Ektimo

Experts in air quality, odour and emission monitoring.

Emission Testing Report Spraybooth Testing

March 2026

Report: R020272r

K & W Motor Service prepared for Roy Somerville Consultants

ilac-MRA NATA

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration, and inspection reports.

Document Information

Client Name:	Roy Somerville Consultants
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Attention:	Liam Keefer
Address:	47 Randall street Slacks Creek, QLD, 4127
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Reissue Record

Original Document Number	Initiator	Original Report Date	Section (s)	Reason for reissue
R020272	Client	14/04/2026	Document Information	Address updated.
			1.1 Background	Additional information added.

Report Authorisation

James Jackson
Operations Manager (QLD)

NATA Accredited Laboratory
No. 14601

Greg Sceneay
Ektimo Signatory

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo terms of NATA accreditation as described in the Test Methods table. This does not include calculations that use data supplied by third-parties, comments, conclusions, or recommendations based upon the results. Refer to Test Methods section for full details of testing covered by NATA accreditation.

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1 Executive Summary

1.1 Background

Ektimo was engaged by Roy Somerville Consultants to perform emission testing at K&W Motor Service in Logan, QLD. K&W Motor Service is a body shop providing vehicle mechanical repairs and spray painting.

Two spraybooths were tested and were both continuously spraying Mazda car parts for each test entirety. DX11 Solvent based paint was used in the sprayers in both sampling events.

1.2 Project Objective & Overview

The objective of the project was to quantify emissions from two (2) discharge points.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
Spray Booth 1	24 March 2026	Volatile organic compounds (VOCs)
Spray Booth 2		

* Flow rate, velocity, temperature, and moisture were also determined.

All volume-based concentrations are reported on a dry basis at STP.

2 Results

2.1 Spray Booth 1

Date	24/03/2026	**Client**	Somerville Consultants
Report	R020272	**Stack ID**	Spray Booth 1
Licence No.	-	**Location**	Slacks Creek
Ektimo Staff	James Jackson	**State**	QLD
Process Conditions	Spraying Mazda Auto Parts		260310

Comments
DX11 Solvent Based Paint
The discharge is assumed to be composed of dry air and moisture

Stack Parameters		
Moisture content, %v/v	2.7	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m³	1.16	
Gas Flow Parameters		
Flow measurement time(s) (hhmm)	0910	
Temperature, °C	27	
Ambient pressure, kPa	101	
Stack pressure, kPa	101	
Velocity at sampling plane, m/s	3.4	
Volumetric flow rate, actual, m³/min	99	
Volumetric flow rate (wet STP), m³/min	90	
Volumetric flow rate (dry STP), m³/min	87	
Mass flow rate (wet basis), kg/h	6900	

Total Speciated VOCs	Results	
Sampling time	0920-0950	
	Concentration mg/m³	Mass Rate g/min
Total	17	1.5

VOC's C5-C20	Results	
Sampling time	0920-0950	
	Concentration mg/m³	Mass Rate g/min
Detection limit(1)	<0.3	<0.03
Butyl acetate	5.3	0.46
Ethylbenzene	0.87	0.076
m + p-Xylene	3	0.26
1-Methoxy-2-propyl acetate	1.6	0.14
o-Xylene	0.96	0.084
1,2,4-Trimethylbenzene	1.2	0.1
Residuals as Toluene	4	0.35

(1) Unless otherwise reported, the following target compounds were found to be below detection:
Ethanol, Acetone, Isopropanol, Pentane, 1,1-Dichloroethene, Acrylonitrile, Dichloromethane, trans-1,2-Dichloroethene, Methyl ethyl ketone, n-Hexane, cis-1,2-Dichloroethene, Ethyl acetate, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Cyclohexane, Benzene, Carbon tetrachloride, Butanol, Isopropyl acetate, 2-Methylhexane, 2,3-Dimethylpentane, 1-Methoxy-2-propanol, 3-Methylhexane, Heptane, Trichloroethylene, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, Toluene, 1,1,2-Trichloroethane, 2-Hexanone, Octane, Tetrachloroethene, Chlorobenzene, Styrene, Butyl acrylate, Nonane, 2-Butoxyethanol, Cellosolve acetate, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, alpha-Pinene, Propylbenzene, 1,3,5-Trimethylbenzene, beta-Pinene, tert-Butylbenzene, Decane, 3-Carene, 1,2,3-Trimethylbenzene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane

