 – 216 MHz, 43.5 dBμV/m; 216 – 960 MHz, 46 dBμV/m; Above 960 MHz, 54 dBμV/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	:	AC 120 V, 60 Hz for battery charger DC 12 V for cordless drill
Operational mode	:	Mode 1: charging Mode 2: discharging
Ambient condition	:	Temperature: 23.9 °C; Relative humidity: 40.3 %
Expanded measurement uncertainty (k=2)	:	5.49 dB

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.

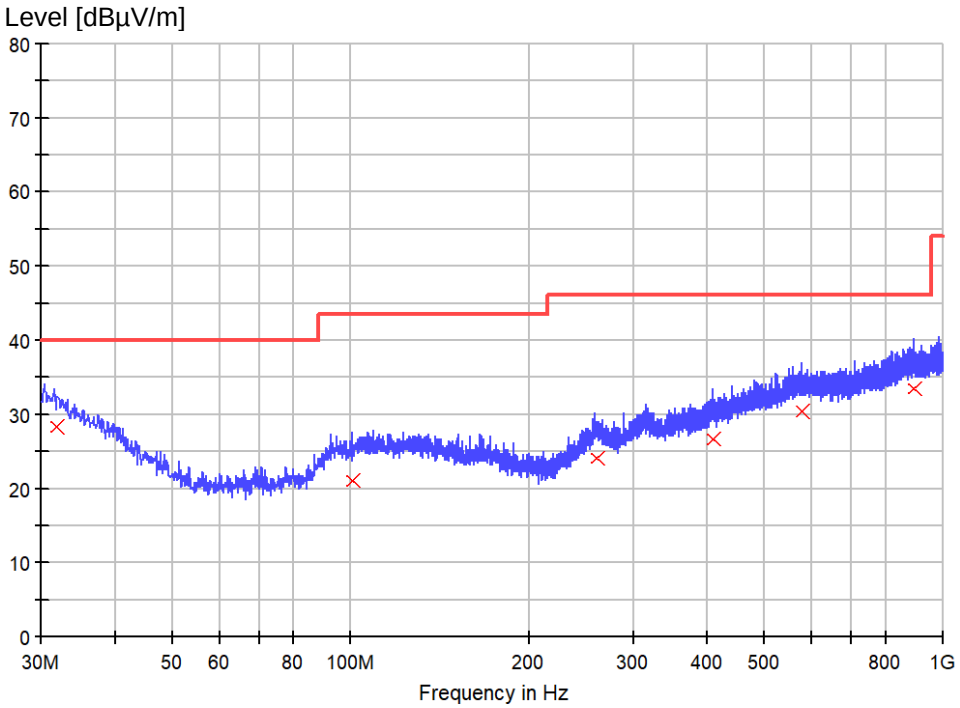
The following figures and tables were those measured by an automatic measurement system. A preview test was firstly performed with peak detector. The final test was performed with quasi-peak at those critical frequencies during the preview test. In the following spectral diagram, "×" means quasi-peak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

Note 1: The class B limits of FCC 47 CFR Part 15, Subpart B:2021 is stricter than those ICES-003:2020 Table 2 for 3 m test distance. Therefore, the former limits are used in following figures and tables.

Notes on following tables of radiated emission results and conversions:

QuasiPeak (dBµV/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 (dBµV/m) - QuasiPeak (dBµV/m)

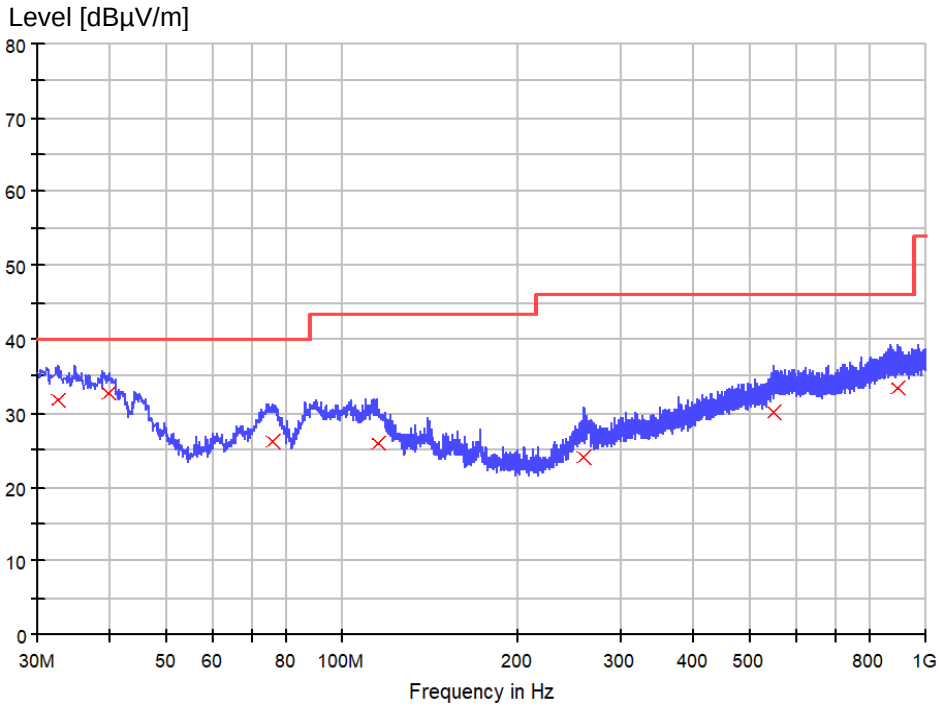
Figure 9: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 1 with sample 1#



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)
31.940000	28.2	120.000	120.0	H	-127.0	24.5	11.8	40.0
100.446250	21.1	120.000	100.0	H	166.0	17.6	22.4	43.5
261.587500	24.1	120.000	160.0	H	180.0	20.7	21.9	46.0
408.663750	26.6	120.000	110.0	H	24.0	23.0	19.4	46.0
577.322500	30.3	120.000	135.0	H	100.0	26.1	15.7	46.0
894.876250	33.5	120.000	180.0	H	-180.0	28.4	12.5	46.0

