Report on the FCC and IC Testing of the pewag austria GmbH

Model: levo AWC 1

In accordance with FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN.

Prepared for: pewag austria GmbH
Gaslaternenweg 4
A-8041 Graz

FCC ID: 2AT89-LEVOAWC
IC: 25302-LEVOAWC

Product Service

Choose certainty.
Add value.

COMMERCIAL-IN-CONFIDENCE

Date: 2020-03-09
Document Number: TR-13786-60370-03 | Issue: 06

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Michael Ingerl	2020-03-09	
Authorised Signatory	Markus Biberger	2020-03-09	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT
The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Michael Ingerl	2020-03-09	

Laboratory Accreditation	Laboratory recognition	ISED Canada test site registration
DAkkS Reg. No. D-PL-11321-11-02	Registration No. BNetzA-CAB-16/21-15	3050A-2

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN.:2016, Issue 2 (2016) and Issue 5 (2019).

DISCLAIMER AND COPYRIGHT
This non-binding report has been prepared by TÜV SÜD Product Service with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD Product Service. No part of this document may be reproduced without the prior written approval of TÜV SÜD Product Service. © 2020 TÜV SÜD Product Service.

ACCREDITATION
Our BNetzA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our BNetzA Accreditation. Results of tests not covered by our BNetzA Accreditation Schedule are marked NBA (Not BNetzA Accredited).

Trade Register Munich
HRB 85742
VAT ID No. DE129484267
Information pursuant to Section 2(1)
DL-InfoV (Germany) at
www.tuev-sued.com/imprint

Managing Directors:
Dr. Peter Havel (CEO)
Dr. Jens Butenandt
Patrick van Welij

Phone: +49 (0) 9421 55 22-0
Fax: +49 (0) 9421 55 22-99
www.tuev-sued.de

TÜV SÜD Product Service GmbH

Äußere Frühlingstraße 45
94315 Straubing
Germany

Product Service

Contents

1 Report Summary 2

1.1 Report Modification Record 2
1.2 Introduction 2
1.3 Brief Summary of Results 3
1.4 Application Form 4
1.5 Product Information 7
1.6 Deviations from the Standard 7
1.7 EUT Modification Record 7
1.8 Test Location 7

2 Test Details 8

2.1 Field Strength of Emissions 8
2.2 AC Power Line Conducted Emissions 11
2.3 Bandwidth 15
2.4 Radiated Spurious Emissions 18
2.5 Exposure of Humans to RF Fields 21

3 Photographs 26

3.1 Equipment Under Test (EUT) 26

4 Measurement Uncertainty 31

Product Service

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	2019-07-24
2	Added IC and FCC ID. Added chapter 2.3.	2020-01-29
3	Added SPR-002 at chapter 2.5	2020-02-12
4	Changed at chapter 2.5.6 the test distance from SPR-002, Issue 1	2020-02-21
5	Changed RSS GEN from Issue 4 to Issue 5. Added ISED limit line to the plots. Changed Test Result in 2.1.6. Added test setup photo from testing below 30MHz	2020-03-03
6	Added at chapter 2.5.6 the test distance.	2020-03-09

Table 1

1.2 Introduction

Applicant	pewag austria GmbH
Manufacturer	pewag austria GmbH
Model Number(s)	levo AWC 1
Serial Number(s)	---
Hardware Version(s)	---
Software Version(s)	---
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN.:2016, Issue 2 (2016) and Issue 5 (2019).
Test Plan/Issue/Date	---
Order Number	4500035075
Date of Receipt of EUT	2019-07-08
Start of Test	2019-07-09
Finish of Test	2019-07-18
Name of Engineer(s)	Michael Ingerl
Related Document(s)	ANSI C63.10 (2013) ICES-001 Issue 4 (2006) CISPR 11 Fourth Edition (inc. Amend.1 IEC:2004) ANSI C63.4 (2014) 680106 D01 RF Exposure Wireless Charging Apps v03

Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: 115 V / 60 Hz AC - Powered Inductive charging ON				
2.1	15.205, Clause 6.2.2.2, 6.4, 6.5 and 6.13	Field Strength of Emissions	Pass	ANSI C63.10 (2013) ICES-001 Issue 4 (2006) CISPR 11 Fourth Edition (inc Amend.1 IEC:2004)
2.2	15.207, 6.2.2.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.4 (2014)
2.3	15.215 (c) and 6.6	Bandwidth	Pass	---
2.3	15.209, 15.205	Radiated Spurious Emissions	Pass	---
2.4	1.1310, 1.1307 (b) and 6.4.2	Exposure of Humans to RF Fields	Pass	680106 D01 RF Exposure Wireless Charging Apps v03

Table 2

Product Service

1.4 Application Form

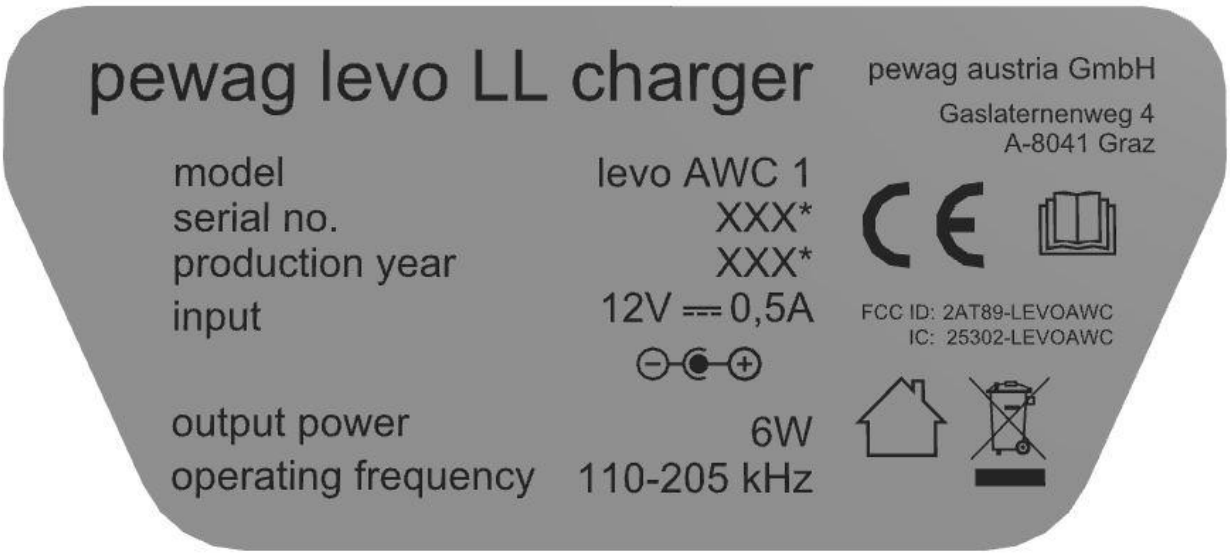
General information (for report)	
Ordernumber (your PO number)	4500035075
Applicant (incl. address and contact person)	**pewag austria GmbH** A-8041 Graz, Gaslaternenweg 4 Phone: +43 50 50 11 – 188 Mobile: 06646125720 Fax: +43 50 50 11 100 sga@pewag-group.com Andreas Schögler
Manufacturer (when different to applicant)	**---**
Name and address of factory(ies)	**pewag s.r.o** Smetenavo nábrezi 934 51754 Vamberk CZECH REPUBLIC

