

**Test Report for:**  
**KNAPHEIDE MANUFACTURING CO.**  
Attn: Mike Land  
**THERMAL CYCLE TEST**  
**One (1) 2015 Chevy City Express Van**  
  
Client PO No.: 671108



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Patrick Dani  
Technician



Chuck Thomas  
Engineering Team Leader

February 23, 2016  
Report No.: 102478898DET-001

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Attn: Mike Land  
Knapheide Manufacturing Co.  
1848 Westphalia Strasse  
Quincy, IL 62305  
Phone: (217) 592-5101  
Email Address: mland@knapheide.com

**DATE RECEIVED:** 02/01/2016

**DATE(S) TESTED:** 02/22/2016

**WORK REQUEST / APPLICABLE DOCUMENTS:**

Per the client's request, along with Intertek's quotation number Qu-00671620-3, dated 01/27/2016; perform Thermal Cycle Test.

**DESCRIPTION OF TEST SAMPLE:**

One (1) 2015 Chevy City Express Van, sample number:

- SN 001

Condition of Test Samples: Production

**EQUIPMENT LIST:**

Asset	Description	Manufacturer	Model	Serial	Cal Due
162221.1	F4 WATLOW CONTROLLER	WATLOW	F4	037805	10/20/2016
373-216	GAS DETECTOR	HONEYWELL	GAS ALERT EXTREME	J615-CD45893	VBU*
162221P	DRIVE IN CHAMBER	ENVIROTRONICS	WPH3230-2-30-WC	04046115	VBU

VBU\* = "Verified Before Use"

**Testing Performed at:**

Intertek  
45000 Helm Street  
Suite 150  
Plymouth Twp., MI 48170

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## THERMAL CYCLE TEST

Date Received: 02/01/2016

Date(s) Tested: 02/22/2016

### Description of Sample:

One (1) 2015 Chevy City Express Van, sample number:

- SN 001

### Test Procedure:

Prior to testing, four (4) gallons of bleach were placed inside the rear of the vehicle. One gallon was used to fill four trays, and the other three (3) gallons were placed with the caps off. The meter was then placed over the bleach to confirm functionality. The van doors were closed and the vehicle was placed inside an environmental chamber. A pre-test meter reading was taken inside the vehicle cab and then the sample was subjected to the following:

- One (1) hour soak at ambient temperature
- Three (3) people smelled the inside of the vehicle to see if bleach could be detected
- Meter reading taken
- One (1) hour soak at 50°C
- Three (3) people smelled the inside of the vehicle to see if bleach could be detected
- Meter reading taken
- One (1) hour soak at -20°C
- Three (3) people smelled the inside of the vehicle to see if bleach could be detected
- Meter reading taken

All meter readings conducted with the meter being inside the cab of the van for thirty (30) seconds.

### Acceptance Criteria:

None stated; the client is to determine.

### Results:

#### **AMBIENT CONDITION**

Nose #1	No Odor Observed
Nose #2	No Odor Observed
Nose #3	No Odor Observed
Meter Reading	0.0 PPM

#### **50°C CONDITION**

Nose #1	No Odor Observed
Nose #2	No Odor Observed
Nose #3	No Odor Observed
Meter Reading	0.0 PPM

#### **-20°C CONDITION**

Nose #1	No Odor Observed
Nose #2	No Odor Observed
Nose #3	No Odor Observed
Meter Reading	0.0 PPM

Appendices:

Appendix A – Photographs

Appendix B – Chamber Profile

Disposition of Test Samples:

After the completion of testing, the test samples were returned to the client for further evaluation.