2.2 Spray Booth 2

Date	24/03/2026	**Client**	Somerville Consultants
Report	R020272	**Stack ID**	SprayBooth 2
Licence No.	-	**Location**	Slacks Creek
Ektimo Staff	James Jackson	**State**	QLD
Process Conditions	Spraying Mazda Auto Parts. DX11 Solvent Based Paint		260310

Comments
The discharge is assumed to be composed of dry air and moisture

Stack Parameters		
Moisture content, %v/v	3	
Gas molecular weight, g/g mole	28.6 (wet)	29.0 (dry)
Gas density at STP, kg/m³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m³	1.15	
Gas Flow Parameters		
Flow measurement time(s) (hhmm)	1000	
Temperature, °C	29	
Ambient pressure, kPa	101	
Stack pressure, kPa	101	
Velocity at sampling plane, m/s	3.7	
Volumetric flow rate, actual, m³/min	110	
Volumetric flow rate (wet STP), m³/min	97	
Volumetric flow rate (dry STP), m³/min	94	
Mass flow rate (wet basis), kg/h	7400	

Total Speciated VOCs	Results	
Sampling time	1012-1042	
	Concentration mg/m³	Mass Rate g/min
Total	30	2.8

VOC's C5-C20	Results	
Sampling time	1012-1042	
	Concentration mg/m³	Mass Rate g/min
Detection limit(1)	<0.3	<0.03
Toluene	7.8	0.73
Butyl acetate	8.4	0.79
Ethylbenzene	1.4	0.13
m + p-Xylene	4.5	0.42
1-Methoxy-2-propyl acetate	2.4	0.22
o-Xylene	1.6	0.15
1,2,4-Trimethylbenzene	1.1	0.1
Residuals as Toluene	2.7	0.25

(1) Unless otherwise reported, the following target compounds were found to be below detection:
Ethanol, Acetone, Isopropanol, Pentane, 1,1-Dichloroethene, Acrylonitrile, Dichloromethane, trans-1,2-Dichloroethene, Methyl ethyl ketone, n-Hexane, cis-1,2-Dichloroethene, Ethyl acetate, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Cyclohexane, Benzene, Carbon tetrachloride, Butanol, Isopropyl acetate, 2-Methylhexane, 2,3-Dimethylpentane, 1-Methoxy-2-propanol, 3-Methylhexane, Heptane, Trichloroethylene, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, 1,1,2-Trichloroethane, 2-Hexanone, Octane, Tetrachloroethene, Chlorobenzene, Styrene, Butyl acrylate, Nonane, 2-Butoxyethanol, Cellosolve acetate, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, alpha-Pinene, Propylbenzene, 1,3,5-Trimethylbenzene, beta-Pinene, tert-Butylbenzene, Decane, 3-Carene, 1,2,3-Trimethylbenzene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane

3 Sample Plane Compliance

3.1 Spray Booth 1 & Spray Booth 2

Sampling Plane Details	
Sampling plane dimensions	700 x 700 mm
Sampling plane area	0.49 m²
Sampling port size, number & depth	2" BSP (x1), 0 mm
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Bend 1 D
Upstream disturbance	Change in diameter 1 D
No. traverses & points sampled	1 42
Sample plane conformance to USEPA Method 1	Non-conforming

Comments

Unable to reach stack level due to restricted access.
Spraybooth on immediate right facing booths.
The number of traverses sampled is less than the requirement