Equipment characteristics:	
Type of equipment:	Wireless Charger
Type designation*:	levo AWC 1
Parts of the system:	levo AWC 1, levo LL7
Serial number:	120123
highest frequency generated or used within the EUT	16 MHz ☒ < 108 MHz

Product Service

List of devices connected to EUT				
No.	*Description*	*Type designation*	*Serial no. or ID*	*Manufacturer*
1	LL7	masterlink	---	pewag
2	DC Power Supply	XP Power VER05	---	XP Power
3	---	---	---	---

Marking plate (may only be a draft)



Applicant also made a statement regarding to KDB 680106 D01 RF Exposure Wireless Charging Apps v03, chapter 5.b):

(6) Power transfer frequency is less than 1 MHz.
Yes. The used frequency is between 110 – 205 kHz.

(2) Output power from each primary coil is less than or equal to 15 watts.
Yes.

(3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.
Yes. Only one single primary coil and one single secondary coil.

(4) Client device is placed directly in contact with the transmitter.
Yes.

(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
Yes.

(6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
Yes. See chapter 2.4.6

1.5 Product Information

1.5.1 Technical Description

1.6 Deviations from the Standard

none

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	As supplied by the customer (S/N: ---)	Not Applicable	Not Applicable

Table 3

1.8 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing Test Laboratory.

Test Name	Name of Engineer(s)
Configuration and Mode: 115 V / 60 Hz AC Powered – Inductive charging ON	
Field Strength of Emissions	Michael Ingerl
AC Power Line Conducted Emissions	Michael Ingerl
Bandwidth	Michael Ingerl
Radiated Spurious Emissions	Michael Ingerl
Exposure of Humans to RF Fields	Michael Ingerl

Table 4

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany

2 Test Details

2.1 Field Strength of Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN., Clause 15.205(b), Clause 6.2.2.2, 6.4, 6.5 and 6.13

2.1.2 Equipment Under Test and Modification State

levo AWC 1, S/N: --- - Modification State 0

2.1.3 Date of Test

2019-07-09

2.1.4 Test Method

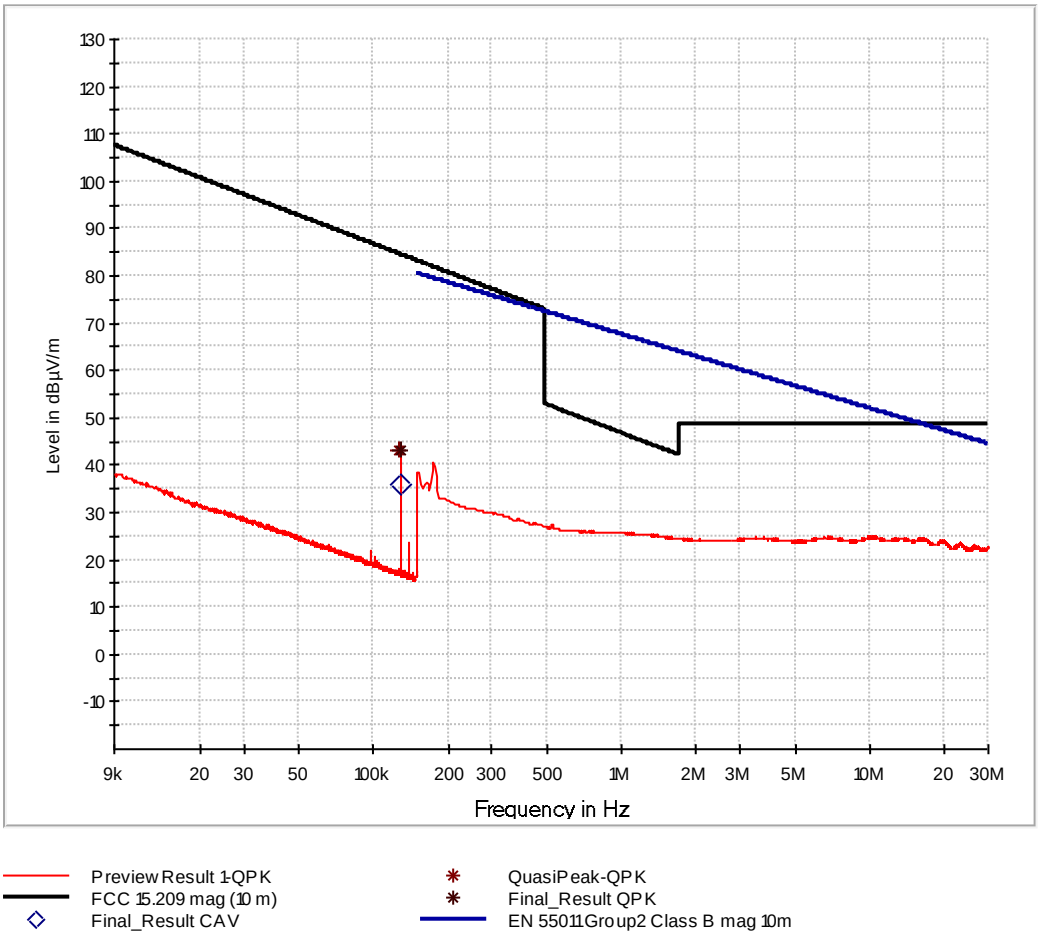
This test was performed in accordance with ANSI C63.10 clause 6.3, 6.4 and 6.5 and ISED Canada RSS-GEN, clause 6.13.