## APPENDIX A – PHOTOGRAPHS



Photograph 1: Bleach Placement



Photograph 2: Bleach Placement

## APPENDIX A – PHOTOGRAPHS (cont'd)



Photograph 3: Bleach Placement



Photograph 4: Bleach

## APPENDIX A – PHOTOGRAPHS (cont'd)



Photograph 5: Vehicle in Chamber



Photograph 6: Vehicle in Chamber

## APPENDIX B – CHAMBER PROFILE

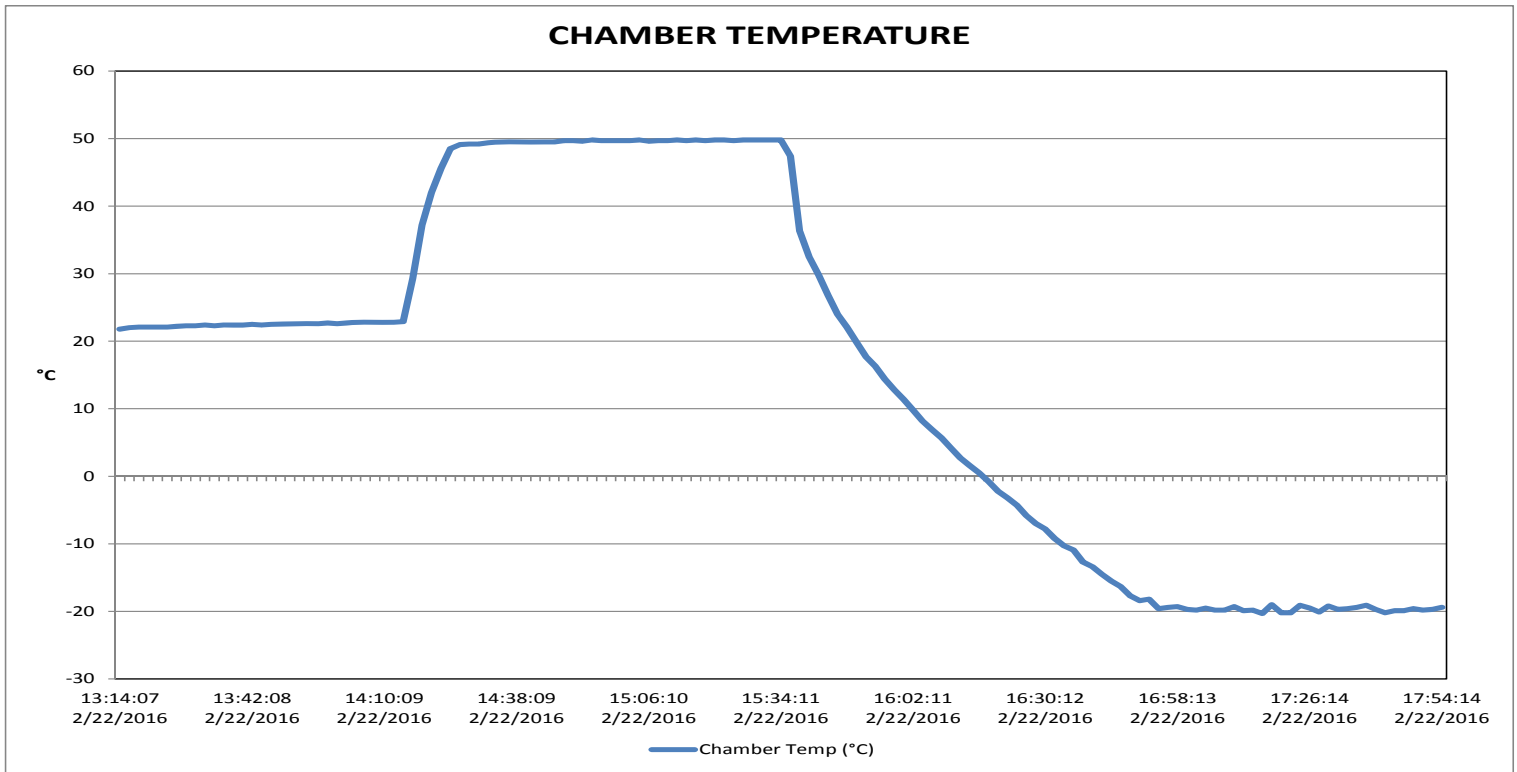


Figure 1: Chamber Profile