
TITLE OF THE CD (English):
OIML R XX-3
Electric Vehicle Supply Equipment (EVSE)
Part 3: Test report format

Contents

Foreword

This test report format gives guidance on how to present test results. It is meant as an example, not necessarily the only correct format.

Explanatory Notes

Meaning of symbols used in this report

BMPE	=	base maximum permissible error
c	=	mean temperature coefficient
e_u and e_l	=	errors at the uppermost and the lowest temperatures respectively in the temperature interval of interest
t_u and t_l	=	uppermost and the lowest temperatures respectively in the temperature interval of interest
f_{nom}	=	nominal frequency
U_{nom}	=	nominal voltage
U_{test}	=	test voltage
I_{max}	=	maximum current
I_{tr}	=	transitional current
I_{min}	=	minimum current
I_{st}	=	starting current
H1	=	humidity class 1: enclosed locations where the instruments are not subjected to condensed water, precipitation, or ice formations
H2	=	humidity class 2: enclosed locations where the instruments may be subjected to condensed water, to water from sources other than rain and to ice formations.
H3	=	humidity class 3: open locations with average climatic conditions
|x|	=	absolute value of x
τ	=	expected time between two pulses (period)
m	=	number of elements
k	=	is the number of pulses emitted by the test output per kilowatt hour (the meter constant expressed in imp/kWh)
Δt	=	test period (for test of no-load condition)

References to the test procedures in Part 2 of this Recommendation are given in brackets after each test heading.

1 Information

1.1 Test information

Test Report

Report reference number:	
Date of Issue:	
Date(s) of testing:	

Laboratory

Name:	
Address:	
Contact details:	

Client / applicant

Name:	
Address:	

Test specification

Record any variations from Parts 1 and 2 of this Recommendation.

1.2 EVSE information

Manufacturer and type

EVSE manufacturer:	
EVSE type (model designation):	

Does this EVSE have a separately type approved meter as its main metrology component? Yes ☐ No ☐

Meter manufacturer:	
Meter type (model designation):	

Sample EVSE

Serial number(s):	

1.2.1 Remarks

1.3 EVSE specification

Type

Construction: ☐ Unitary EVSE ☐ Complex DC EVSE
Mode(s): ☐ AC Single Phase ☐ AC 3-Phase ☐ DC

Transaction types supported

Transaction types: ☐ Ad hoc public ☐ Contractual public ☐ Contractual private

Accuracy class

Accuracy class: ☐ A (2%) ☐ B (1%) ☐ C (0.5%)

Output electrical parameters

AC EVSE

			Current values negative direction:	
Nominal frequency, f_{nom}:		Hz		
Nominal voltage(s), U_{nom}:		V		
Maximum current, I_{max}:		A		A
Transitional current, I_{tr}:		A		A
Minimum current, I_{min}:		A		A
Starting current, I_{st}:		A		A
MMQ:		kWh		

DC EVSE

Minimum voltage, U_{min}:		V
Maximum voltage, U_{max}:		V
Maximum current, I_{max}:		A
Transitional current, I_{tr}:		A
Minimum current, I_{min}:		A
Starting current, I_{st}:		A
MMQ:		kWh

Environment

Lower specified temperature: ☐ −55 °C ☐ −40 °C ☐ −25 °C ☐ −10 °C ☐ +5 °C
Upper specified temperature: ☐ +30 °C ☐ +40 °C ☐ +55 °C ☐ +75 °C ☐ +85 °C
Humidity class: ☐ H1 ☐ H2 ☐ H3
For use: ☐ Outdoor ☐ Indoor use only

Direction of energy flow

Energy flow: ☐ EVSE to EV only ☐ Bidirectional

Hardware and software

Hardware version(s):	
Software version(s):	
Maximum current, Imax:	

Auxiliary devices

Provide information about any auxiliary devices

Remarks

1.4 Adjustments or modifications

Provide information about any authorised and agreed upon adjustments or modifications for sample meters during the evaluation.