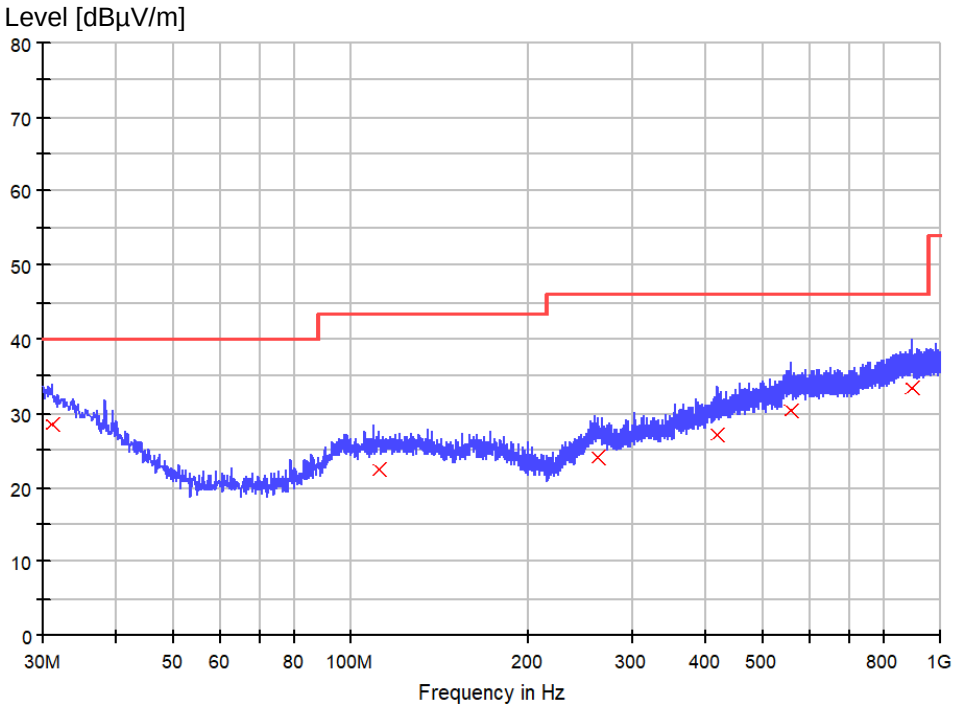
Figure 10: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 1 with sample 1#



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)
32.546250	31.9	120.000	100.0	V	-180.0	24.1	8.1	40.0
39.821250	32.8	120.000	160.0	V	62.0	20.1	7.2	40.0
75.832500	26.3	120.000	130.0	V	-142.0	13.3	13.7	40.0
114.996250	25.9	120.000	100.0	V	-119.0	18.6	17.6	43.5
259.890000	24.0	120.000	120.0	V	180.0	20.7	22.0	46.0
550.405000	30.3	120.000	150.0	V	-76.0	26.3	15.7	46.0
893.300000	33.4	120.000	110.0	V	180.0	28.3	12.6	46.0

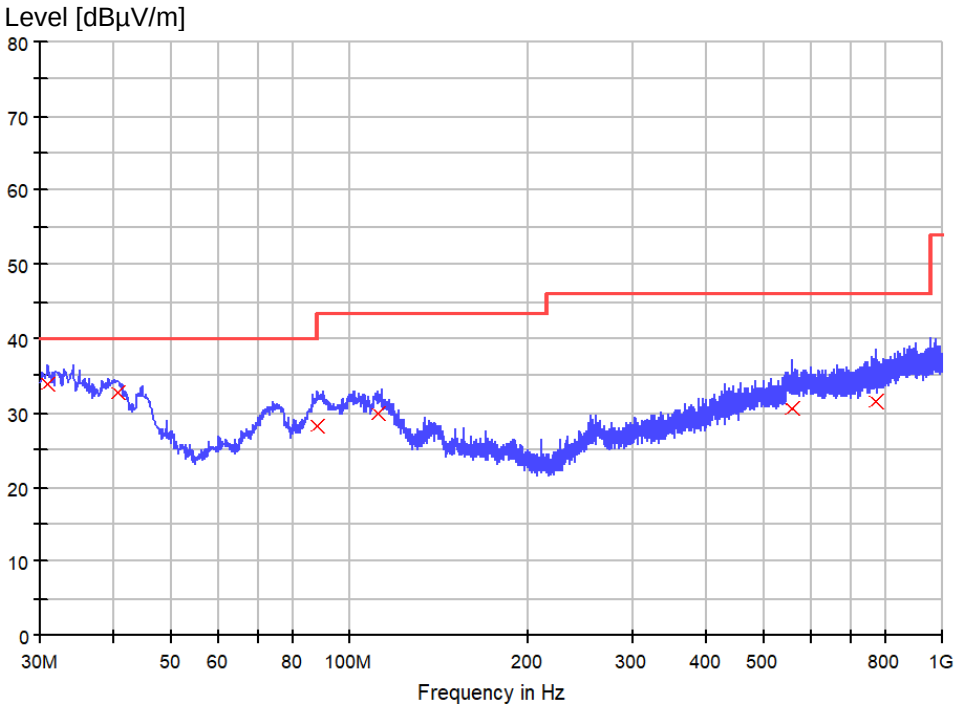
Figure 11: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 1 with sample 2#



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)
31.091250	28.6	120.000	100.0	H	89.0	24.9	11.4	40.0
111.358750	22.4	120.000	130.0	H	-180.0	18.5	21.2	43.5
263.163750	24.1	120.000	160.0	H	123.0	20.7	21.9	46.0
419.940000	27.0	120.000	110.0	H	136.0	23.4	19.0	46.0
559.741250	30.3	120.000	165.0	H	-117.0	26.3	15.7	46.0
893.785000	33.5	120.000	150.0	H	180.0	28.3	12.5	46.0

