

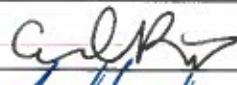
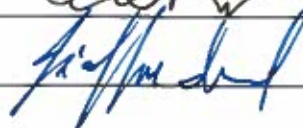
Waters THE SCIENCE OF WHAT'S POSSIBLE.™	Installation Qualification Report		
Report No: VAL001270-IQR	Iteration No: 00	SAP No: VAL001270	

INSTALLATION QUALIFICATION REPORT
For the Alliance Final Test System #6

PREPARED BY

Name	Role	Signature	Date
Chan Yee Hwa	Manufacturing Engineer		18 JUN 18.

REVIEWED BY

Name	Role	Signature	Date
Emma Pierce	Test Validation Engineer		18 Jun 2018
Michael Goller Jaaffar Ismail	Principal Test Engineer		18 Jun 2018

APPROVED BY

Name	Role	Signature	Date
Andre Kopoyan	Senior Operations Quality Engineer		18 Jun 2018

The "Prepared By" signature denotes that this document accurately describes the qualification activities.

The "Reviewed By" signature[s] denotes agreement with the description of the qualification activities.

The "Approved By" signature denotes that this document has been reviewed and approved for overall quality and completeness.

REVISION HISTORY

Version	Author	Summary of Change
00	Chan Yee Hwa	First document for approval

Waters THE SCIENCE OF WHAT'S POSSIBLE.™	Installation Qualification Report		
Report No: VAL001270-IQR	Iteration No: 00	SAP No: VAL001270	

1.0 Purpose

The Alliance Final Test System #6 is located in the WPPL Flextronics Contract Manufacturer Site in Singapore. The station is used to perform the final functional test of the following part numbers: 186269506 and 186269505. In the final test, the UUT is connected to the test station and electrical, mechanical, and fluidic performance of the unit is tested.

The test station is equipped with a Prime/Purge Module, two (2) Temperature Control Modules, four (4) Column Heater Modules, four (4) 2489 Detectors and an Empower Work Station.

This Installation Qualification is being performed as required by VAL001270-06JUN2018-VAF, which can be found in the VAL001270 directory of SAP.

2.0 Scope of Report

This Installation Qualification Report details the qualification activities undertaken for the Alliance Final Test System #6 based on the requirements of the Installation Qualification Procedure 730004135, Ver. 00.

This Installation Qualification Report defines the documents used to qualify the Alliance Final Test System #6 .

3.0 Summary of Results - Statement of Fitness for Intended Use

The Alliance Final Test System #6 was tested in accordance with the Installation Qualification Procedure 730004135, Ver. 00. All Test Scripts were performed and all objective evidence requirements have been met.

Waters now has the necessary documentation in place to ensure that the Alliance Final Test System #6 complies with Waters' requirements, the latest relevant quality system regulations, and cGMP practices.

Following the approval of this Qualification Report, the Alliance Final Test System #6 can be considered fully qualified and fit for intended use.

4.0 Glossary

The following definitions are used in this document:

Term	Explanation
cGMP	Current Good Manufacturing Practice
CTQ	Critical to Quality
EQID	Equipment Identification
Hz	Hertz
IQ	Installation Qualification
IQR	Installation Qualification Report
N/A	Not Applicable
P/N	Part Number
SAP	Enterprise Resource Planning Software
S/N	Serial Number
TSP	Test Specification and Procedure
UUT	Unit Under Test
VAC	Volts Alternating Current
VAF	Validation Assessment Form

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5.0 Training

The operator of the Alliance Final Test System #6 was trained according to the Alliance Separations Module / Altus A10 Solvent and Sample Module, TSP WAT271129, REV. 33, VER. 35. The executor of this qualification was trained according to the Installation Qualification Procedure 730004135, Ver. 00. Operator and executor training records are provided as Attachment 7.1 and 7.2, respectively.

6.0 Qualification Results

6.1 Test Script IQ-01: Associated Documentation Verification was performed according to Installation Qualification Procedure 730004135, Ver. 00. The completed Test Script Data Sheet is provided as Attachment 7.3.

