

Central Management System: Witness Test

Test date: 29 January 2020

Location: ELEXON

Facilitator: Kevin Spencer

Witness: Adam Jessop

Testing: Central Management System (CMS)

Description: The Ki Platform is a hosted CMS web application that connects to an Outdoor Device Network via LoRaWAN. The software that controls the luminaire itself is connected directly to the driver. This document represents the Witness Test report for Lucy Zodion's Ki Platform CMS. Lucy Zodion is seeking approval to use this Central Management System as the CMS part of an equivalent meter in Great Britain.

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	Ki – umsug-cert-23 (Version 768 is the current version number – this is incremented for any change that effects an event log).	Pass
Test 1.2	CMS operating platform and version	Non-functional	The platform is different for each customer. Kubernetes – source code for how the CMS is structured The platform uses Bitbucket – Lucy Zodion can see who makes changes and when.	Pass
Test Group 2	<u>System Security</u>		Secure access procedures were demonstrated for the different participants.	Pass
Test 2.1	HHDC	4.5.2.3 (i)	Collections of different permissions for different types of customer– Page 6-9 of the Ki . Platform Test Report	Pass
Test 2.2	Suppliers	4.5.2.3 (i)	As above	Pass
Test 2.3	Customers	4.5.2.3 (i)	As above	Pass
Test 2.4	MA	Functional	As above	Pass

Test Group 3	<u>Synchronisation to UTC</u>	4.5.2.3 (k)	<p>We witnessed the correct times in the system and on the event logs.</p> <p>The servers are configured to UTC and the application re synchronises every time the pod boosts.</p>	Pass
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2. Data Input and Storage Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test Group 4a	<u>Detailed Inventory information</u>			
Test 4.1	Add, delete, modify manually or electronically:	Functional	Demonstrated	Pass
Test 4.1.1	Road Reference	Functional	Inventory information was reviewed during the Witness Test, but screenshots have also been provided on page 11-14 of the Ki.Platform Test Report	Pass
Test 4.1.2	Town, Parish, District	Functional	As 4.1.1	Pass
Test 4.1.3	Road Name	Functional	As 4.1.1	Pass
Test 4.1.4	Location	Functional	As 4.1.1	Pass
Test 4.1.5	Unit Type	Functional	As 4.1.1	Pass
Test 4.1.6	Unit Identity	Functional	As 4.1.1	Pass

Test 4.1.7	CMS Unit Reference	Functional	As 4.1.1	Pass
Test 4.1.8	Charge Code	Functional	As 4.1.1 - The Charge Code imports directly from the ELEXON Charge Code spreadsheet (csv)	Pass
Test 4.1.9	Number of Items	Functional	As 4.1.1	Pass
Test 4.1.10	Switch Regime	Functional	As 4.1.1 – Always the default switch regime of 999	Pass
Test 4.1.11	Number of Controls	Functional	As 4.1.1	Pass
Test 4.1.12	Control Charge Code	Functional	As 4.1.1 (98 0001 0022 100)	Pass
Test 4.1.13	Ordinance Survey Grid ref 'East' or Latitude	Functional	As 4.1.1	Pass
Test 4.1.14	Ordinance Survey Grid ref 'North' or Longitude	Functional	As 4.1.1	Pass
Test 4.1.15	Exit Point	Functional	As 4.1.1	Pass
Test 4.2	Audit Trail	Functional	The audit log of any changes made to a device is stored in the revisions database with a log on who actioned the change as well as the previous value and new value – can be reverted if required	Pass
Test Group 4b	<u>Inventory control information</u>			
Test 4.3	Add, delete, modify manually or electronically:	Functional		Pass

Test 4.3.1	Sub-Meter ID	Functional	As 4.1.1	Pass
Test 4.3.2	Effective From Date	Functional	As 4.1.1	Pass
Test 4.3.3	CMS Unit Reference	Functional	As 4.1.1	Pass
Test 4.3.4	Number of Items	Functional	As 4.1.1	Pass
Test 4.3.5	Switch Regime	Functional	As 4.1.1	Pass
Test 4.3.6	Charge Code	Functional	As 4.1.1	Pass
Test 4.4	Audit Trail	Functional	The audit log of any changes made to a device is stored in the revisions database with a log on who actioned the change as well as the previous value and new value – can be reverted if required	Pass
Test Group 5	<u>Equipment control information</u>			
Test 5.1	Add, delete, modify manually or electronically	Functional	We witnessed the control device and Lucy Zodian provided this information in their Test Report.	Pass
Test 5.1.1	CMS Unit Reference	Functional	As 4.1.1	Pass
Test 5.1.2	Sum of CMS Controller devices	Functional	As 4.1.1	Pass
Test 5.1.3	Switch Regime	Functional	As 4.1.1	Pass
Test 5.1.4	Charge Code	Functional	As 4.1.1	Pass

Test 5.2	Audit Trail	Functional	The audit log of any changes made to a device is stored in the revisions database with a log on who actioned the change as well as the previous value and new value – can be reverted if required	Pass
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3. Process Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
Test Group 6	<u>CMS Issue Instructions</u>			
Test 6.1	Scenario 1	4.5.2.3 (b)	Test 1 <ul style="list-style-type: none"> Lumen: 100% - Events recorded start time of 13.45 and end time of 13.50 and energy recorded on the register as 24.43W. Lumen: 75% - Events recorded start time of 13.50 and end time of 13.55 and energy recorded on the register as 19.06W. Lumen: 50% - Events recorded start time of 13.55 and end time of 14.00 and energy recorded on the register as 13.57W. Lumen: 0% - Events recorded start time of 14.00 and energy recorded on the register as 1.091W. 	Pass