2.1.5 Environmental Conditions

Ambient Temperature	23.0 °C
Relative Humidity	31.0 %

2.1.6 Test Results

115 V / 60 Hz AC Powered - Inductive charging ON
Test distance: 10m



Final Results 1:

Frequency *MHz*	*QuasiPeak* *dBµV/m*	*CAverage* *dBµV/m*	*Limit* *dBµV/m*	*Margin* *dB*	*Meas. Time* *ms*	*Bandwidth* *kHz*	*Pol*	*Azimuth* *deg*	*Corr.* *dB*
0,128000	43,34	---	107,60	64,26	1000,0	0,200	H	107,0	20,0
0,128000	---	36,01	---	---	1000,0	0,200	H	107,0	20,0

Figure 1 - 9 kHz to 30 MHz

2.1.7 Test Location and Test Equipment Used

This test was carried out in Semi anechoic room - cabin no. 8.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Loop antenna	Rohde & Schwarz	HFH2-Z2	18876	24	2019-07-31
EMI test receiver	Rohde & Schwarz	ESW44	101814	12	2020-02-29
EMC measurement software	Rohde & Schwarz	EMC32-ME+	19719	N/A	N/A

Table 5

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable

2.2 AC Power Line Conducted Emissions

2.2.1 Specification Reference

FCC 47 CFR Part 15, ISED Canada RSS-216 and ISED Canada RSS-GEN., Clause 15.207, 6.2.2.1 and 8.8

2.2.2 Equipment Under Test and Modification State

levo AWC 1, S/N: --- - Modification State 0

2.2.3 Date of Test

2019-07-17

2.2.4 Test Method

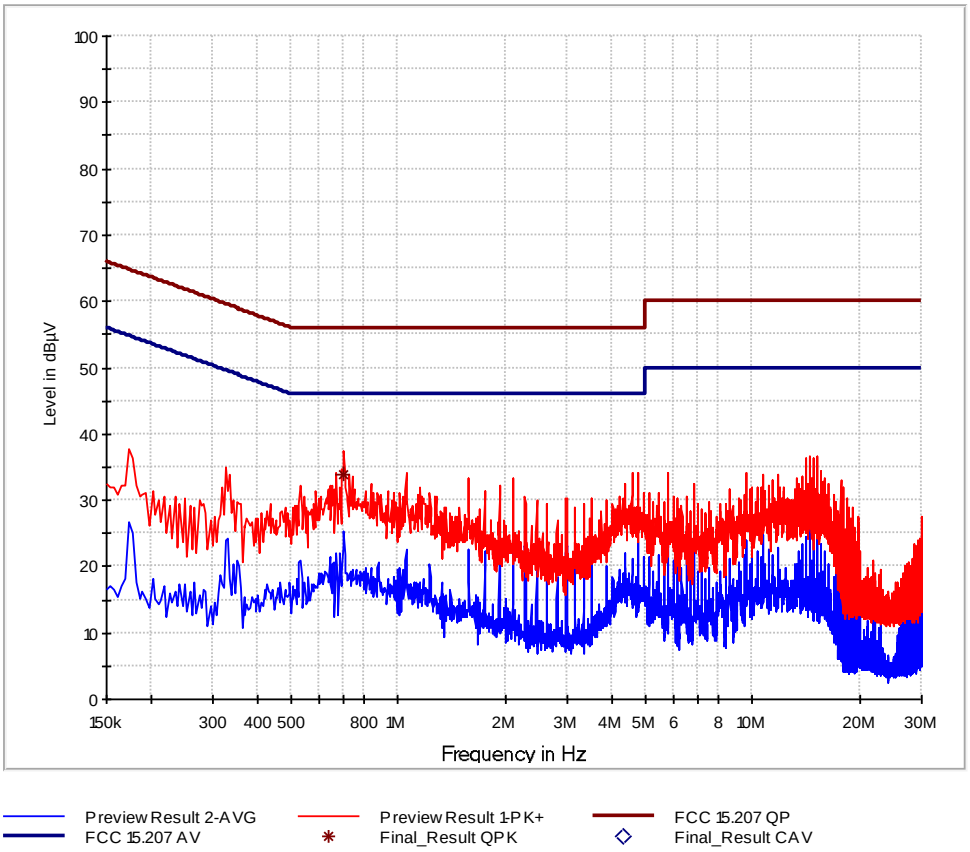
The test was performed in accordance with ANSI C63.4, clause 7.

2.2.5 Environmental Conditions

Ambient Temperature	22.0 °C
Relative Humidity	30.0 %

2.2.6 Test Results

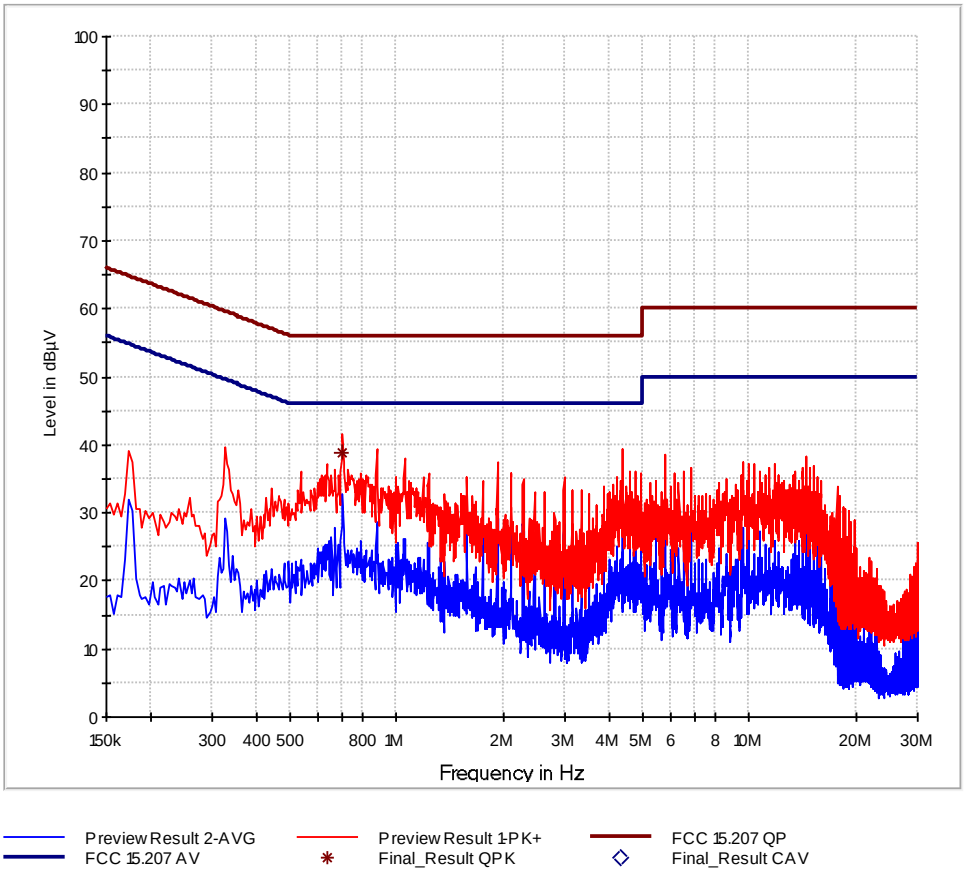
115 V / 60 Hz AC Powered - Inductive charging ON



