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Global Product Certification
EMC-EMF Safety Approvals

Test Report to AS/NZS 60950.1:2015

Report No. S190711_S

Manufacturer: Transport for NSW
Test Sample Name: Tri-Vision Changeable Message Sign
Model: N/A
Serial No.: N/A

Date of Issue: 29th July, 2019

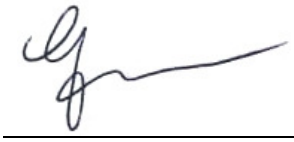
Accreditation No. 5292

Accredited for compliance with ISO/IEC 17025 - Testing. The results of tests, calibration and/or measurements included in this document are traceable to Australian/national standards. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

EMC Technologies Report No.: S190711_S

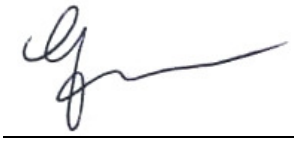
Test Sample Name:	Tri-Vision Changeable Message Sign
Model:	N/A
Serial Number:	N/A
Part Number:	N/A
Manufacturer:	Transport for NSW
Tested For:	Transport for NSW
Address:	129a Orchardleigh Street, Yennora, NSW 2161, Australia
Phone:	+61 2 9794 4720
Email:	tim.HUTTON@rms.nsw.gov.au
Responsible Party:	Transport for NSW
Contact:	Tim Hutton
Test Standard/s:	***AS/NZS 60950.1:2015*** *Information technology equipment – Safety* *Part 1: General requirements*
Result of Test:	The test sample was tested with clause 1.6.2 of AS/NZS 60950.1:2015. Refer to Report no. S190711_S for results.
Test Date/s:	22nd July, 2019

Testing Officer:



James Chu

Authorised Signature:



James Chu
Safety Manager
EMC Technologies Pty Ltd

Issued by EMC Technologies Pty Ltd, Unit 3/87 Station Road, Seven Hills, NSW, 2147, Australia.
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PRODUCT DESCRIPTION SUMMARY

The product is a changeable message sign (CMS) for traffic control. It is a system consists of a control cabinet which controls a row of vertical triangular prisms by a positioning motor. Prisms turn 120° or 60° on their axes to show the traffic message on the prism surfaces. It also connects to 4 yellow warning lights which blink and last for 15 seconds when the message is being changed. Two wireless modems are connected to the cabinet for wireless data communication.

TEST RESULTS OF CLAUSE 1.6.2 OF AS/NZS 60950.1:2015

Test Mode	Power (W)	Voltage (V)	Current (A)	Frequency (Hz)	Power Factor
1	21.14	240	0.492	50	0.179
2	60.49	240	0.585	50	0.431
3	35.04	240	0.537	50	0.272

Note:
Test mode 1: Idle mode (steady state mode)
Test mode 2: Prisms are being turned and yellow lights are blinking
Test mode 3: Prisms stop in position and yellow lights are still blinking

Test mode 2 and mode 3 occur when the change of message is being operated. The operation only lasts for seconds and it usually happens twice per day.

Energy consumption of each message changing operation:

Test 1 Prisms turn 120° from AM position to OT position or vice versa. Such operation was operated for 10 times in an hour.
Total energy consumed in an hour was 22.36Wh.
Extra energy consumption calculated for each operation is (22.36Wh – 21.14Wh)/10 = 0.122Wh = 1.22×10^{-4} kWh