1.5 Test values and configuration

Specify the values used for testing (unless otherwise specified in individual tests).

Test voltage:		V
Test frequency:		Hz
Test connection mode:	☐ AC single phase ☐ AC three-phase ☐ DC	

Remarks

1.6 Test equipment

List all test equipment used in this report.

Equipment name	Manufacturer	Type no.	Serial no.	Used for (test reference)

Remarks

2 Tests for compliance with maximum permissible error

2.1 Initial intrinsic error for positive and negative flow (7.3.1)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	
EVSE MMQ:	
Claimed accuracy class:	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

System powered up for 15 minutes prior to testing: ☐

Test voltage #1:	

Positive energy flow					
Test Current (A)	Energy per EVSE (kWh)	Energy per reference meter (kWh)	Error (%)	BMPE (%)	Pass
I_{min}					☐
I_{tr}					☐
50% I_{max}					☐
I_{max}					☐
50% I_{max}					☐
I_{tr}					☐
I_{min}					☐

Negative energy flow					
Test Current (A)	Energy per EVSE (kWh)	Energy per reference meter (kWh)	Error (%)	BMPE (%)	Pass
I_{min}					☐
I_{tr}					☐
50% I_{max}					☐
I_{max}					☐
50% I_{max}					☐
I_{tr}					☐
I_{min}					☐

Test voltage #2:	

Positive energy flow					
Test Current (A)	Energy per EVSE (kWh)	Energy per reference meter (kWh)	Error (%)	BMPE (%)	Pass
I_{min}					☐
I_{tr}					☐
50% I_{max}					☐
I_{max}					☐
50% I_{max}					☐
I_{tr}					☐
I_{min}					☐

Negative energy flow					
Test Current (A)	Energy per EVSE (kWh)	Energy per reference meter (kWh)	Error (%)	BMPE (%)	Pass
I_{min}					☐
I_{tr}					☐
50% I_{max}					☐
I_{max}					☐
50% I_{max}					☐
I_{tr}					☐
I_{min}					☐

Test voltage #3:	

Positive energy flow					
Test Current (A)	Energy per EVSE (kWh)	Energy per reference meter (kWh)	Error (%)	BMPE (%)	Pass
I_{min}					☐
I_{tr}					☐
50% I_{max}					☐
I_{max}					☐
50% I_{max}					☐
I_{tr}					☐
I_{min}					☐

Negative energy flow					
Test Current (A)	Energy per EVSE (kWh)	Energy per reference meter (kWh)	Error (%)	BMPE (%)	Pass
I_{min}					☐
I_{tr}					☐
50% I_{max}					☐
I_{max}					☐
50% I_{max}					☐
I_{tr}					☐
I_{min}					☐

- Check that in every test $|\text{error}| \leq |\text{BMPE}|$ ☐ Passed ☐ Failed

Remarks:

2.2 Starting current (7.3.2)

Meter serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Positive energy flow:

I_{st} (A)	MMQ	Energy per EVSE (kWh)	Energy per reference meter (kWh)	BMPE (%)	Passed
					☐

Negative energy flow:

I_{st} (A)	MMQ	Energy per EVSE (kWh)	Energy per reference meter (kWh)	BMPE (%)	Passed
					☐

Note: the BMPE is calculated according to the formula listed in Table 2 of Part 1 for the applied current.

Remarks:

3 Tests for influence quantities

3.1 Self heating (7.4.2)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

AC EVSE

Test current (A)	Current (A)	Time at I_{max} (minutes)	Error (%)	Error shift (%)	
$\geq I_{tr}$		Initial Measurement		N/A	N/A
I_{max}		For 3 hours			☐
$\geq I_{tr}$		Final measurement			Passed ☐

DC EVSE

Test current (A)	Current (A)	Time at I_{max} (minutes)	Error (%)	Error shift (%)	
$\geq I_{tr}$		Initial Measurement		N/A	N/A
I_{max}		Deliver 25 kWh			☐
I_{max}		Deliver 25 kWh			☐
I_{max}		Deliver 25 kWh			☐
$\geq I_{tr}$		Final measurement			Passed ☐

Remarks:

3.2 Temperature dependence (7.4.3)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

- The mean temperature coefficient, c, is calculated by $c = (e_u - e_l)/(t_u - t_l)$.
- The temperature intervals, $(t_u - t_l)$, span at least 15 °C and no more than 23 °C; and the set of intervals span the entire specified operating range (intervals may overlap).