			ELEXON witnessed the events and calculations of this test and found that Test 1 satisfied our requirements.	
Test 6.2	Scenario 2	4.5.2.3 (b)	<p>As above</p> <ul style="list-style-type: none"> • Lumen: 100% - Events recorded start time of 13.45 and end time of 13.50 and energy recorded on the register as 24.43W. • Lumen: 75% - Events recorded start time of 13.50 and end time of 13.55 and energy recorded on the register as 19.06W. • Lumen: 50% - Events recorded start time of 13.55 and end time of 14.00 and energy recorded on the register as 13.57W. • Lumen: 0% - Events recorded start time of 14.00 and energy recorded on the register as 1.091W. <p>ELEXON witnessed the events and calculations of this test and found that Test 1 satisfied our requirements.</p>	Pass
Test 6.3	Scenario 3 - Control Failure	4.5.2.3 (b)	<p>Lucy Zodion receive billing data that shows if the start and end times are different to the arranged switching times. Without actual data, an event log would be created based on assumptions. When the device is able to supply the necessary data the event log will be created with the correct on and off times.</p> <p>A dimming profile was configured but the lamp was disconnected from the CMS for the first switch point.</p> <p>Event log 2 shows a profile running based on assumptions without having any data from a device.</p>	Pass

			<p>Switch points are CMS driven assuming the device has run them.</p> <p>The following scenario was created:</p> <p><i>(Italics represent actual events)</i></p> <ul style="list-style-type: none"> • Lumen: 100% - Events recorded start time of 14.30 and end time of 14.40 (event log 2 recorded 100%) <ul style="list-style-type: none"> - <i>However, the lamp was disconnected.</i> - <i>The lamp switched on at 14.34 (as shown in event log 3)</i> • Lumen: 50% - Events recorded start time of 14.40 and end time of 14.50 (event log 2 recorded 55.63%) <ul style="list-style-type: none"> - <i>lamp switched off at 14.40 (as shown in event log 3)</i> • Lumen: 0% - Events recorded at 14.50 (event log 2 recorded 4.35%) <p>Event log 3 was created when actual device data was received and shows a different initial switch point and cut off when the lamp was powered off. This shows that when full data is available, the correct output is generated as a valid revision and an accurate reflection of what happened – for this test it showed that the lamp switched on at 14.34 and switched off at 14.40.</p>	
Test 6.4	Scenario 4 – Revised Data after control failure (following day)	4.5.2.3 (b) 4.5.2.3 (c)	<p>On the day Lucy Zodion forcibly overrode the schedule which would usually only apply at noon each day. Without performing the tests over multiple days, they would be unable to replicate what it does in production. Forcing this override makes the system change what</p>	Pass

			the assumed running profile was for the day, which would never happen in actual operation. This meant that the events from earlier in the day were missing from the latest event log.	
Test 6.5	Receive Response (optional)	Functional		
Test Group 7	<u>Record operational switching times and power levels</u>		For Test Group 7 please see Test Evidence in Attachment C.	
Test 7.1	Scenario 1 - Switch Regime 999	4.5.2.3 (b) 4.5.2.3 (c)		
Test 7.2	Scenario 2 - Switch Regime 998	4.5.2.3 (b) 4.5.2.3 (c)		
Test 7.3	Scenario 3 - Control Failure	4.5.2.3 (b) 4.5.2.3 (c)		
Test 7.4	Scenario 4 – Revised Data after control failure (following day)	4.5.2.3 (b) 4.5.2.3 (c)		
Test 7.5	Audit Trail	4.5.2.3 (j)		
Test Group 8	<u>Generate Operational Event Log</u>		For Test Group 8 please see Test Evidence in Attachment C.	
Test 8.1	Scenario 1 - Switch Regime 999	4.5.2.3 (b)		

		4.5.2.3 (c)		
Test 8.2	Scenario 2 - Switch Regime 998	4.5.2.3 (b) 4.5.2.3 (c)		
Test 8.3	Scenario 3 - Control Failure	4.5.2.3 (b) 4.5.2.3 (c)		
Test 8.4	Scenario 4 – Revised Data after control failure (following day)	4.5.2.3 (c)		
Test 8.5	Available daily (Separate CMS and MA System)	4.5.2.3 (b)		
Test 8.6	On Request (Integrated CMS and MA System)	4.5.2.3 (c)		
Test 8.7	Audit Trail	4.5.2.3 (j)		
Test Group 9	Volume and Performance			
Test 9.1	Compliance with operational timescales	Functional	Lucy Zodion generated the event log during the Witness Test after each Scenario was performed.	Pass

4. Data Output Requirements

Test Ref	Requirement / Details	Requirement Reference	Comment	Complies
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Test Group 10	Operational Event Log			
Test 10.1	File Format	4.5.2.3 (c)	The file format and manual calculations of the event log provided have the correct format and values. PDA (MA) have confirmed that they can process the event log- please see Test Evidence in Attachment C.	Pass
Test 10.2	Filename	4.5.2.3 (c)	As 10.1	Pass
Test 10.3	Header identifier	4.5.2.3 (c)	As 10.1	Pass
Test 10.4	Sub-Meter ID	4.5.2.3 (c)	As 10.1	Pass
Test 10.5	Date	4.5.2.3 (c)	As 10.1	Pass
Test 10.6	Version	4.5.2.3 (c)	As 10.1	Pass
Test 10.7	CMS Unit reference	4.5.2.3 (c)	As 10.1	Pass
Test 10.8	Time	4.5.2.3 (c)	As 10.1	Pass
Test 10.10	Percentage of base power	4.5.2.3 (c)	As 10.1	Pass
Test 10.10	Information Flag	4.5.2.3 (c)	As 10.1	Pass
Test 10.11	Trailer	4.5.2.3 (c)	As 10.1	Pass