6.1.1 The Alliance Separations Module / Altus A10 Solvent and Sample Module, TSP WAT271129, REV. 33, VER. 35 was confirmed to be in SAP with a status of Release General, as evidenced below:



Doc/Lit Type	Document	Ver	Part	Description	Status	Current Ver	Valid From	Valid To	Change
MSC	WAT271129	09	000	TST PROC, 2695 SEPARATIONS MOD	RELEASE GENERAL		03.07.2002	11.12.9999	9004280
TSP	WAT271129	35	000	TEST SPECIFICATION AND PROCEDURE, ALLIAN	RELEASE GENERAL		20.03.2016	11.12.9999	9221027

6.2 Test Script IQ-02: Site Verification was performed according to Installation Qualification Procedure 730004135, Ver. 00. The completed Test Script Data Sheet is provided as Attachment 7.4.

6.2.1 The ambient temperature and humidity were measured using an Hisamatsu TN-2500 Thermohygrograph, EQID-0418 and were determined to be within specification as defined by the Alliance 2695 Separations Module Operator's Guide 721008073 VER. 00. The calibration record of the Thermohygrograph is provided as Attachment 7.5.

6.2.2 The electrical supply was measured using a Fluke 179 Multimeter, EQID-0246, and was determined to be within specification as defined by the Alliance 2695 Separations Module Operator's Guide 721008073 VER. 00. The calibration record is provided as Attachment 7.6.

6.2.3 The Test Station was confirmed to have more than the thirteen (13) dedicated electrical outlets required.

6.2.4 The space and test bench of the Alliance Final Test System #6 were confirmed to have adequate space for testing and service. The bench was confirmed to be large and strong enough to support all test equipment. A picture of the Test Station work area is provided as Attachment 7.7.

6.3 Test Script IQ-03: Instrumentation Calibration Verification was performed according to Installation Qualification Procedure 730004135, Ver. 00. The completed script is provided as Attachment 7.8.

6.3.1 Each component of The Alliance Final Test System #6 was confirmed to be in either the Calibration Manager Database or the Preventive Maintenance Database with a twelve (12) month maintenance cycle. Screen captured from both the databases are provided as Attachment 7.9 and 7.10.

6.3.2 Note that since this is a newly installed test system, calibration or preventive maintenance has not yet been performed. The calibration dates listed in the Calibration Database reflects date of production.

6.4 Test Script IQ-04: Software and Instrument Firmware Version was not performed as part of this qualification.

6.4.1 The Alliance Final Test System #6 does not have custom software and does not download instrument firmware.

6.5 Test Script IQ-05: General Safety and Alarms was performed according to Installation Qualification Procedure 730004135, Ver. 00. The completed Test Script Data Sheet is provided as Attachment 7.11.

6.5.1 It was confirmed that there were no mechanical safety pinch points or sharp edges.

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6.5.2 An electrical safety test was performed using a Chroma 19032 Electrical Safety Analyzer, EQID-1492. Each component of The Alliance Final Test System #6 was confirmed to pass an Electrical Safety Hi-Pot/Ground Continuity test. The calibration record is provided as Attachment 7.12.

6.5.3 It was confirmed that the glass bottles in use at the test station were secured.

6.5.4 It was confirmed that the waste tanks in use at the test station were secured.

6.6 Test Script IQ-06: Functional Verification was performed according to Installation Qualification Procedure 730004135, Ver. 00. The completed Test Script Data Sheet is provided as Attachment 7.13, Attachment 7.15 and Attachment 7.17 for test port #1, #2 and #3 respectively.

6.6.1 The e2695 with Heater/Cooler (P/N: 186269506, S/N: F18SM4615A) was chosen as the UUT for this Installation Qualification because it verifies the full functionality of the Alliance Final Test System #6 .

6.6.2 One (1) UUT (P/N: 186269506, S/N: F18SM4615A) was tested on each available test port of the Alliance Final Test System #6 with all tests passing. The passing test record is provided as Attachment 7.14, Attachment 7.16 and Attachment 7.18 for test port #1, #2 and #3 respectively.

6.7 This table provides a summary of each test script as performed according to 730004135, Ver. 00 along with the attachment location of all objective evidence. The table also indicates any deviation taken from the scripts during qualification.