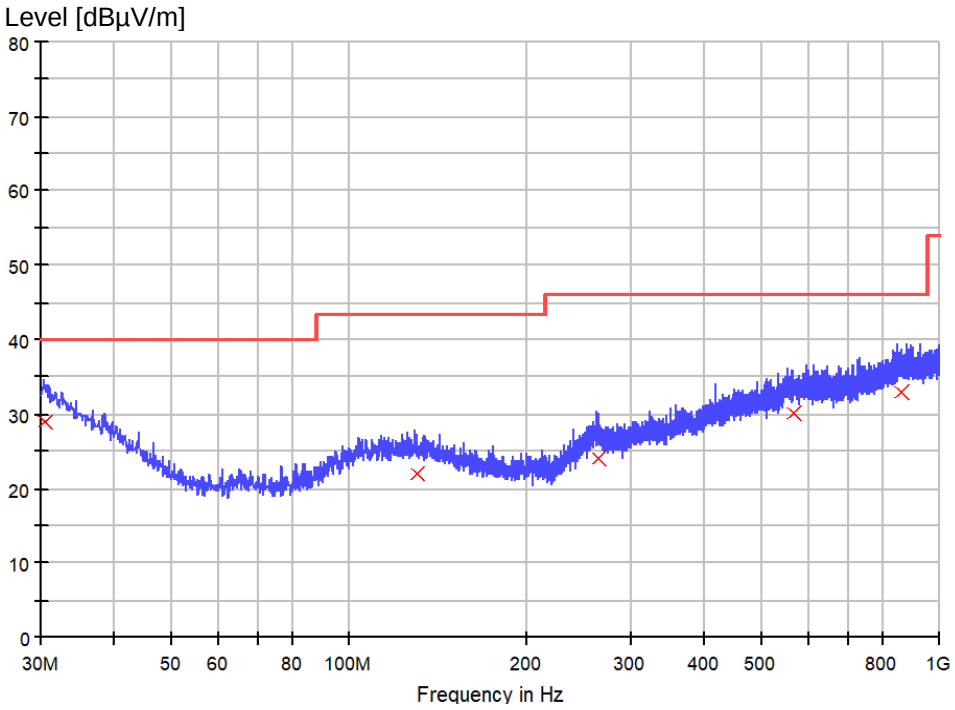
Figure 12: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 1 with sample 2#



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)
30.970000	33.9	120.000	150.0	V	-180.0	24.9	6.1	40.0
40.548750	32.7	120.000	110.0	V	-166.0	19.6	7.3	40.0
88.442500	28.3	120.000	130.0	V	-146.0	15.0	15.2	43.5
111.722500	30.0	120.000	165.0	V	-125.0	18.5	13.5	43.5
556.225000	30.5	120.000	100.0	V	-106.0	26.4	15.5	46.0
769.867500	31.5	120.000	120.0	V	-86.0	27.5	14.5	46.0

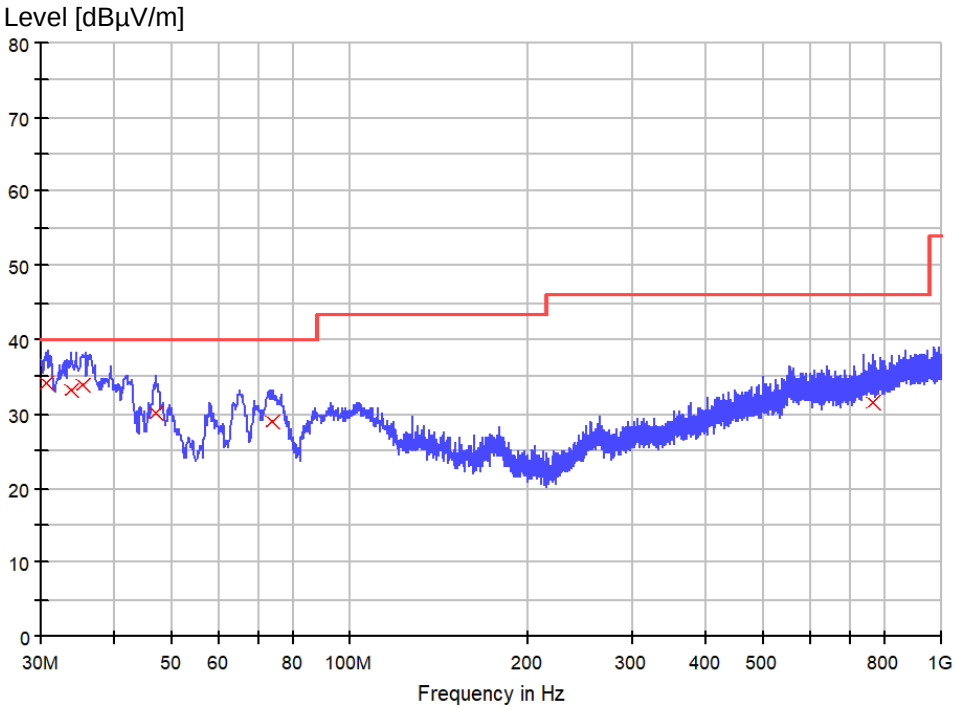
Figure 13: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 1 with sample 3#



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)
30.363750	29.0	120.000	150.0	H	180.0	25.2	11.0	40.0
130.031250	22.1	120.000	100.0	H	-180.0	18.7	21.4	43.5
264.740000	24.1	120.000	110.0	H	116.0	20.7	21.9	46.0
564.470000	30.2	120.000	160.0	H	152.0	26.2	15.8	46.0
864.806250	33.0	120.000	130.0	H	-141.0	27.9	13.0	46.0

