

# **EVF-23.4 & 23.7**

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Letter from the  
submitters dated  
August 22, 2023



# Executive summary

- The submitters, supporters and several other interested charge point providers met several times during and after the NCWM Annual meeting and arrived at these recommendations together.
- EVF 23.4 and EVF 23.7 have been greatly simplified due to the passage of EVF-23.1 (Note: section numbers have changed)
- The N.5 test requirements have direct affects on the size, expense, and availability of equipment required to perform field accuracy inspections.
- These recommendations represent a balanced approach to metrology and an efficient inspection workflow.

## Section 3.40 N.5 Test of an AC EVSE System

### Current HB 44 requirements

1. A point not greater than **10 % of the maximum deliverable amperes** (expressed as MDA) as determined from the pilot signal.
2. A point not less than **85 % of the maximum deliverable amperes** (expressed as MDA) as determined from the pilot signal. (Not required to exceed 7.2 kW.)

### EVF 23.4 & 23.7 Recommendations

Accuracy tests shall be performed at the following current levels:

- (i) A point between **4 A and 10 A**; and
- (ii) A point between **40 % and 60 %** of the MDA; and
- (iii) A point between **70 % and 100 %** of the MDA.

Maximum deliverable amperage (MDA): The maximum current available from the EVSE at the time of the test as determined by the Control Pilot Pulse Width Modulation signal or via digital communication between the EVSE and EV or test equipment.

# Test Examples for an AC EVSE System

High power Level 2 AC charger		Current Tests		Proposed Tests		
		10%	85%	Min.	40%	70%
Line voltage (VAC)	240	240	240	240	240	240
Max current (A)	80	8	68	6	32	56
Max Power (kW)	19.2	1.9	16.3	1.4	7.7	13.4
Low power Level 2 AC charger		Current		Proposed		
		10%	85%	Min.	40%	70%
Line voltage (VAC)	208	208	208	208	208	208
Max current (A)	32	3.2	27.2	6	12.8	22.4
Max Power (kW)	6.7	0.7	5.7	1.2	2.7	4.7

Current low power test for a low power charger violates the required minimums for charger design.

## Section 3.40 N.5 Test of an DC EVSE System

### Current HB 44 requirements

1. A point not greater than 10 % of the maximum deliverable amperes (expressed as MDA) as determined from the pilot signal.
2. A point not less than 85 % of the maximum deliverable amperes (expressed as MDA) as determined from the pilot signal. (Not required to exceed 7.2 kW.)

### EVF 23.4 & 23.7 Recommendations

Accuracy tests shall be performed at the following current levels:

- (i) A point between 10% and 20% of the MDA, but not less than 30 A; and
- (ii) A point between 25 % and 100 % of the MDA, with the recommendation to test at the maximum power level within that range that is possible using the test equipment available.

Note: The test points (i) and (ii) above must not be at the same current level. It is recommended that the current levels should be separated to the extent that the test equipment will allow.

# Test Examples for a DC EVSE System

High power DC charger		Current Tests		Proposed Tests	
		10%	85%	10%	25%
Charge voltage (VDC)	1000	920	920	920	920
Max current (A)	500	50	425	50	125
Max Power (kW)	500.0	46.0	391.0	46.0	115.0
Low power DC charger		Current Tests		Proposed Tests	
		10%	85%	20%	25%
Charge voltage (VDC)	1000	480	480	480	480
Max current (A)	100	10	85	30	25
Max Power (kW)	100.0	4.8	40.8	14.4	12.0

Note: min. amps kick in

Proposed tests reduce necessary electrical load by 1/3 – reducing size, weight and expense

# Type Evaluation Testing of a DC EVSE

- The new proposal also adds Type Evaluation requirements
- Type Evaluation requirements are only applied under laboratory conditions
- These have been added because type evaluation requirements do not exist anywhere else, and the DC chargers must be evaluated over a wide range of operating conditions to ensure adequate metrology to enter the marketplace.

## Test Summary:

- High and low voltage range requirements
- High, medium and low current range requirements
- All current ranges tested within both voltage ranges (3x2)

# Test of an DC EVSE System – use of EV load

## Current HB 44 requirements

**Note:** For DC systems it is anticipated that an electric vehicle may be used as the test load. Under that circumstance, **testing at the load presented by the vehicle** shall be sufficient.

- insufficient, poor metrology
- range of vehicles is too great

## EVF 23.4 & 23.7 Recommendations

For DC systems it is anticipated that an electric vehicle may be used as the test load. Under that circumstance, testing at the load presented by the vehicle shall be sufficient for field verification provided that it is **greater than 40 % of the MDA and no less than 30 A.**

- better metrology, but still not great
- must choosing the right vehicle
- state of charge of the vehicle must be known
- limited number of tests can be performed



## Please consider -

- The N.5 test requirements have direct affects on the size, expense, and availability of equipment required to perform field accuracy inspections.
- The latest recommendations represent a balanced approach to metrology and an efficient inspection workflow.

**The submitters and supporters respectfully request that the WWMA S&T Committee recommend the proposed modifications progress to a voting item at the NCWM interim.**

# Q&A?

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