The sampling plane is deemed to be non-conforming due to the following reasons:

The upstream disturbance is <2D from the sampling plane
The stack or duct does not have the required number of access holes (ports)
The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

4 Test Methods

All sampling and analysis were performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Uncertainty*	NATA accredited Sampling	NATA accredited Analysis
Sampling points - Selection	USEPA Method 1	NA	NA	✓	NA
Flow rate, temperature & velocity	USEPA Method 2	USEPA Method 2	8%, 2%, 7%	NA	✓
Moisture (stacks <60°C)	Ektimo 050	Ektimo 050	not specified	✓	✓[j]
Speciated volatile organic compounds (VOCs)	Ektimo 344	Ektimo 344	19%	✓	✓[†]

270226

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

[†] Analysis performed by Ektimo. Results were reported to Ektimo on 4 April 2026 in report LV-008666.

[j] Includes analysis of moisture content by Ektimo 050 which uses the same principle as ASTM E337.

5 Deviations to Test Methods

TM-34 VOLATILE ORGANIC COMPOUNDS (USEPA 18)

Ektimo notes that the sampling and analysis of Volatile Organic Compounds (VOCs) per USEPA 18 has excluded the recovery study as specified in Section 8.4.3. Performing the recovery study described in Section 8.4.3 of USEPA Method 18 for analytes present at low levels is problematic. Given this, Ektimo applies a threshold of 50µg as a lower-bound mass, below which the 'spiking' of specific volatile organic compounds is not performed. For the purposes of this round of monitoring, the following compounds were present above the detection limit (0.1 µg) but were below 50µg (unless **bolded**). Therefore, recovery studies for the following analytes were not performed:

Spray Booth 1

- Butyl acetate (36 µg)
- Ethylbenzene (5.9 µg)
- m + p-Xylene (20 µg)
- 1-Methoxy-2-propyl acetate (11 µg)
- o-Xylene (6.5 µg)
- 1,2,4-Trimethylbenzene (7.8 µg)

Spray Booth 2

- **Toluene (52 µg)**
- **Butyl acetate (56 µg)**
- Ethylbenzene (9.3 µg)
- m + p-Xylene (30 µg)
- 1-Methoxy-2-propyl acetate (16 µg)
- o-Xylene (11 µg)
- 1,2,4-Trimethylbenzene (7.4 µg)

NIOSH 1450 – Esters 1

Butyl acetate is specifically referred as compound to be sampled under this method, and the recommended adsorbent media for sampling is 'Solid Sorbent Tube, coconut shell charcoal'; Ektimo used the recommended sampling media (SKC brand 226-01). Since the adsorbent media is deemed appropriate by NIOSH 1450, Ektimo opted not to perform the recovery study for this compound.

NIOSH 1501 – Hydrocarbons, Aromatic

Toluene is specifically referred as compound to be sampled under this method, and the recommended adsorbent media for sampling is 'Solid Sorbent Tube, coconut shell charcoal'; Ektimo used the recommended sampling media (SKC brand 226-01). Since the adsorbent media is deemed appropriate by NIOSH 1501, Ektimo opted not to perform the recovery study for this compound.

6 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

Unless specifically noted, all samples were collected and handled in accordance with Ektimo's QA/QC standards.

7 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry basis (except moisture)
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
AS	Australian Standard
D	Duct diameter or equivalent duct diameter for rectangular ducts
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier transform infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
TOC	Total organic carbon. This is the sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range

Ektimo

Experts in air quality, odour and emission monitoring.

Melbourne
(Head Office)
26 Redland Dr
Mitcham, VIC 3132

Wollongong
1/10 Doyle Ave
Unanderra
NSW 2526

Brisbane
3/109 Riverside Pl
Morningside
QLD 4170

Perth
52 Cooper Rd
Cockburn Central
WA 6164

1300 364 005

ektimo.com.au