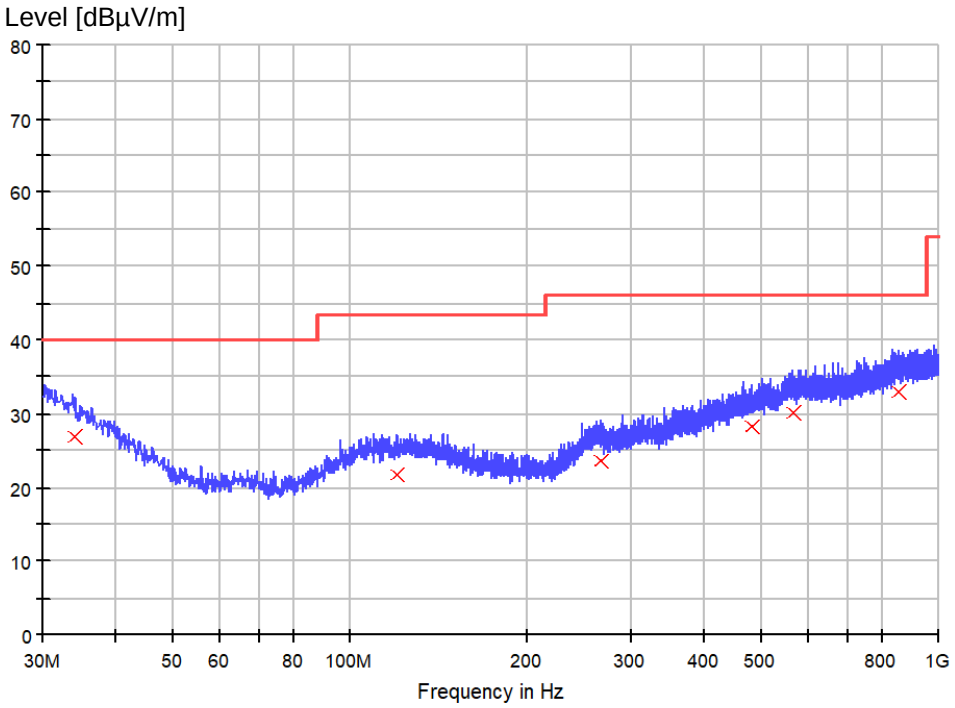
Figure 14: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 1 with sample 3#



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)
30.606250	34.2	120.000	100.0	V	180.0	25.1	5.9	40.0
33.637500	33.2	120.000	160.0	V	-180.0	23.5	6.8	40.0
35.213750	33.8	120.000	115.0	V	135.0	22.7	6.2	40.0
46.975000	30.2	120.000	130.0	V	180.0	16.2	9.8	40.0
73.892500	29.1	120.000	100.0	V	-154.0	13.2	10.9	40.0
768.897500	31.5	120.000	150.0	V	94.0	27.5	14.5	46.0

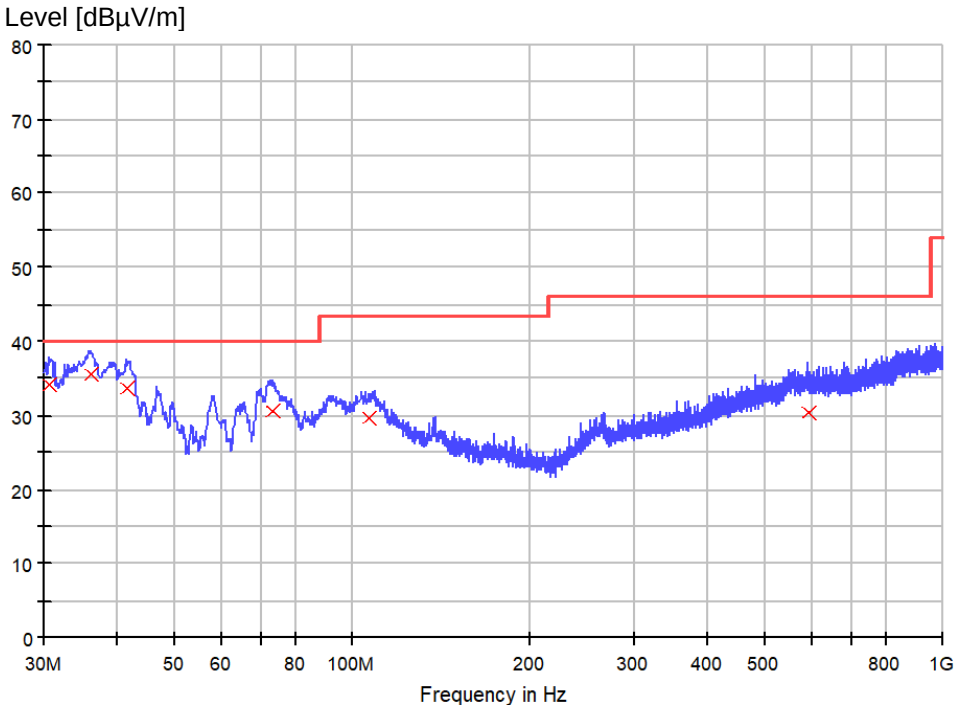
Figure 15: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 1 with sample 4#



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)
34.122500	26.9	120.000	100.0	H	-146.0	23.2	13.1	40.0
120.573750	21.8	120.000	150.0	H	180.0	18.5	21.7	43.5
267.407500	23.7	120.000	130.0	H	-103.0	20.2	22.3	46.0
480.080000	28.2	120.000	100.0	H	-83.0	24.6	17.8	46.0
568.107500	30.2	120.000	165.0	H	165.0	26.2	15.8	46.0
858.622500	33.0	120.000	110.0	H	19.0	28.0	13.0	46.0