Final Results 1:

Frequency MHz	*QuasiPeak dBµV*	*Limit dBµV*	*Margin dB*	*Meas. Time ms*	*Bandwidth kHz*	*Line*	*Filter*	*Corr. dB*
0.702000	33.75	56.00	22.25	1000.0	9.000	L1	ON	10.0

Figure 2 - Live Line - 150 kHz to 30 MHz



Final Results 1:

Frequency MHz	*QuasiPeak dBµV*	*Limit dBµV*	*Margin dB*	*Meas. Time ms*	*Bandwidth kHz*	*Line*	*Filter*	*Corr. dB*
0.702000	38.88	56.00	17.12	1000.0	9.000	N	ON	10.0

Figure 3 - Neutral Line - 150 kHz to 30 MHz

2.2.7 Test Location and Test Equipment Used

This test was carried out in Shielded room - cabin no. 4.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI test receiver	Rohde & Schwarz	ESCI3	19730	18	2020-11-30
V-network	Rohde & Schwarz	ENV216	39910	12	2020-02-29
EMC measurement software	Rohde & Schwarz	EMC32-MEB	20090	N/A	N/A

Table 6

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable

2.3 Bandwidth

2.3.1 Specification Reference

FCC 47 CFR Part 15C, Industry Canada RSS-210 and Industry Canada RSS-GEN, Clause 15.215 (c), N/A and 6.6

2.3.2 Equipment Under Test and Modification State

levo AWC 1, S/N: --- - Modification State 0

2.3.3 Date of Test

2019-07-09

2.3.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.9.1.

2.3.5 Environmental Conditions

Ambient Temperature 21,0 °C
Relative Humidity 35,0 %

2.3.6 Test Results

115 V / 60 Hz AC Powered - Inductive charging ON

Frequency (MHz)	6 dB Bandwidth (Hz)	99% Occupied Bandwidth (Hz)	F_{LOWER} (MHz)	F_{UPPER} (MHz)
0.175	14182	21128	0.164	0.185

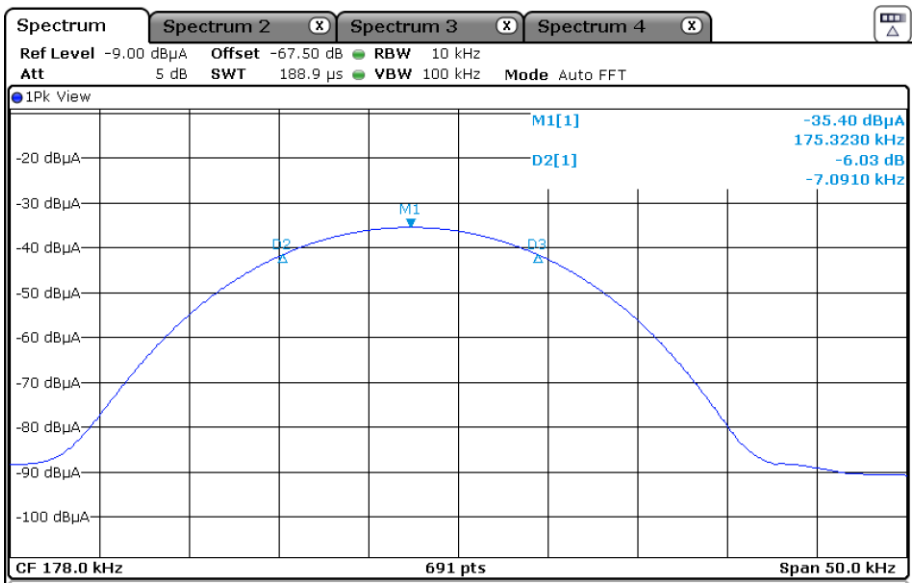


Figure 4 - 6 dB Bandwidth

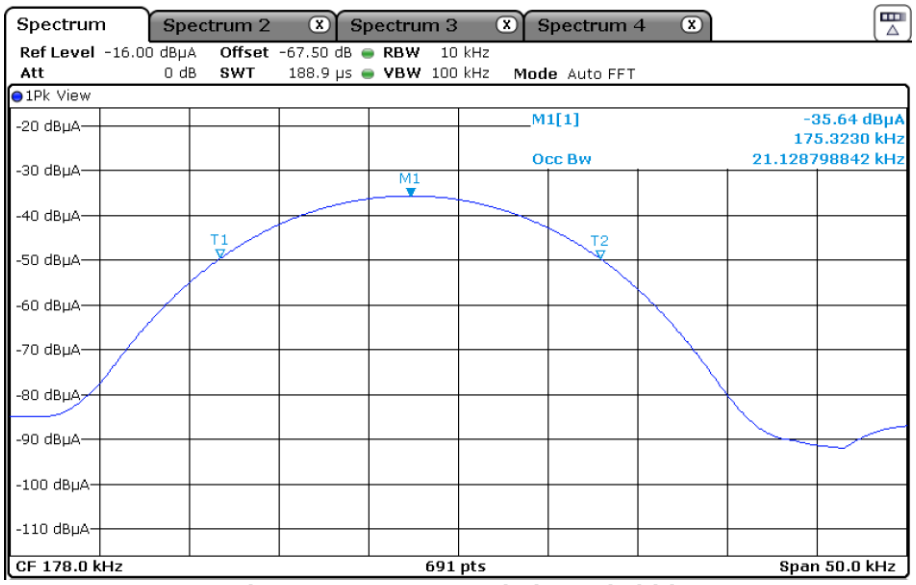


Figure 5 - 99% Occupied Bandwidth

2.3.7 Test Location and Test Equipment Used

This test was carried out in Non shielded room.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Rohde & Schwarz	FSV40	20219	12	2020-01-31

