

UMS SUMMARY TEST REPORT

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ISSUED BY:
CRANAGE EMC TESTING LIMITED
STABLE COURT
OAKLEY
MARKET DRAYTON
SHROPSHIRE, TF9 4AG



Report No: **U0051R02** Date of Issue: **13th April 2015**

This document summarises the results of testing to ascertain the appropriate Elexon Charge Codes for inclusion in BSCP520

Tested & Inspected for: **King Transport Equipment Limited,
Riverside,
Market Harborough,
Leicestershire,
LE16 7PX.**

Test Dates: **16th March 2015 – 26th March 2015**
Receipt Date of Test Item: **10th March 2015**

Sample 1

Test Item Description: **LED Road Sign & Charger**
Manufacturer: **King Transport Equipment Limited (LED Road Sign) &
Victron Energy (Charger)**
Model Number: **Multisign VarioSign 9K 420 r/w (LED Road Sign) &
Blue Power Charger 12/25 (Part No. BPC122508006)**
Serial Number: **KE122-4032 (LED Road Sign) & HQ1352H2DFP (Charger)**

Sample 2

Test Item Description: **LED Road Sign & Charger**
Manufacturer: **King Transport Equipment Limited (LED Road Sign) &
Victron Energy (Charger)**
Model Number: **Multisign VarioSign 9K 420 r/w (LED Road Sign) &
Blue Power Charger 12/25 (Part No. BPC122508006)**
Serial Number: **KE123-4033 (LED Road Sign) & HQ1352QM8GF (Charger)**

Sample 3

Test Item Description: **LED Road Sign & Charger**
Manufacturer: **King Transport Equipment Limited (LED Road Sign) &
Victron Energy (Charger)**
Model Number: **Multisign VarioSign 9K 420 r/w (LED Road Sign) &
Blue Power Charger 12/25 (Part No. BPC122508006)**
Serial Number: **KE124-4034 (LED Road Sign) & HQ131742G7G (Charger)**

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Sample 4

Test Item Description: **LED Road Sign & Charger**
Manufacturer: **King Transport Equipment Limited (LED Road Sign) & Victron Energy (Charger)**
Model Number: **Multisign VarioSign 9K 420 r/w (LED Road Sign) & Blue Power Charger 12/25 (Part No. BPC122508006)**
Serial Number: **KE126-4036 (LED Road Sign) & HQ14509W4UB (Charger)**

Sample 5

Test Item Description: **LED Road Sign & Charger**
Manufacturer: **King Transport Equipment Limited (LED Road Sign) & Victron Energy (Charger)**
Model Number: **Multisign VarioSign 9K 420 r/w (LED Road Sign) & Blue Power Charger 12/25 (Part No. BPC122508006)**
Serial Number: **KE120-4330 (LED Road Sign) & HQ1450M3VCZ (Charger)**

Approved Signatories: M. Richens - Technical Director


APPROVED SIGNATORY

Verification Signatories: R. Flynn - Test Engineer


VERIFICATION SIGNATORY

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Mode of Operation: LED road sign set to display AA+ 800Y and powered from external 12V battery. 12V battery connected to Victron energy 12/25 (Part Number BPC122508006) AC/DC charger. Measurements taken whilst charger status was in absorption mode. LED road sign set in 10 separate dimming levels: 100%, 90%, 80%, 70%, 60%, 50%, 40%, 30%, 20% & 10%. Handheld Nissen Typ Pro Remote II connected to LED road and used for the setting of the display and the various levels of intensity. Photographs showing the test item can be found on pages 13 and 14.

Test Condition: - Stabilisation period of 1 hour given prior to measurements at 230V 50Hz. Measurements were subsequently taken after 10 minutes at each voltage level. This was found to be an adequate time window for the purpose of the test measurements.

All results are rounded to 2 decimal places.