Test voltage:	
Test current:	

I_{tr}

Temperature interval, t_l to t_u (°C):					
Low temperature	High temperature	Error (%)		Mean temperature coefficient (%/K)	
		e_l	e_u	c	Limit
−55 ºC	−40 ºC				
−40 ºC	−25 ºC				
−25 ºC	−10 ºC				
−10 ºC	+5 ºC				

+5 ºC	+23 ºC				
+23 ºC	+40 ºC				
+40 ºC	+55 ºC				
+55 ºC	+70 ºC				
+70 ºC	+85 ºC				

Test voltage:	
Test current:	

50% I_{max}

Temperature interval, t_l to t_u (°C):					
Low temperature	High temperature	Error (%)		Mean temperature coefficient (%/K)	
		e_l	e_u	c	Limit
−55 ºC	−40 ºC				
−40 ºC	−25 ºC				
−25 ºC	−10 ºC				
−10 ºC	+5 ºC				
+5 ºC	+23 ºC				
+23 ºC	+40 ºC				
+40 ºC	+55 ºC				
+55 ºC	+70 ºC				
+70 ºC	+85 ºC				

Test voltage:	
Test current:	

I_{max} *(Only required for AC EVSE)*

Temperature interval, t_l to t_u (°C):					
Low temperature	High temperature	Error (%)		Mean temperature coefficient (%/K)	
		e_l	e_u	c	Limit
−55 ºC	−40 ºC				
−40 ºC	−25 ºC				
−25 ºC	−10 ºC				
−10 ºC	+5 ºC				
+5 ºC	+23 ºC				
+23 ºC	+40 ºC				
+40 ºC	+55 ºC				
+55 ºC	+70 ºC				
+70 ºC	+85 ºC				

Add temperature coefficients table for each temperature interval.

- Check that each $|c| \leq |\text{limit}|$.
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:

3.3 Voltage variation (AC EVSE) (7.4.4)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Test current: 50% I_{max}

Voltage	Error (%)	Error shift (%)	MPE shift (%) for EVSE class
Reference (U_{nom})		N/A	N/A
0.9 lowest U_{nom}			
lowest U_{nom}			
next U_{nom}			
next U_{nom}			
highest U_{nom}			
1.1 highest U_{nom}			

Add rows for additional U_{nom} values as required.

- Check that each |error shift| ≤ |limit|
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:

3.4 Frequency variations (AC EVSE) (7.4.5)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

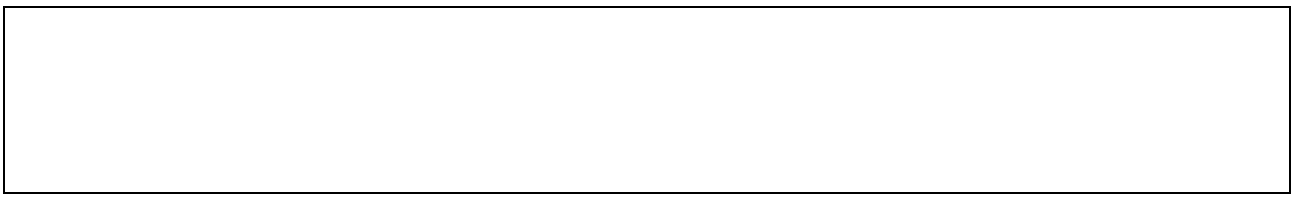
f_{nom} (Hz):				
Test current (A)	Frequency variation	Error (%)	Error shift (%)	MPE shift (%) for EVSE class
50% I_{max}	Reference (f_{nom})		N/A	N/A
	0.98 f_{nom}			
	1.02 f_{nom}			

Add tables for additional f_{nom} values as required.