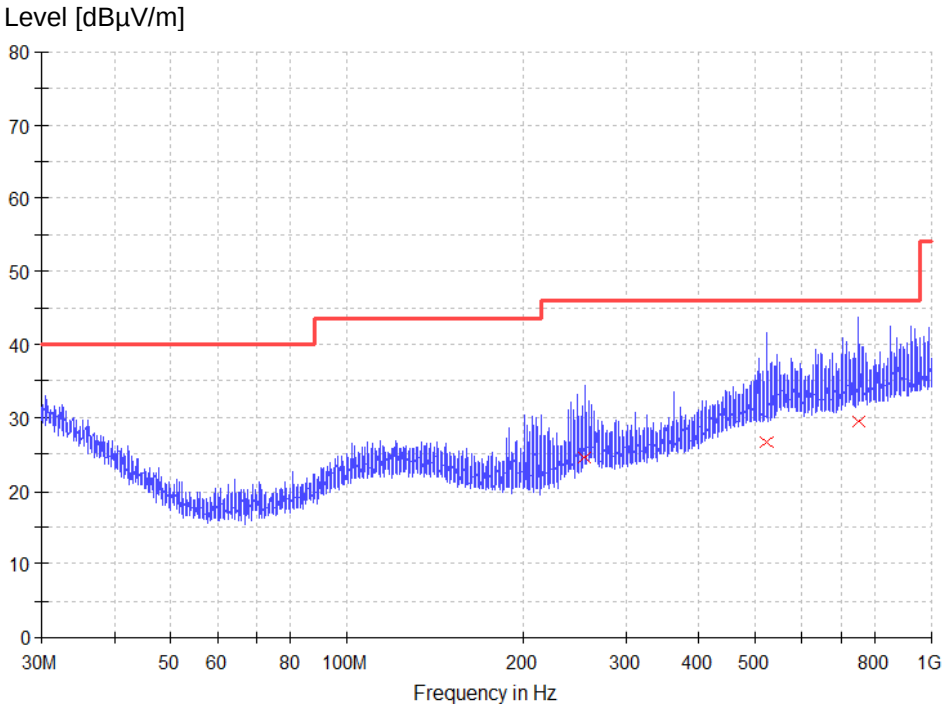
Figure 16: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 1 with sample 4#



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)
30.606250	34.1	120.000	100.0	V	-180.0	25.1	5.9	40.0
36.183750	35.5	120.000	120.0	V	121.0	22.1	4.5	40.0
41.518750	33.7	120.000	110.0	V	-142.0	19.0	6.4	40.0
73.165000	30.7	120.000	165.0	V	180.0	13.2	9.4	40.0
106.872500	29.8	120.000	120.0	V	-96.0	18.4	13.7	43.5
593.812500	30.5	120.000	150.0	V	154.0	26.2	15.5	46.0

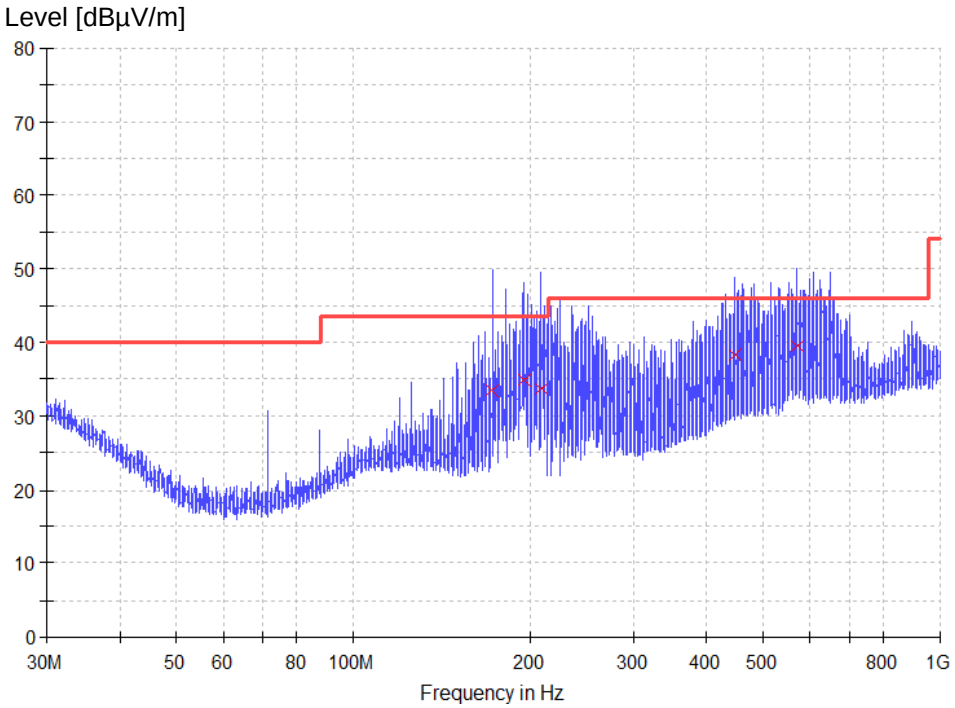
Figure 17: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 2 with sample 1#



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)
255.816000	24.6	120.000	100.0	H	-50.0	20.1	21.4	46.0
521.466667	26.6	120.000	100.0	H	110.0	24.9	19.5	46.0
751.421333	29.6	120.000	100.0	H	120.0	27.2	16.5	46.0