Mode 1 – 100% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	77.30	70.55	68.03	61.43	60.08
220	74.37	70.66	68.07	61.47	60.20
230	73.51	70.87	68.29	61.59	60.38
240	73.34	71.05	68.46	61.93	61.33
250	73.61	71.37	68.77	62.54	61.86

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	136.70	126.47	123.12	112.27	110.22
220	134.44	128.44	124.97	113.98	112.04
230	134.60	130.64	127.11	115.80	113.95
240	136.36	132.53	129.13	117.95	117.02
250	138.18	134.83	131.31	120.47	119.41

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Mode 2 – 90% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	68.90	66.71	64.24	57.38	56.30
220	69.13	66.77	64.27	57.46	56.45
230	69.46	66.98	64.45	57.77	56.87
240	69.59	67.21	64.83	58.62	57.55
250	69.88	67.58	65.16	59.19	58.19

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	124.27	120.91	117.20	106.15	104.49
220	126.33	122.75	119.01	107.89	106.32
230	128.04	124.82	121.05	109.94	108.56
240	130.35	126.89	123.57	112.84	111.20
250	132.64	129.14	125.78	115.28	113.78

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Mode 3 – 80% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	64.87	62.89	60.39	53.65	52.39
220	65.37	62.97	60.46	53.82	52.64
230	67.57	63.22	60.71	54.20	53.26
240	65.87	63.49	61.38	54.97	54.06
250	66.99	63.96	61.73	55.33	54.05

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	118.00	114.94	111.69	100.53	98.58
220	120.37	116.81	113.51	102.37	100.54
230	125.61	118.88	115.61	104.49	102.93
240	124.66	120.94	118.13	107.22	105.76
250	127.82	123.28	120.40	109.48	107.45

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Mode 4 – 70% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	61.23	59.01	56.65	49.88	48.53
220	61.17	59.16	56.77	50.16	48.74
230	61.31	59.38	57.18	50.86	49.45
240	61.61	59.82	57.64	51.85	49.76
250	62.12	60.45	58.28	51.40	49.25

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	112.51	109.07	106.02	94.76	92.51
220	114.17	110.97	107.90	96.73	94.52
230	115.82	112.98	109.90	99.38	97.14
240	118.12	115.27	112.51	102.41	99.31
250	120.53	117.91	114.91	103.28	100.02

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Mode 5 – 60% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	56.11	55.27	52.83	44.53	43.90
220	56.51	55.43	52.95	44.92	44.54
230	57.29	55.85	53.46	45.91	45.95
240	57.98	56.43	54.08	45.80	45.23
250	58.54	56.94	54.14	44.97	44.54

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	104.77	103.63	100.25	86.47	85.58
220	106.57	105.56	102.12	88.57	88.10
230	109.46	107.85	104.56	91.63	91.79
240	112.51	110.36	107.17	93.03	92.30
250	115.10	112.88	109.25	93.27	92.70

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Mode 6 – 50% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	48.73	51.64	48.86	40.62	40.07
220	51.56	51.89	49.12	41.44	41.28
230	51.55	52.50	49.85	42.40	41.72
240	51.36	53.26	50.51	41.64	40.75
250	50.11	53.27	49.96	41.15	40.29

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	93.61	98.12	94.21	80.52	79.47
220	99.36	100.17	96.27	83.31	83.00
230	101.12	102.55	99.03	86.47	85.52
240	102.73	105.54	101.83	86.77	85.49
250	102.37	107.39	102.70	87.39	86.29

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Mode 7 – 40% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	45.14	47.99	41.63	37.36	36.69
220	45.87	48.67	42.19	38.90	38.93
230	47.20	49.30	43.08	38.40	37.66
240	46.35	49.90	41.93	37.96	37.13
250	46.40	49.42	41.42	37.59	36.62

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	88.11	92.60	82.26	75.54	74.60
220	90.87	95.22	84.71	79.42	79.52
230	94.47	97.80	87.81	80.27	79.14
240	95.52	100.56	87.68	81.02	79.87
250	96.17	101.21	88.46	81.85	80.60

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Mode 8 – 30% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	41.52	44.66	37.64	34.53	33.94
220	42.66	45.27	39.13	36.27	34.97
230	44.51	46.46	38.31	34.77	33.53
240	42.36	46.29	37.41	33.94	32.73
250	42.34	45.72	36.93	33.38	32.48