Script or Section	Pass/Fail	Objective Evidence	Deviations
IQ-01	Pass	Attachment 7.3	None
IQ-02	Pass	Attachments 7.4, 7.5, 7.6, and 7.7	None
IQ-03	Pass	Attachments 7.8, 7.9, and 7.10	None
IQ-05	Pass	Attachments 7.11 and 7.12	None
IQ-06	Pass	Attachments 7.13, 7.14, 7.15, 7.16, 7.17 and 7.18	None

7.0 Attachments

7.1 Completed Operator Training Record TSP WAT271129, REV. 33, VER. 35

7.2 Completed Executor Training Record 730004135, Ver. 00

7.3 Completed Test Script IQ-01: Associated Document Verification

7.4 Completed Test Script IQ-02: Site Verification

7.5 Objective Evidence IQ-02: Hisamatsu TN-2500 Thermohygrograph (EQID-0418) Calibration Record

7.6 Objective Evidence IQ-02: Fluke 179 Multimeter (EQID-0246) Calibration Record

7.7 Objective Evidence IQ-02: Picture of Test Station Work Area

7.8 Completed Test Script IQ-03: Instrument Calibration Verification

7.9 Objective Evidence IQ-03: Screen Capture of Alliance Final Test System #6 in Calibration Master Database

7.10 Objective Evidence IQ-03: Screen Capture of Alliance Final Test System #6 in Preventive Maintenance Master Database

7.11 Completed Test Script IQ-05: General Safety and Alarms

7.12 Objective Evidence IQ-05: Chroma 19032 Electrical Safety Analyzer (EQID-1492) Calibration Record

7.13 Completed Test Script IQ-06: Functional Verification of UUT Part #186269506 (S/N: F18SM4615A) at Port #1

7.14 Objective Evidence IQ-06: Passing Test Record for UUT Part #186269506 (S/N: F18SM4615A) at Port #1

Template 730002845, Version 02

Ref. 730001835, Process Validation Procedure for Milford Site

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Report No: VAL001270-IQR	Iteration No: 00	SAP No: VAL001270	

- 7.15 Completed Test Script IQ-06: Functional Verification of UUT Part #186269506 (S/N: F18SM4615A) at Port #2
- 7.16 Objective Evidence IQ-06: Passing Test Record for UUT Part #186269506 (S/N: F18SM4615A) at Port #2
- 7.17 Completed Test Script IQ-06: Functional Verification of UUT Part #186269506 (S/N: F18SM4615A) at Port #3
- 7.18 Objective Evidence IQ-06: Passing Test Record for UUT Part #186269506 (S/N: F18SM4615A) at Port #3

8.0 Deviation from Test Equipment Qualification

There were no deviations generated during the execution of the Installation Qualification Procedure 730004135, Ver. 00.

9.0 References

The current approved versions of the following documents are referenced within this report:

Document Number	Document Title
730004135, Ver. 00	Installation Qualification Procedure
TSP WAT271129, REV. 33, VER. 35	Alliance Separations Module / Altus A10 Solvent and Sample Module
VAL001270-06JUN2018-VAF	Validation Assessment Form for Alliance Test System
WAT046538, Ver. 09	Generic Electrical Safety Test Procedure
721008073, VER. 00	Alliance 2695 Separations Module Operator's Guide

Title: individual Training Form

Document No: 730002657

Version No: 00

Page 1 of 1

Training Type:	Read and Understood		
Name:	CHONG WOUI KHIP	Employee ID:	246026
Date of Training	13 JUN 2018		
Comments:	NA		

[illegible]

Cyp.
Employee's Signature

Senior Technician

13 JUN 2018
Date


Trainer's Signature

SENIOR ENGINEER (TEST)
Title

13 JUN 2018
Date

Document No.: VAL001376- IRR
Iteration No.: 00
Attachment: 7.1 Page: 1 of 1

¹ Without preceding "90"

Training Type:	Read and Understood		
Name:	CHAN YEE HWA	Employee ID:	618056
Date of Training	07 MAR 2018		
Comments:	N/A		

[illegible]

	MANUFACTURING ENGINEER	7 MAR 2018
Employee's Signature	Title	Date

N/A
N/A
N/A

Trainer's Signature
Title
Date

25 APR 2018.

Document No.: VAL001270- IQR
Iteration No.: 00
Attachment: 7.2 Page: 1 of 1

¹ Without preceding "90"

Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

Page 1 of 5

IQ Test Name: Associated Documentation Verification		Test Script No.: IQ-01	
Equipment No./ID: VAL001270		Equipment Name: Alliance Final Test System	
Installation Site: Flextronics: WPPL, Singapore			
Purpose: To verify that supporting documentation is available prior to the completion of qualification.			
Test Execution: List all applicable documents (Preventive Maintenance, Calibration, Operating Procedures, Test Specification Procedures, Manufacturing Procedures, etc.) under the Document type header and then complete the table below. If applicable documents are unavailable state why in the comments section. All applicable documents must be in either Ready, Pre-Rel-Prod, or Release General state in SAP. Enter N/A for any parameter or cell that is not used or not applicable.			
Objective Evidence: Completed Test Script Data Sheet SAP Screen shot of below available document(s)			
Document Type	Title, Doc. No., Revision/Version No.	Status In SAP	Initial & Date
TSP	Alliance Separations Module / Altus A10 Solvent and Sample Module TSP WAT271129 Rev. 33, Ver. 35	RELEASE GENERAL	YH 14JUN18
Comments:  N/A 1404N 18			
Overall Test Conclusion: ☒ Pass ☐ Fail			