- Check that each |error shift| ≤ |limit|
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:



3.5 Harmonics in voltage and current (AC EVSE) (7.4.6)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

- Test current 50 % I_{max}
- The EV#1 current waveform is specified in OIML R XX-2, clause 6.4.6, Table 12 and Figure 3.
- The EV#2 voltage waveform is specified in OIML R XX-2, clause 6.4.6, Table 13 and Figure 4.

Test number	Condition	Error (%)	Error shift (%)	MPE shift (%) for EVSE class
Ref	Reference, sinusoidal voltage and current		N/A	N/A
1	Sinusoidal voltage EV#1 current			
2	EV#1 voltage EV#1 current			
3	EV#2 voltage EV#1 current			

- Check that each |error shift| ≤ |limit|

☐ Passed ☐Failed

Remarks:

3.6 Reversed phase sequence (any two phases interchanged) (AC EVSE) (7.4.7)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Test current (A)	Phase sequence	Error (%)	Error shift (%)	MPE shift (%) for EVSE class
50% I_{max}	Reference (L1, L2, L3)		N/A	N/A
	L1, L3, L2			

- Check that each |error shift| ≤ |limit|

☐ Passed ☐Failed

Remarks:

3.7 Continuous (DC) magnetic induction of external origin (7.4.8)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Test current:		$\geq I_{tr}$

Specify or illustrate the three orthogonal directions relative to the EVSE designated as x, y & z:

	Error shift						
Magnet placement	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	MPE shift (%) for EVSE class
No magnet							
Front							
Left side							
Right side							
Rear							

- Check that each |error shift| ≤ |limit|
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:

3.8 Magnetic field (AC, power frequency) of external origin (7.4.9)

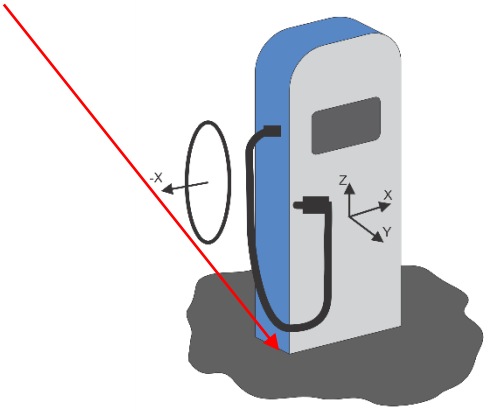
EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating
Applicable standard:	*(IEC 61000-4-8 or IEC 61851-21-2)*

Test current:		$\geq I_{tr}$

x, y, z coordinates have origin at the left, front, lower corner



Determination of worst case location phase and orientation

Loop orientation (Poynting Vector)	**EVSE Face** (front, back, left, right, top)	**Height** (center of coil from floor)	**Phase**	**EVSE Measurement**	**Reference meter Measurement**	MPE shift (%) for EVSE class

Extend if needed.

Highest measured error shift (%):	
MPE Shift (%) for EVSE class:	

- Check that |maximum error shift| ≤ |limit|

☐ Passed ☐Failed

Remarks:

3.9 Radiated, radio frequency (RF), electromagnetic fields (7.4.10.1)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating
Applicable standard:	*(IEC 61000-4-3 or IEC 61851-21-2)*

Test current:		$\geq I_{tr}$

Antenna / facility:	
Field Strength (V/m):	
Dwell time:	

Test current (A)	Power factor	Frequency value / range (MHz)	Polarization	Facing EVSE	Error shift (%)	MPE Shift (%) for EVSE class
	unity		Vertical	Front		
				Back		
				Right		
				Left		
				Top		
				Bottom		
			Horizontal	Front		
				Back		
				Right		
				Left		
				Top		
				Bottom		

Extend for each antenna/facility, field strength and frequency values (including sensitive frequencies).