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	82.71	87.54	76.22	71.17	70.38
220	86.05	90.07	80.03	75.55	73.86
230	90.81	93.50	81.05	74.57	72.97
240	89.29	95.10	80.52	74.96	73.24
250	90.37	95.59	81.47	75.50	74.32

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Mode 9 – 20% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	38.27	41.26	34.21	31.67	31.49
220	40.03	42.19	35.58	32.15	30.87
230	38.81	43.02	34.13	31.12	29.49
240	38.21	42.20	33.07	30.46	28.84
250	37.56	41.68	32.74	30.03	28.43

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	77.76	82.33	70.87	66.88	66.53
220	82.03	85.35	75.05	69.82	67.59
230	82.78	88.54	74.46	69.25	66.91
240	82.69	88.79	73.88	69.49	67.39
250	83.38	89.69	75.09	70.35	68.30

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Mode 10 – 10% Intensity

Watts					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	35.18	38.15	31.17	29.51	30.39
220	36.30	39.70	31.20	28.32	26.43
230	34.78	39.36	30.14	27.06	25.38
240	33.88	38.32	29.29	26.55	24.68
250	33.60	37.83	28.75	26.26	24.43

VA					
Voltage (Vrms)	Sample No.				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
210	73.07	77.61	66.27	63.62	65.21
220	77.00	81.57	69.12	63.93	60.81
230	76.59	83.34	68.01	63.20	60.91
240	75.84	82.73	68.22	63.76	61.34
250	77.45	83.83	69.04	64.88	62.45

Ambient temperature range recorded during test period:
8.0°C

Test Equipment

Asset Number	Description	Calibration Date	Calibration Due
AN288	Power Source	-	-
AN1162	Power Analyser	16/07/2014	15/07/2015
AN452	Timer	-	-

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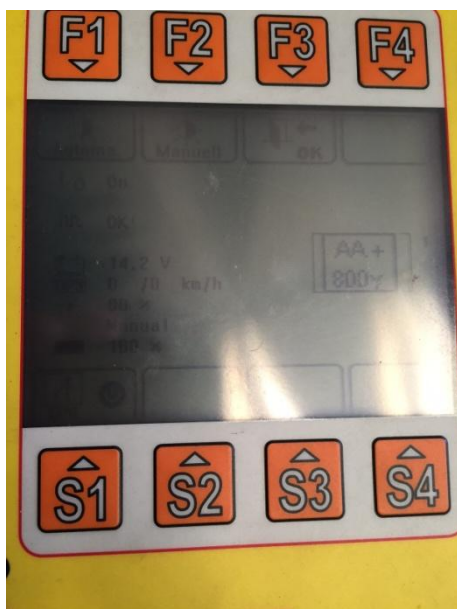


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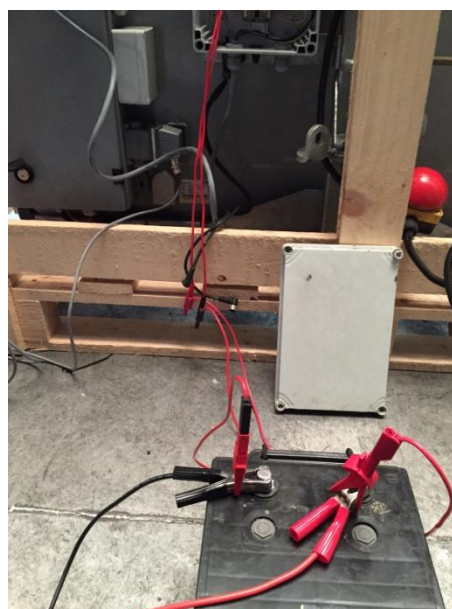
Photograph of the Test Item



Above: Generic Photo of Test Item, AA+ 800Y displayed for UMS testing.



Above: Handheld Nissen Typ Pro Remote II connected to LED road sign.



Above: Typical test setup.

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Above: Victron energy 12/25 charger used.

Measurement Uncertainty

The 95 % confidence measurement uncertainty for AC Power (Analyser) is 0.17%.