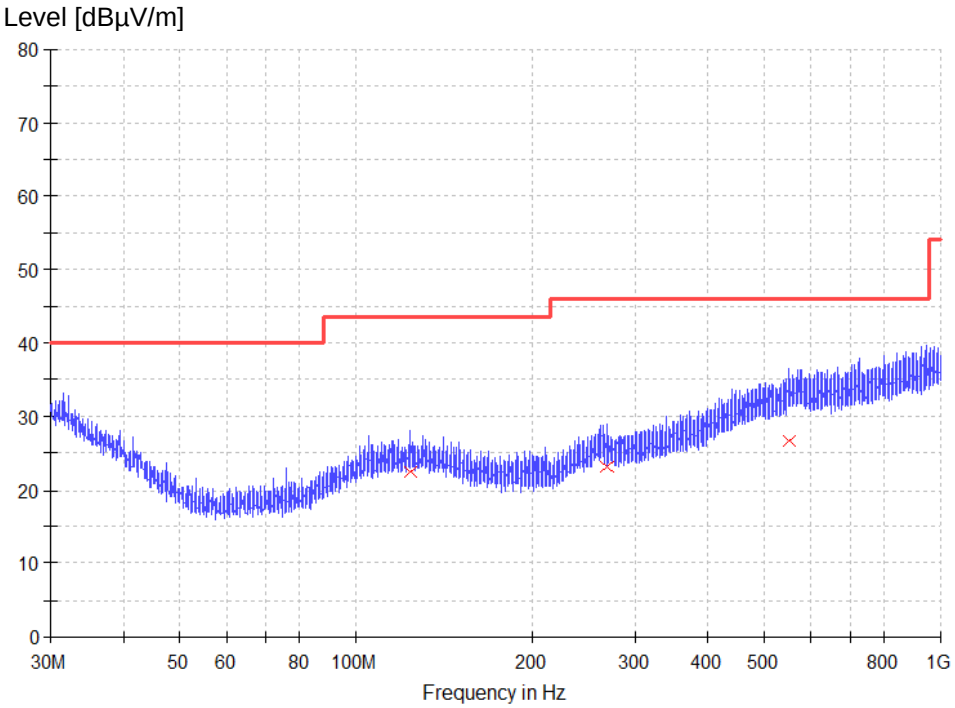
Figure 18: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 2 with sample 1#



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)
172.687000	33.6	120.000	100.0	V	-55.0	16.2	10.0	43.5
195.676000	34.8	120.000	100.0	V	62.0	16.1	8.7	43.5
209.644000	33.7	120.000	100.0	V	76.0	16.1	9.8	43.5
446.065333	38.5	120.000	100.0	V	-103.0	24.0	7.5	46.0
569.675667	39.6	120.000	100.0	V	120.0	26.2	6.5	46.0

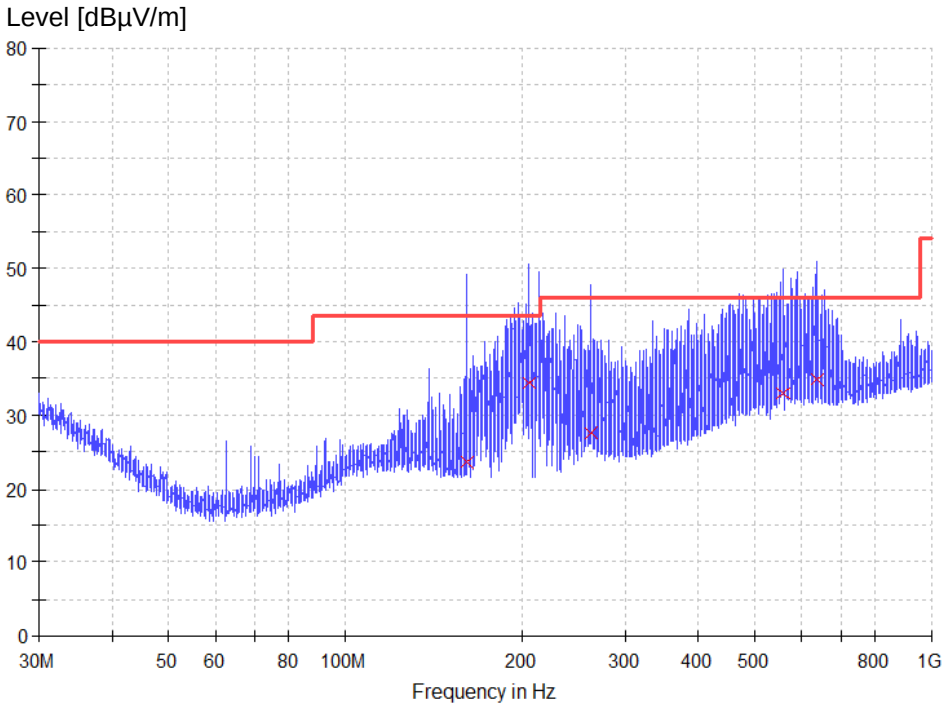
Figure 19: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 2 with sample 2#



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)
123.831333	22.6	120.000	100.0	H	120.0	18.7	21.0	43.5
268.523000	23.2	120.000	100.0	H	-50.0	20.0	22.8	46.0
551.116333	26.6	120.000	100.0	H	10.0	26.3	19.5	46.0

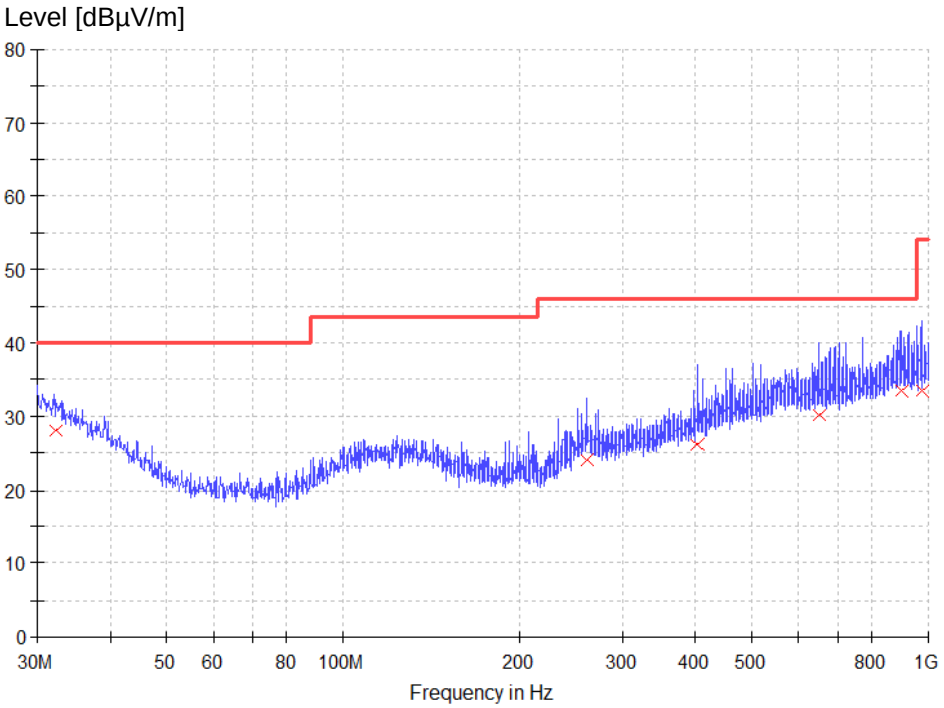
Figure 20: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 2 with sample 2#