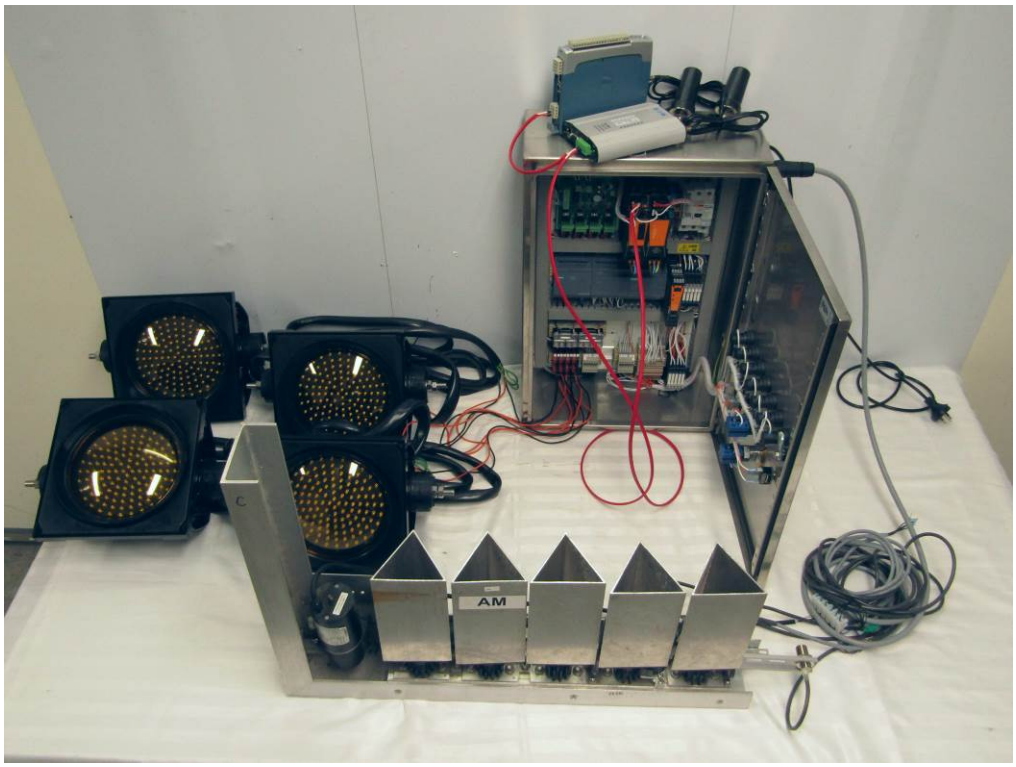
Test 2 Prisms turn 60° from OT position to Face C position or vice versa. Such operation was operated for 10 times in an hour.
Total energy consumed in an hour was 21.94Wh.
Extra energy consumption for each operation is (21.94Wh – 21.14Wh)/10 = 0.08Wh = 8×10^{-5} kWh

Average load:

As per the result of Test 1 above and with one of such message changing operation per hour, the average load of the CMS is (21.14Wh + 0.122Wh)/h = 21.262W.

APPENDIX I: IDENTIFICATION PHOTOGRAPHS

Overall view

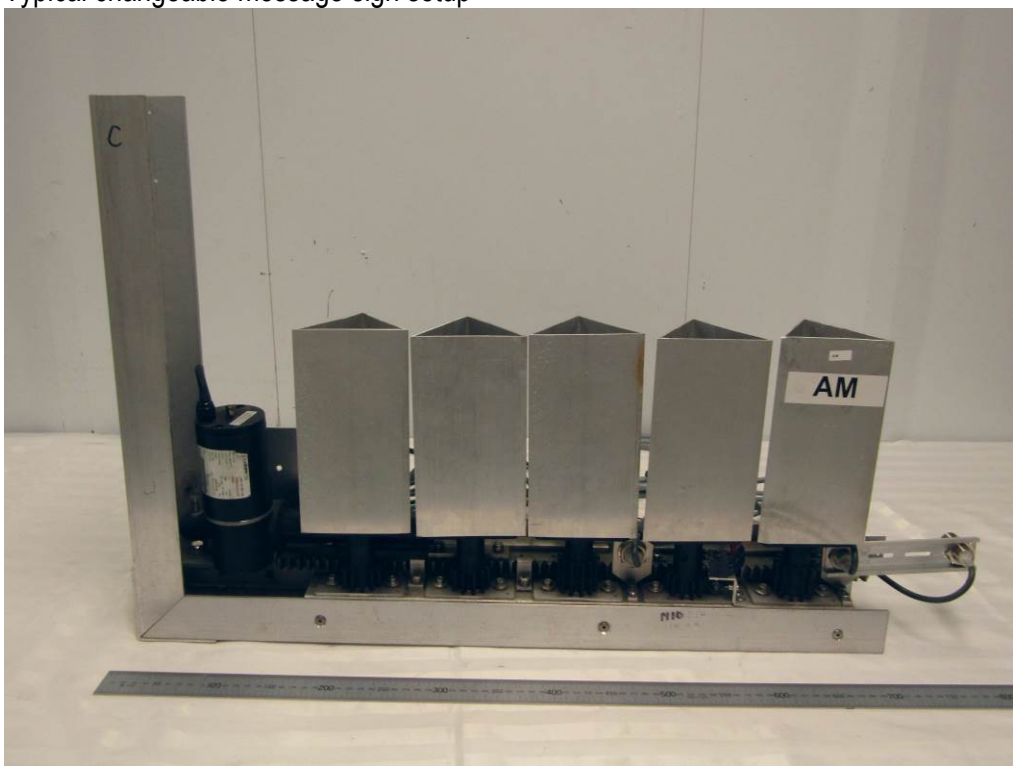


Front view of the control cabinet

APPENDIX I: IDENTIFICATION PHOTOGRAPHS (continued)

Internal view of the control cabinet

Typical changeable message sign setup



APPENDIX I: IDENTIFICATION PHOTOGRAPHS (continued)

Warning lights

Wireless modems