Table 7

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable

2.4 Radiated Spurious Emissions

2.4.1 Specification Reference

FCC 47 CFR Parts 15, Clause 15.209 and 15.205

2.4.2 Equipment Under Test and Modification State

levo AWC 1, S/N: --- - Modification State 0

2.4.3 Date of Test

2019-07-17

2.4.4 Test Method

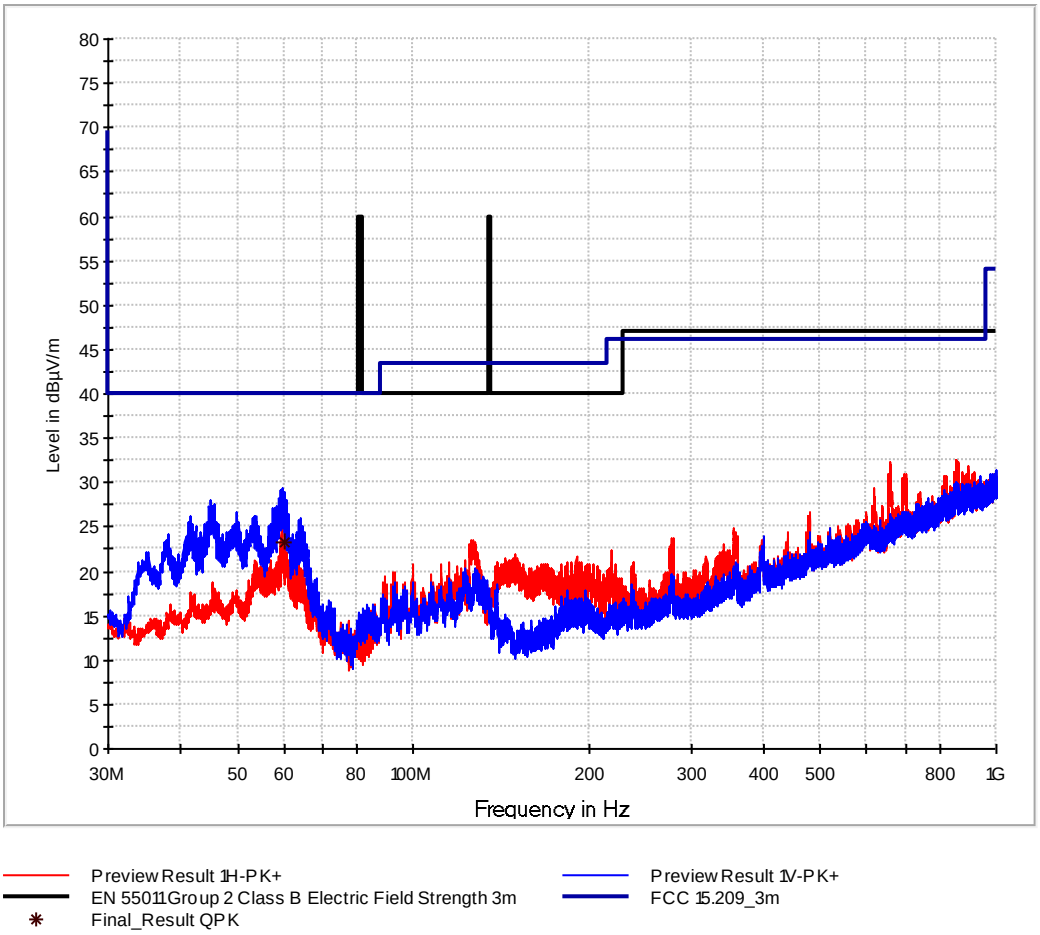
The test was performed in accordance with ANSI C63.10, clauses 6.5 and 6.6.

2.4.5 Environmental Conditions

Ambient Temperature	22.0 °C
Relative Humidity	34.0 %

2.4.6 Test Results

115 V / 60 Hz AC Powered - Inductive charging ON



Final Results 1:

Frequency MHz	*QuasiPeak dBµV/m*	*Limit dBµV/m*	*Margin dB*	*Meas. Time ms*	*Bandwidth kHz*	*Height cm*	*Pol*	*Azimuth deg*	*Corr. dB*
59,990000	23,36	40,00	16,64	1000,0	120,000	127,0	V	120,0	13,7

Figure 6 - 30 MHz to 1 GHz - Horizontal and Vertical

2.4.7 Test Location and Test Equipment Used

This test was carried out in Semi anechoic room - cabin no. 8.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
TRILOG Antenna (4db)	Schwarzbeck	VULB 9162	20116	36	2022-01-31
EMI test receiver	Rohde & Schwarz	ESW44	101814	12	2020-02-29
EMC measurement software	Rohde & Schwarz	EMC32-ME+	19719	N/A	N/A

Table 8

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable

2.5 Exposure of Humans to RF Fields

2.5.1 Specification Reference

IC RSS-GEN Issue 5, section 3.2 and
IC RSS-102, Issue 5, section 2.5
680106 D01 RF Exposure Wireless Charging Apps v03, chapter 5.b)

2.5.2 Equipment Under Test and Modification State

levo AWC 1, S/N: --- - Modification State 0

2.5.3 Date of Test

2019-07-18

2.5.4 Test Method

FCC:

According to KDB 680106 D01 RF Exposure Wireless Charging Apps v03, chapter 5.b):
Inductive wireless power transfer applications that meet the following requirements are excluded from submitting an RF exposure evaluation.

(1) Power transfer frequency is less than 1 MHz.
(2) Output power from each primary coil is less than or equal to 15 watts.
(3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.
(4) Client device is placed directly in contact with the transmitter.
(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
(6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

2.5.5 Environmental Conditions

Ambient Temperature	22.0 °C
Relative Humidity	30.0 %

Product Service

2.5.6 Test Results

115 V / 60 Hz AC Powered - Inductive charging ON

	Front of EUT	Right of EUT	Rear of EUT	Left of EUT	Top of EUT	Reference limit (KDB)	Limit Tests
Measured level [V/m]	0.81	0.36	0.62	0.53	0.60	307	614
Measured level [A/m]	0.015	0.017	0.023	0.010	0.018	0.815	1.63

Table 9: E-Field and H-Field Strength at 15 cm surrounding the EUT and 20 cm above the top surface of the EUT

FCC 47 CFR Part 1, Limit Clause 1.1310 (e):

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Product Service

Health Canada - 115 V / 60 Hz AC Powered - Inductive charging ON

Test distance: Direct Contact (0mm)

Frequency (kHz)	*Measured maximum RMS value (A/m)*	*Reference level (A/m)*	*Margin to reference value (A/m)*	*Result*
110-205	0.023	3.56	3.537	**Pass**

ISED Canada RSS-216, Limit Clause 6.4.2, RSS-102, Limit Clause 4:

According to RSS-102, the criteria listed in the following table shall be used to evaluate the environment impact of a human exposure to RF fields.

Frequency Range (MHz)	**Electric Field (V/m rms)**	**Magnetic Field (A/m rms)**	**Power Density (W/m^2)**	**Reference Period (minutes)**
0.003-10[21]	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142f^{0.3417}$	$0.008335f^{0.3417}$	$0.02619f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

Note: f is frequency in MHz.
*Based on nerve stimulation (NS).
** Based on specific absorption rate (SAR).

Maximum operating frequency of EUT is 205 kHz. Thus, the minimum limit for Canada is 3.56 A/m.

Product Service

Specifications:	RSS-102, Issue 5, Section 4, Table 4, Uncontrolled Environment SPR-002, Issue 1
Operation mode:	115 V / 60 Hz AC Powered - Inductive charging ON
Comment:	The nerve stimulation exposure limit is defined for the frequency range 3 kHz to 10 MHz, only. Thus, the 110-205 kHz was evaluated, only.