- Check that each |error shift| ≤ |limit|
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:

3.10 Immunity to conducted disturbances, induced by low frequency fields (7.4.10.2)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Active transaction
Applicable standard:	IEC 61000-4-19:2014, 5.2.2 and 5.2.3

Test current:	

$\geq I_{tr}$

RF Amplitude:			
Dwell time:			
Frequency	Differential Current	Error shift (%)	MPE shift (%) for EVSE class
None	None	Reference	
2 kHz			
3 kHz			
5 kHz			
7 kHz			
10 kHz			
15 kHz			
20 kHz			
30 kHz			
40 kHz			
50 kHz			
70 kHz			
85 kHz			
100 kHz			
120 kHz			
150 kHz			

- Check that each |error shift| ≤ |limit|
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:

3.11 Immunity to conducted disturbances, induced by radiofrequency fields (7.4.10.3)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Transaction active
Applicable standard:	IEC 61000-4-6 and IEC 61851-21-2

Test current:		$\geq I_{tr}$

RF Amplitude:		
Dwell time:		
Susceptible Frequencies	Error shift (%)	MPE shift (%) for EVSE class
None	Reference	

- Check that each |error shift| ≤ |limit|

☐ Passed ☐Failed

Remarks:

3.12 Operation of ancillary devices (7.4.11)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Test current (A)	Power factor	Operation of ancillary device	Error (%)	Error shift (%)	MPE shift (%) for EVSE class
≥ I_{tr}	unity	No operation of any ancillary device		N/A	N/A
		Device 1			
		Device 2			
		Device 3			

- Check that each |error shift| ≤ |limit|

☐ Passed ☐Failed

Remarks:

4 Test for disturbances

4.1 Electrostatic discharge (7.5.2)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Applied current:	
Voltage applied to voltage circuits:	
Applicable standard:	IEC 61000-4-2 and IEC 61851-21-2, if applicable

Test / event	Discharge mode	Test voltage (kV)	Polarity	Number of discharges (≥ 10)	Error (%)	Error shift (%)
Initial error						
Direct	Contact	6	Positive			
			Negative			
	Air	8	Positive			
			Negative			
Indirect, Horizontal coupling plane	Contact	8	Positive			
			Negative			
Indirect, Vertical coupling plane	Contact	8	Positive			
			Negative			

- Check that for each test, the error shift is within 1 base MPE.

☐ Passed ☐Failed

Remarks:

4.2 Fast transients (7.5.3)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating
Voltage applied to voltage circuits:	
Applicable standards:	IEC 62052-11, IEC 61000-4-4, and IEC 61851-21-2, if applicable
Duration of test:	60 s at each polarity
Repetition rate:	100 kHz

Test current (A)	Power factor	Circuit	Test Voltage (kV)	Error (%)	Error shift (%)	Limit (%)
	unity	Reference			N/A	N/A

- Check that each $|\text{shift}| \leq 1.0$ BMPE
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance

☐ Passed ☐Failed

Remarks:

4.3 Voltage dips and interruptions (7.5.4)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating, with no current
Voltage applied to voltage circuits:	
Applicable standards:	IEC 61000-4-11, IEC 61000-4-34

Event / Test	Residual voltage (% ref)	Duration (cycles[1])	No. of events	Inception angle	Error (%)	Error shift (%)
Initial error						
Dip 1	0 %	0.5/0.5	10	0		
			10	180		
Dip 2	0 %	1/1	10	0		
Dip 3	40 %	10/12	10	0		
Dip 4	70 %	25/30	10	0		
Dip 5	80 %	250/300	10	0		
Interruption Test	0 %	250/300	10	0		

Note 1: Cycles are given for 50 Hz and 60 Hz power line frequencies. E.g. 25/30 means 25 cycles for 50 Hz, and 30 cycles for 60 Hz.

