Measured Central Management System: CityEV

Test date: 30 May 2018

Location: Power Data Associates office. Wrest Park, Silsoe, Bedfordshire MK45 4HR

Facilitator: Kevin Spencer

Witness: Sam Daoudi

Testing: CityEV measured Central Management System (mCMS)

Description: The Cityline series of electric vehicle chargepoint provide urban on-street residential electric vehicle charging infrastructure. CityEV is taking the route of using an unmetered supply and implementing a measured Central Management System. ELEXON witnessed CityEV's mCMS on 30 May 2018.

1. System Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test Group 1	**<u>Configuration Control</u>**			
Test 1.1	CMS software version	Non-functional	- System Component Software revisions at time of testing - Chargepoint firmware 2.90 - Central system communications gateway 1.14 - mCMS event log file generator service 1.03 - Central system database: 2.11 - Web portal: 1.24	Pass
Test 1.2	CMS operating platform and version	Non-functional	See above.	Pass
Test 1.3	The technical details of the measurement device to be used	Non-functional	See above.	Pass
Test Group 2	**<u>Synchronisation to UTC</u>**	4.6.3.3(i)	Time Synchronisation is done the central server clock (Microsoft Windows Time Service) and maintained to within +/- 2 seconds of UTC.	Pass

2. Data Input and Storage Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test Group 3a	**Detailed Inventory information**			
Test 3.1	Add, delete, modify manually or electronically:	Functional	See screenshot "Chargepoint database entry".	Pass
Test 3.1.1	Road Reference	Functional	See above.	Pass
Test 3.1.2	Town, Parish, District	Functional	See above.	Pass
Test 3.1.3	Road Name	Functional	See above.	Pass
Test 3.1.4	Location	Functional	See above.	Pass
Test 3.1.5	Unit Type	Functional	See above.	Pass
Test 3.1.6	Unit Identity	Functional	See above.	Pass
Test 3.1.7	CMS Unit Reference	Functional	See above.	Pass
Test 3.1.8	Charge Code	Functional	ELEXON to provide national mCMS generic charge code.	Pass
Test 3.1.9	Number of Items	Functional	Always one.	Pass
Test 3.1.10	Switch Regime	Functional	Agreed default switch regime	Pass
Test 3.1.11	Number of Controls	Functional	Always one.	Pass
Test 3.1.12	Control Charge Code	Functional	ELEXON to provide a control charge code.	Pass
Test 3.1.13	Ordinance Survey Grid ref 'East' or Latitude	Functional	See screenshot "Chargepoint database entry".	Pass
Test 3.1.14	Ordinance Survey Grid ref 'North' or Longitude	Functional	See screenshot "Chargepoint database entry".	Pass

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test 3.1.15	Exit Point	Functional	If appropriate	N/A
Test 3.2	Audit Trail	Functional		Pass
Test Group 3b	**Inventory control information**			
Test 3.3	Add, delete, modify manually or electronically:	Functional		Pass
Test 3.3.1	Sub-Meter ID	Functional		Pass
Test 3.3.2	Effective From Date	Functional		Pass
Test 3.3.3	CMS Unit Reference	Functional		Pass
Test 3.3.4	Number of Items	Functional	This test only applies to Apparatus where more than one item is connected to a single CMS unit reference.	N/A
Test 3.3.5	Switch Regime	Functional	Agreed default switch regime	Pass
Test 3.3.6	Charge Code	Functional		Pass
Test 3.4	Audit Trail	Functional		Pass
Test Group 4	**Equipment control information**		This test group refers to the control device	
Test 4.1	Add, delete, modify manually or electronically	Functional		N/A
Test 4.1.1	CMS Unit Reference	Functional		N/A
Test 4.1.2	Sum of CMS Controller devices	Functional		N/A
Test 4.1.3	Switch Regime	Functional	Agreed default switch regime	N/A
Test 4.1.4	Charge Code	Functional		N/A

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test 4.2	Audit Trail	Functional		N/A

3.   Process Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test Group 5	**CMS Event Driven Measurement**		Where events are driven by the connection of Apparatus to an exit point	
Test 5.1	Scenario 1	4.5.2.3	Based on the dimming levels, the system recorded 3.09 kWh of unit usage. The power analyser recorded 3.08 kWh of unit usage. The difference between the two values give an error margin of 0.32%. The calculations are shown in the attached excel workbook.	Pass
Test 5.2	Scenario 2	4.5.2.3	See above.	Pass
Test 5.3	Scenario 3	4.5.2.3	The absence of the unit usage can be seen in the event log.	Pass
Test 5.4	Scenario 4	4.5.2.3	Not part of the witness test – demonstrated in the test evidence provided by the applicant.	Pass
Test 5.5	Scenario 5	4.5.2.3	Not part of the witness test – demonstrated in the test evidence provided by the applicant.	Pass
Test 5.6	Scenario 6	4.5.2.3	Communication failure The objective was to disconnect the unit to the mCMS. The device was not able to communicate any data to the server but was still recording the consumption, using its internal memory. When the driver went back online, it re-connected to the mCMS and updated any information collected while offline.	Pass
Test Group 6	**Record operational switching times and power levels**		Events and power levels should be available via a user interface to the CMS	

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test 6.1	Record operational switching times for Scenarios 1 to 6	4.6.3.3(b) 4.6.3.3(c)		Pass
Test 6.2	Audit Trail	4.6.3.3(h)		Pass
Test Group 7	**Generate Operational Event Log**		Generate events for each scenario	
Test 7.1	Scenario 1	4.5.2.3	The event log (Hmeterid20180530001) can be found in the relevant folder for test group 5. The calculations to prove the times and power levels are accurate the same as for test group 5 because there isn't a meter with a display to give us a separate set of readings to test against.	Pass
Test 7.2	Scenario 2	4.5.2.3	See above and event log Hmeterid20180530005.	Pass
Test 7.3	Scenario 3	4.5.2.3	See above and event Hmeterid20180530006.	Pass
Test 7.4	Scenario 4	4.5.2.3		Pass
Test 7.5	Scenario 5	4.5.2.3		Pass
Test 7.6	Scenario 6	4.5.2.3	The communication failure can be seen in the last two events logs (Hmeterid20180530005 and Hmeterid20180530006).	Pass
Test 7.7	Available daily and on request	4.6.6.3(b) 4.6.6.3(c)	Evidence the MA can get the file daily and on request	Pass
Test 7.8	Audit Trail	4.6.6.3(h)		Pass
Test Group 8	**Volume and Performance**			
Test 8.1	Compliance with operational timescales	Functional		Pass

4.   Data Output Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test Group 9	**Operational Event Log**		Testing that the event log is in the correct format	
Test 10.1	File Format	4.6.6.3(c)		Pass
Test 10.2	Filename	4.6.6.3(c)		Pass
Test 10.3	Header identifier	4.6.6.3(c)		Pass
Test 10.4	Sub-Meter ID	4.6.6.3(c)		Pass
Test 10.5	Date	4.6.6.3(c)		Pass
Test 10.6	Version	4.6.6.3(c)		Pass
Test 10.7	CMS Unit reference	4.6.6.3(c)		Pass
Test 10.8	Time	4.6.6.3(c)		Pass
Test 10.10	Percentage of base power	4.6.6.3(c)		Pass
Test 10.10	Information Flag	4.6.6.3(c)		Pass
Test 10.11	Trailer	4.6.6.3(c)		Pass