Test procedure:	IEC 62236-1, Section 4.2 “Measurement to show accordance to the reference levels”
Test distance:	Direct Contact (0mm)
Limit:	

Frequency Range (MHz)	*Electric Field (V/m_{rms})*	*Magnetic Field (A/m_{rms})*	*Peference Periode (min)*
0.003 – 10	83	90	Instantaneous
0.1 – 10	---	0.73 / f	6
1.1 - 10	$87/f^{0.5}$	---	6

f in MHz

Test positions:	All surfaces: The antenna was moved all over the equipment under test using a test distance as stated above.

Measured maximum value *(V/m)*	Maximum Limit *(V/m)*	Margin to reference value *(V/m)*
4.21	83.00	78.79

Measured maximum value *(A/m)*	Maximum Limit *(A/m)*	Margin to reference value *(A/m)*
1.16	90.00	88.84

2.5.7 Test Location and Test Equipment Used

This test was carried out in shielded room - cabin no. 4.

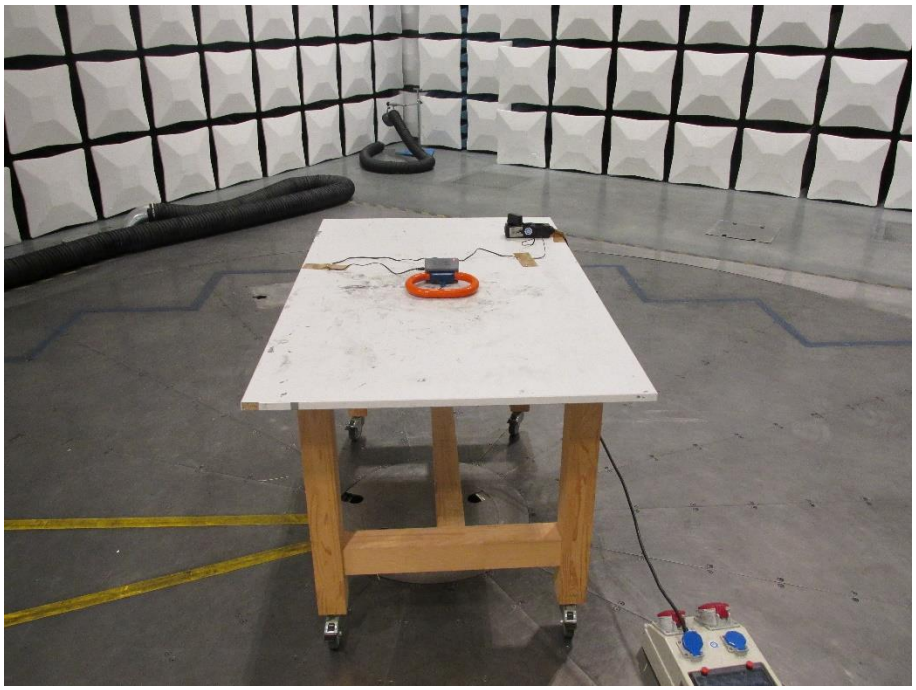
Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Exposure level tester with magnetic field probe	Narda	ELT-400	19725	27	2020-06-30

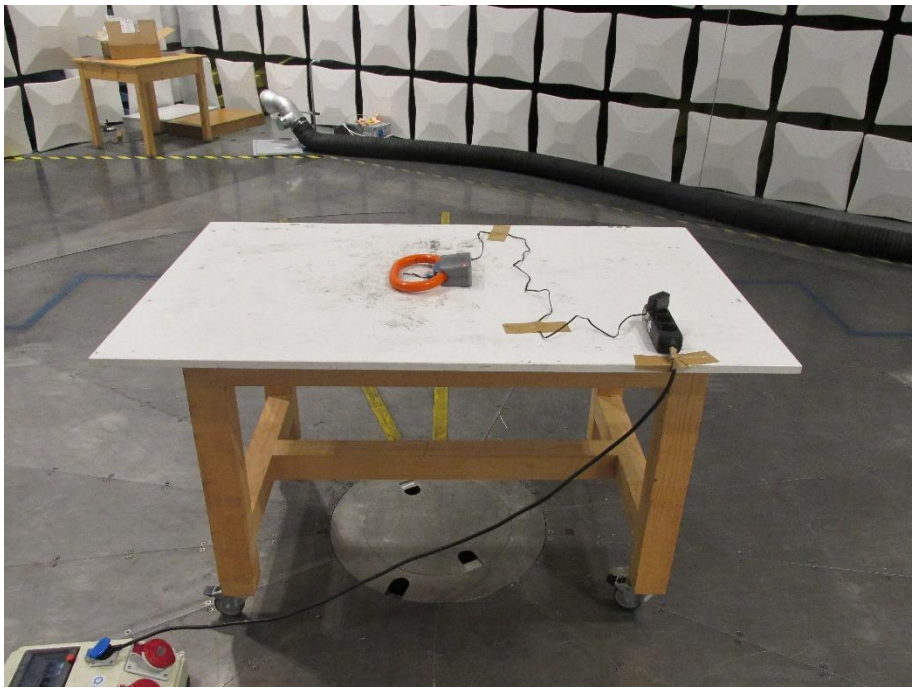
Table 10

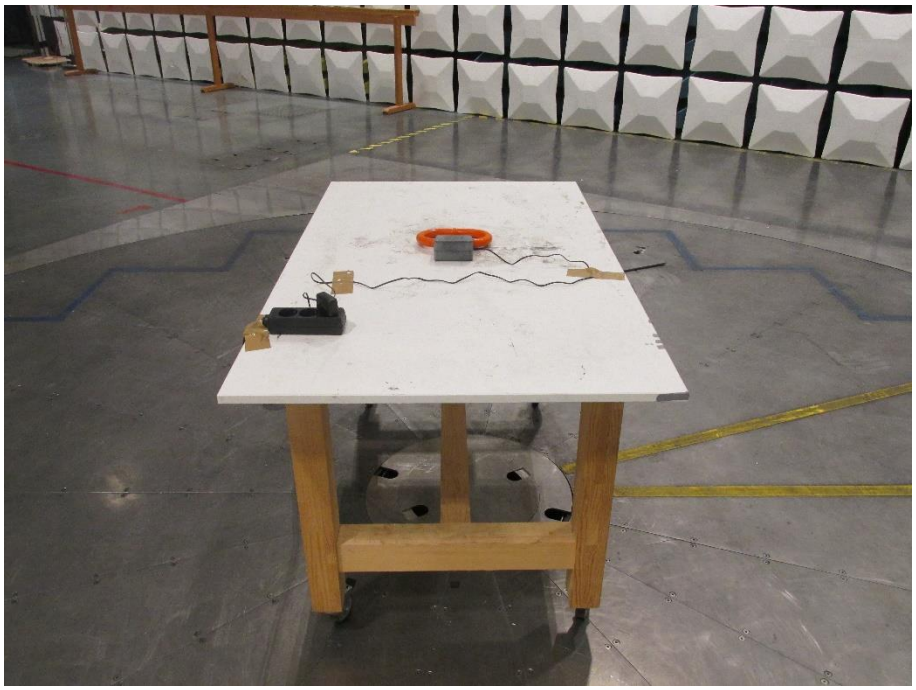
TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable

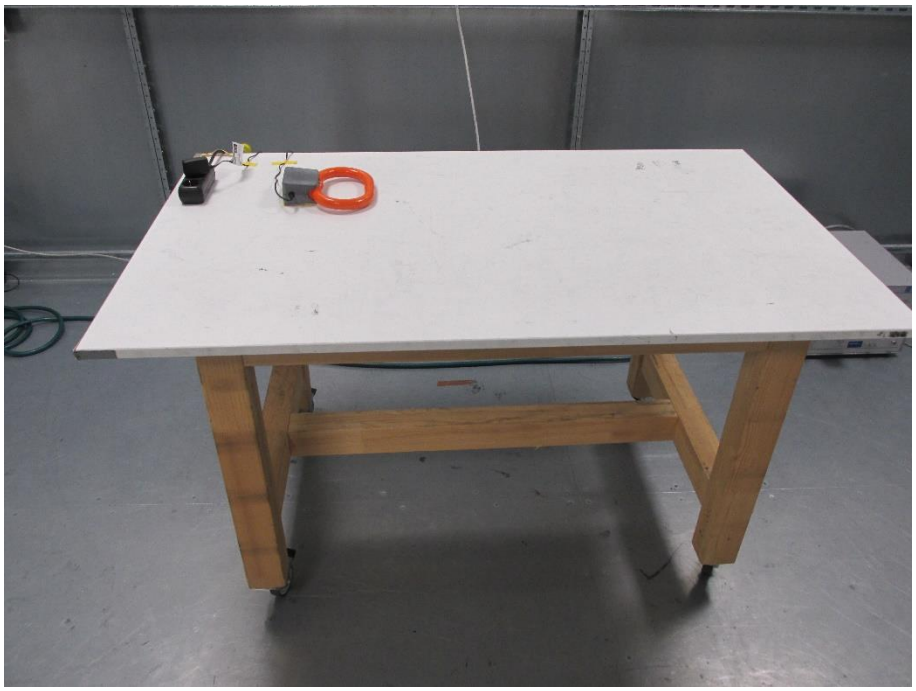
3 Photographs

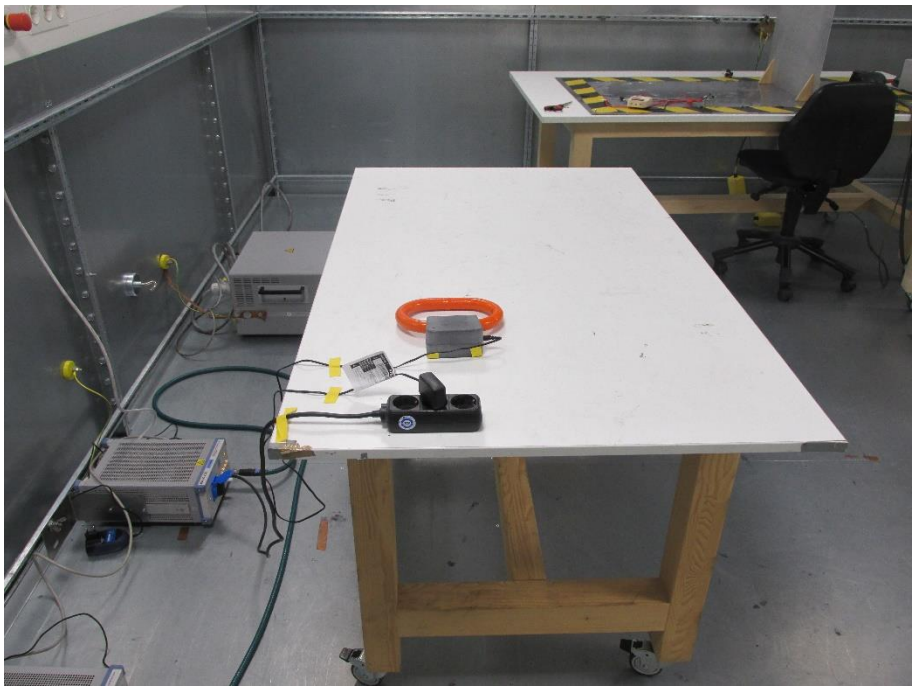
3.1 Equipment Under Test (EUT)