- Check that each $|\text{shift}| \leq 1.0$ BMPE.
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance
  - the EVSE still fulfils the BMPE

☐ Passed ☐Failed

Remarks:

4.4 Surges on mains power lines (7.5.5)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating, with no current
Voltage applied to voltage circuits:	
Applicable standard:	IEC 61000-4-5, IEC 61851-21-2
Number of tests:	5 positive, 5 negative
Repetition rate:	Maximum 1 per minute

Voltage circuits, application	Test voltage (kV)	Generator source impedance (Ω)	Phase angle	Polarity
Voltage circuits line to line	2	2	0°	Positive
				Negative
			90°	Positive
				Negative
			180°	Positive
				Negative
			270°	Positive
				Negative
Voltage circuits line to earth	4	2	0°	Positive
				Negative
			90°	Positive
				Negative
			180°	Positive
				Negative
			270°	Positive
				Negative
Auxiliary circuits, application	Test voltage (kV)[1]	Generator source impedance (Ω)	Phase angle	Polarity[2]
Auxiliary circuits line to line	1	42	0°	Positive
				Negative
			90°	Positive
				Negative
			180°	Positive
				Negative
			270°	Positive
				Negative
Auxiliary circuits line to earth	2	42	0°	Positive
				Negative
			90°	Positive
				Negative
			180°	Positive
				Negative
			270°	Positive
				Negative

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that each $|\text{shift}| \leq 1.0$ BMPE.
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance
  - the EVSE still fulfils the BMPE

☐ Passed ☐Failed

Remarks:

4.5 Short-time overcurrent (7.5.6)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating
Voltage applied to voltage circuits:	
Short-time overcurrent (A):	
Duration:	

Before application of short-time overcurrent				After return to normal temperature	
Test current (A)	Power factor	Phase	Intrinsic Error (%)	Error (%)	BMPE (%)
	unity	L1			
		L2			
		L3			

- Check that after the test:
  - the EVSE shows no damage;
  - the EVSE operates within the BMPE.

☐ Passed ☐Failed

Remarks:

Environmental disturbances (7.5.7)

4.6 Protection against solar radiation (7.5.7.1)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Non-operating
Applicable standard:	IEC 60068-2-5:2018
Test cycle:	8 h irradiation and 16 h darkness; upper temperature +55 °C
Duration:	3 cycles or 3 days

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
current ≥ I_{tr}	unity		

- Check that each change in energy is not more than the critical change value.
- Check that after the test:
  - the EVSE shows no damage
  - the EVSE operates with no degradation to metrological performance
  - the EVSE still fulfils the BMPE

☐ Passed ☐Failed

Remarks:

4.7 Extreme temperatures - Dry Heat (7.5.7.2)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Non-operating
Applicable standards:	IEC 60068-2-2, IEC 60068-3-1
Test temperature (°C):	
Duration:	2 h

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that after the test:
  - the EVSE shows no damage
  - the EVSE still fulfils the BMPE

☐ Passed ☐Failed

4.8 Extreme temperatures - Cold (7.5.7.3)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Non-operating
Applicable standards:	IEC 60068-2-1, IEC 60068-3-1
Test temperature (°C)	
Duration (hours)	2

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that after the exposure:
  - the EVSE shows no damage
  - the EVSE still fulfils the BMPE

☐ Passed ☐Failed

Remarks:

4.9 Damp Heat, steady-state (non-condensing), for humidity class H1 (7.5.7.4)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating, with no current
Applicable standards:	IEC 60068-2-78, IEC 60068-3-4
Test temperature:	30 °C
Humidity:	85 %
Duration:	2 days

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that during and after the test the EVSE operates correctly.
- Check that after the exposure:
  - the EVSE shows no mechanical damage or water ingress;
  - the EVSE still fulfils the BMPE.