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)
161.952333	23.7	120.000	100.0	V	-50.0	16.7	19.8	43.5
161.952333	23.7	120.000	100.0	V	10.0	16.7	19.8	43.5
205.440667	34.5	120.000	100.0	V	110.0	16.2	9.1	43.5
263.317333	27.5	120.000	100.0	V	-80.0	20.7	18.5	46.0
559.070333	32.9	120.000	100.0	V	-70.0	26.3	13.1	46.0
638.545667	34.9	120.000	100.0	V	50.0	26.4	11.1	46.0

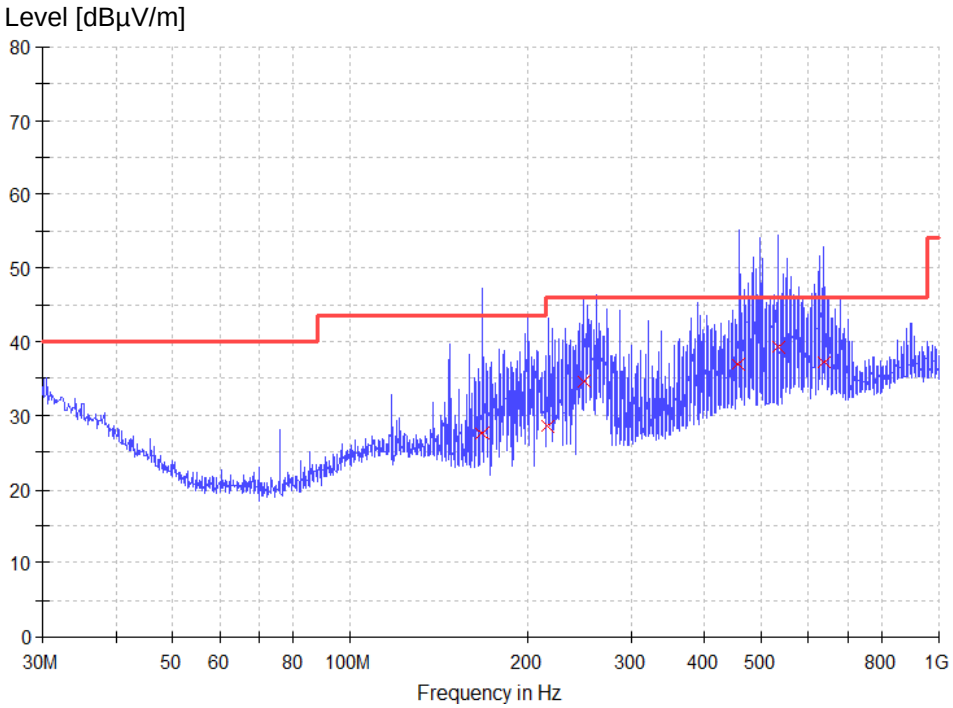
Figure 21: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 2 with sample 3#



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)
32.303750	28.0	120.000	100.0	H	180.0	24.3	12.0	40.0
260.617500	24.0	120.000	130.0	H	-95.0	20.7	22.0	46.0
404.541250	26.3	120.000	160.0	H	-180.0	22.8	19.7	46.0
652.133750	30.2	120.000	150.0	H	151.0	26.2	15.8	46.0
899.362500	33.3	120.000	110.0	H	-118.0	28.3	12.7	46.0
980.963750	33.5	120.000	120.0	H	26.0	28.8	20.5	54.0

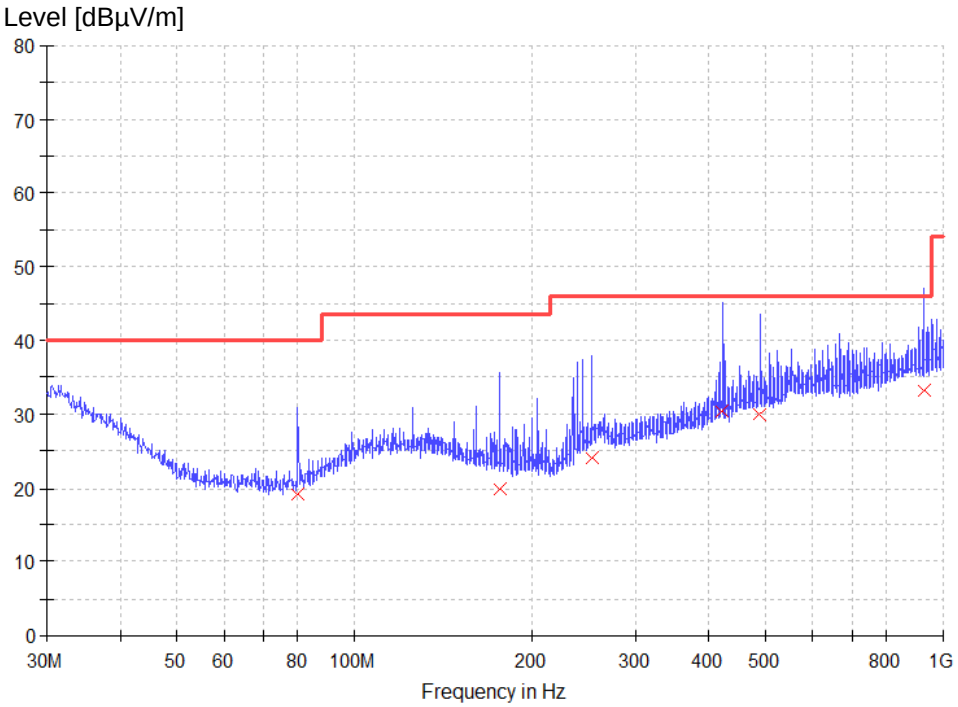
Figure 22: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 2 with sample 3#