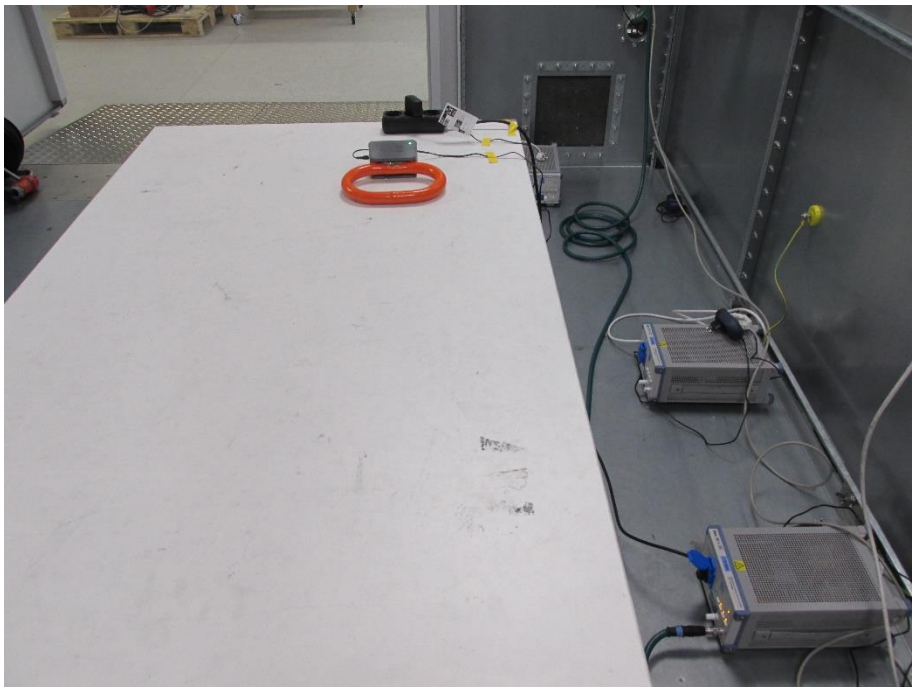


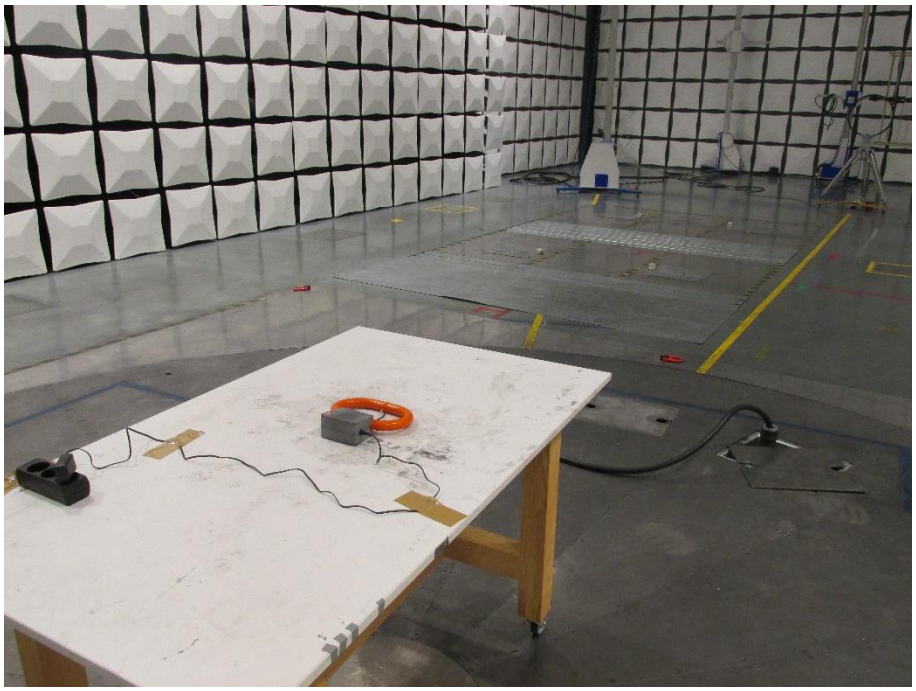












4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Radio Testing			
Test Name	kp	Expanded Uncertainty	Note
Occupied Bandwidth	2.0	±1.14 %	2
RF-Frequency error	1.96	±1 · 10-7	7
RF-Power, conducted carrier	2	±0.079 dB	2
RF-Power uncertainty for given BER	1.96	+0.94 dB / -1.05	7
RF power, conducted, spurious emissions	1.96	+1.4 dB / -1.6 dB	7
RF power, radiated			
25 MHz – 4 GHz	1.96	+3.6 dB / -5.2 dB	8
1 GHz – 18 GHz	1.96	+3.8 dB / -5.6 dB	8
18 GHz – 26.5 GHz	1.96	+3.4 dB / -4.5 dB	8
40 GHz – 170 GHz	1.96	+4.2 dB / -7.1 dB	8
Spectral Power Density, conducted	2.0	±0.53 dB	2
Maximum frequency deviation			
300 Hz – 6 kHz	2	±2,89 %	2
6 kHz – 25 kHz	2	±0.2 dB	2
Maximum frequency deviation for FM	2	±2,89 %	2
Adjacent channel power 25 MHz – 1 GHz	2	±2.31 %	2
Temperature	2	±0.39 K	4
(Relative) Humidity	2	±2.28 %	2
DC- and low frequency AC voltage			
DC voltage	2	±0.01 %	2
AC voltage up to 1 kHz	2	±1.2 %	2
Time	2	±0.6 %	2

Table 11

Radio Interference Emission Testing			
Test Name	kp	Expanded Uncertainty	Note
Conducted Voltage Emission			
9 kHz to 150 kHz (50Ω/50µH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50µH AMN)	2	± 3.4 dB	1
100 kHz to 200 MHz (50Ω/5µH AMN)	2	± 3.6 dB	1
Discontinuous Conducted Emission			
9 kHz to 150 kHz (50Ω/50µH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50µH AMN)	2	± 3.4 dB	1
Conducted Current Emission			
9 kHz to 200 MHz	2	± 3.5 dB	1
Magnetic Fieldstrength			
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB	1
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB	1
Radiated Emission			
Test distance 1 m (ALSE)			
9 kHz to 150 kHz	2	± 4.6 dB	1
150 kHz to 30 MHz	2	± 4.1 dB	1
30 MHz to 200 MHz	2	± 5.2 dB	1
200 MHz to 2 GHz	2	± 4.4 dB	1
2 GHz to 3 GHz	2	± 4.6 dB	1
Test distance 3 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 5.0 dB	1
1 GHz to 6 GHz	2	± 4.6 dB	1
Test distance 10 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 4.9 dB	1
Radio Interference Power			
30 MHz to 300 MHz	2	± 3.5 dB	1
Harmonic Current Emissions			4
Voltage Changes, Voltage Fluctuations and Flicker			4

Table 12

Product Service

Immunity Testing			
Test Name	kp	Expanded Uncertainty	Note
Electrostatic Discharges			4
Radiated RF-Field			
Pre-calibrated field level	2	+32.2 / -24.3 %	5
Dynamic feedback field level	2.05	+21.2 / -17.5 %	3
Electrical Fast Transients (EFT) / Bursts			4
Surges			4
Conducted Disturbances, induced by RF-Fields			
via CDN	2	+15.1 / -13.1 %	6
via EM clamp	2	+42.6 / -29.9 %	6
via current clamp	2	+43.9 / -30.5 %	6
Power Frequency Magnetic Field	2	+20.7 / -17.1 %	2
Pulse Magnetic Field			4
Voltage Dips, Short Interruptions and Voltage Variations			4
Oscillatory Waves			4
Conducted Low Frequency Disturbances			
Voltage setting	2	± 0.9 %	2
Frequency setting	2	± 0.1 %	2
Electrical Transient Transmission in Road Vehicles			4

Table 13

Note 1:
The expanded uncertainty reported according to CISPR 16-4-2:2003-11 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%
Note 2:
The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%
Note 3:
The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of kp = 2.05, providing a level of confidence of p = 95.45%
Note 4:
It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95%confidence.
Note 5:
The expanded uncertainty reported according to IEC 61000-4-3 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%
Note 6:
The expanded uncertainty reported according to IEC 61000-4-6 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%
Note 7:
The expanded uncertainty reported according ETSI TR 100 028 V1.4.1 (all parts) to is based on a standard uncertainty multiplied by a coverage factor of kp = 1.96, providing a level of confidence of p = 95.45%
Note 8:
The expanded uncertainty reported according to ETSI TR 102 273 V1.2.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of kp = 1.96, providing a level of confidence of p = 95.45%