☐ Passed ☐Failed

Remarks:

4.10 Damp Heat, cyclic (condensing), for humidity class H2 and H3 (7.5.7.5)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

EVSE state:	Operating, with no current
Applicable standards:	IEC 60068-2-30, IEC 60068-3-4
Specified humidity class:	
Upper temperature:	
Lower temperature:	25 °C
Humidity:	85 %
Duration:	2 days (2 cycles)

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that during and after the test the EVSE operates correctly.
- Check that after the test:
  - the EVSE shows no mechanical damage or water ingress;
  - the EVSE still fulfils the BMPE.

☐ Passed ☐Failed

Remarks:

Mechanical disturbances

4.11 Vibrations (7.5.8.1)

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Applicable standards	IEC 60068-2-47, IEC 60068-2-64
EVSE state:	Non-operating, without packing
Frequency range:	10 Hz to 150 Hz
Acceleration Spectral Density (ASD) level 10–20 Hz:	1 $m^2 s^{-3}$
Acceleration Spectral Density (ASD) level 20–150 Hz:	−3 dB/octave
Duration per axis	2

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that after the disturbance:

- the EVSE shows no mechanical damage;
- the EVSE still fulfils the BMPE.

☐ Passed ☐Failed

4.12 Shock (7.5.8.2)

			At start	At end
EVSE serial no.		Temperature (°C):		
Observer:		Time (hh:mm):		
Date (dd/mm/yyyy):				

Applicable standard	IEC 60068-2-27
EVSE state:	Non-operating, without packing
Pulse shape:	Half-sine
Peak acceleration:	30 g_n
Duration of the pulse:	18 ms

Check BMPE

Test current (A)	Power factor	Error (%)	BMPE (%)
	unity		

- Check that after the disturbance:
  - the EVSE shows no mechanical damage;
  - the EVSE still fulfils the BMPE.

☐ Passed ☐Failed

Remarks:

4.13 Durability (7.5.9)

			At start	At end
EVSE serial no.		Temperature (°C):		
Observer:		Time (hh:mm):		
Date (dd/mm/yyyy):				

EVSE state:	Functional mode
Maximum operating Temperature:	
Test Load:	50% I_{max}, reference voltage
Duration of applied load:	8h
Number of cycles	10

Other details

Before application of durability test			After application of durability test		
Test current (A)	Power factor	Intrinsic Error (%)	Error (%)	Error shift (%)	Limit (%) (0.5 × BMPE)
I_{tr}	unity				
50% I_{max}	unity				

- Check that each $|\text{shift}| \leq 0.5$ BMPE
- Check that after the test the EVSE shows no damage.

☐ Passed ☐Failed

Remarks:

5 Tests for technical requirements

5.1 Tests for the evaluation of software-controlled EVSEs

EVSE serial no.	
Observer:	
Date (dd/mm/yyyy):	

	At start	At end
Temperature (°C):		
Time (hh:mm):		

Requirements for software-controlled components and EVSE (OIML R xx-1, 4.4)	Validation method	Validation Description	Passed	Failed
Software identification (4.4.3)	AD + VFTSw			
Audit trail (4.4.4)	AD + VFTSw			
Error protection (4.4.5)	AD + VFTSw			
Time stamps (4.4.6)	AD + VFTM			
Software update (4.4.8)	AD + VFTSw			
Remote verification update capabilities (4.4.9)	AD + VFTSw			
Software (4.4.10)	AD + VFTSw			
Compatibility of operating system and hardware (4.4.11)	AD + VFTSw			
Constraints for operation (4.4.12)	AD + VFTSw			
Parameter (4.4.13)	AD + VFTM			
Measurement data (4.4.14)	AD + VFTSw			
Client interface (4.4.15)	AD + VFTSw			
Communication interface (4.4.16)	AD + VFTSw			
Separation of electronic devices and components (4.4.17)	AD			
Separation of modules (4.4.18)	AD			
Storage of data (4.4.19)	AD + VFTSw			
Transmission of measurement data (4.4.20)	AD + VFTSw			
Software identification (4.4.21)	AD + VFTSw			