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)
167.618750	27.6	120.000	150.0	V	180.0	16.4	16.0	43.5
217.088750	28.5	120.000	120.0	V	-20.0	15.8	17.5	46.0
249.583750	34.7	120.000	100.0	V	-180.0	19.2	11.3	46.0
456.800000	37.0	120.000	165.0	V	167.0	24.3	9.0	46.0
533.793750	39.3	120.000	130.0	V	-180.0	25.1	6.7	46.0
636.977500	37.1	120.000	110.0	V	180.0	26.4	8.9	46.0

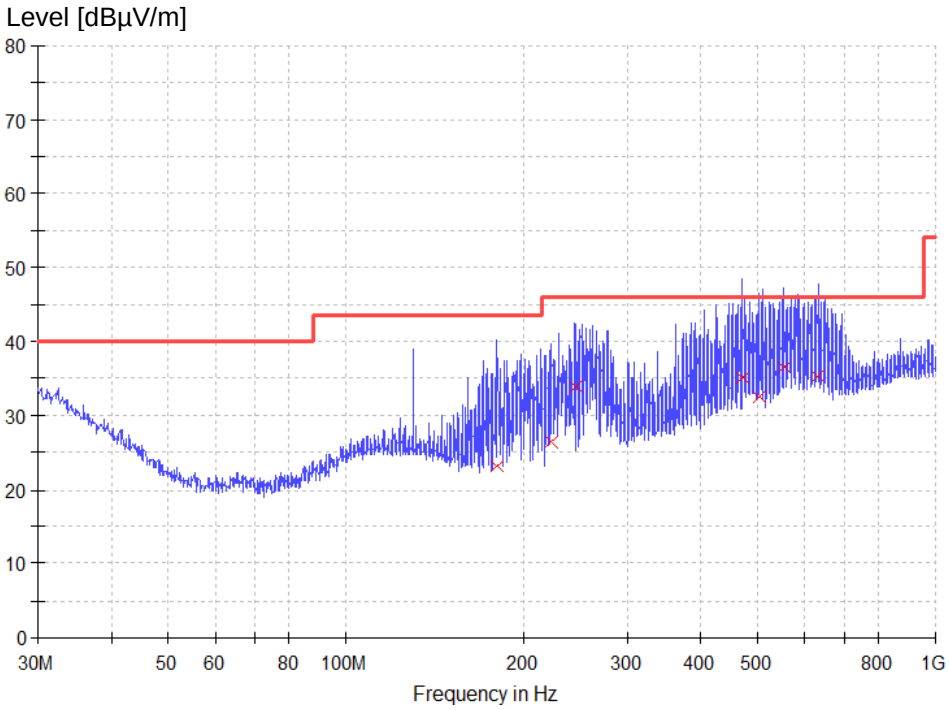
Figure 23: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Horizontal polarization on mode 2 with sample 4#



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)
80.318750	19.1	120.000	150.0	H	-124.0	13.7	20.9	40.0
176.833750	19.9	120.000	110.0	H	52.0	16.0	23.6	43.5
252.857500	24.0	120.000	135.0	H	105.0	19.7	22.0	46.0
421.880000	30.4	120.000	160.0	H	152.0	23.4	15.6	46.0
488.203750	29.9	120.000	150.0	H	-180.0	24.8	16.1	46.0
931.251250	33.2	120.000	120.0	H	180.0	28.1	12.8	46.0

Figure 24: Spectral Diagrams, Radiated Emission, 30 MHz – 1000 MHz, Vertical polarization on mode 2 with sample 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)
180.956250	23.3	120.000	100.0	V	-180.0	15.9	20.2	43.5
223.030000	26.5	120.000	130.0	V	180.0	16.2	19.5	46.0
245.582500	34.0	120.000	150.0	V	-165.0	18.7	12.0	46.0
469.895000	35.1	120.000	165.0	V	118.0	24.4	11.0	46.0
502.632500	32.6	120.000	120.0	V	90.0	24.9	13.4	46.0
552.708750	36.4	120.000	100.0	V	-114.0	26.4	9.6	46.0
630.915000	35.4	120.000	135.0	V	152.0	26.4	10.6	46.0

6 Photographs of the Test Set-Up

Refer to the test setup file.

7 List of Test and Measurement Instruments

Equip.	Description	Model	Manufacturer	Last Date DD.MM.YYYY	Due Date DD.MM.YYYY
9023229	EMI test receiver	ESR3	Rohde&Schwarz	11.08.2022	11.08.2023
G1811403	Artificial mains network	ENV216	Rohde&Schwarz	19.10.2022	19.10.2023
G1824248	Dual display multimeter	F45	Fluke	08.10.2022	08.10.2024
G1811378	3m modified semi-anechoic chamber	SAC3	Frankonia	10.06.2021	10.06.2024
9042162	EMI test receiver	ESR7	Rohde&Schwarz	02.03.2022	02.03.2023
G1811425	Bilog antenna	CBL 6112D	Teseq	10.03.2020	10.03.2023

8 List of Figures

End of test report