Copy this Test Script as needed

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Template 730000483 V06

It is the responsibility of the user to verify they are using the current released version.
HARD COPY UNCONTROLLED UNLESS STAMPED, SIGNED AND DATED BY AUTHORISED PERSONNEL

Document No.: VMLO01270 - IQR

Iteration No.: 00

Attachment: 713 Page: 1 of 1

Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

Page 2 of 5

IQ Test Name: Site Verification		Test Script No.: IQ-02		
Equipment No./ID: VAL001270		Equipment Name: Alliance Final Test System		
Installation Site: Flextronics: WPPL, Singapore				
Purpose: To verify the location in which the test equipment is to be installed is suitable for use. Test Execution: List any additional applicable environmental parameters in the Parameters column. Using the applicable equipment documentation, define the specifications in the Acceptance Criteria column, as appropriate. Verify and/or measure the applicable parameters and complete the table below. Do not delete any of the listed defined parameters. Enter N/A for any parameter or cell that is not used or applicable. Objective Evidence: Completed Test Script Data Sheet. Photo(s) of the work area, if applicable. Copies of calibration certificates for gauges or meters used for measurement, if applicable.				
Parameters	Acceptance Criteria	As Found	Pass/Fail	Initial & Date
Ambient Temperature	4 – 40 °C	24 °C	PASS	YH 14 JUN 18
Relative Humidity	20 – 80 % non condensing	50 %	PASS	YH 14 JUN 18
Workspace	Adequate space for testing and service	Adequate space for testing and service	PASS	YH 14 JUN 18
Test Station Bench	Large and strong enough to support all equipment	Large and strong enough to support all equipment	PASS	YH 14 JUN 18
Electrical Supply	47 – 63 Hz 85 – 132 or 180 – 350 VAC	50 Hz 236 VAC	PASS	YH 14 JUN 18
Electrical Outlets	≥ 13	14	PASS	YH 14 JUN 18
Network Available	≥ 1	1	PASS	YH 14 JUN 18
Comments: Temperature, humidity, and electrical supply specified in 721008073. Temperature and humidity measured by 5010-0418 (calibrated on 15 Jan 2018) Electrical Supply measured by 5010-0246 (calibrated on 31 Jan 2018)				
Overall Test Conclusion: ☒ Pass ☐ Fail				

Copy this Test Script as needed

Waters Confidential

Template 730000483 V06

It is the responsibility of the user to verify they are using the current released version.

HARD COPY UNCONTROLLED UNLESS STAMPED, SIGNED AND DATED BY AUTHORISED PERSONNEL

Document No.: VAL001270 - IQR

Iteration No.: 00

Attachment: 7.4 Page: 1 of 1



CALTEK PTE. LTD.

23 Tagore Lane, #04-08/09/10/11 Tagore 23 Warehouse, Singapore 787601
Tel: (65) 64520300 Fax: (65) 64520500
Email: info@caltekgroup.com Website: www.caltekgroup.com

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER :	CTT-111-1120-18	JOB NUMBER :	CTJ18-1117
RECEIVED DATE :	08-Jan-18	ISSUE DATE :	16-Jan-18

INSTRUMENT :	THERMOHYGROGRAPH	Ambient Temperature :	(23 ± 5) °C
MANUFACTURER :	HISAMATSU MFG. CO.	Relative Humidity :	(55 ± 10) % r.h.
MODEL NO :	TN-2500	Date of Calibration :	15-Jan-18
PART NO :	-	Recommended Due Date :	15-Jan-19
SERIAL NO :	5650	Instrument Code :	CT3260
CUSTOMER :	FLEXTRONICS MANUFACTURING (SINGAPORE) PTE LTD.	Range :	-
		Asset/Tag/Id/Code :	----
		Page No :	1 of 3
		Status :	As Found
		JR No :	JR-8567

The described instrument has been calibrated at Caltek laboratory under the ambient conditions stated above.

This certificate provides traceability of measurement to the International System of Units (SI) and/or to units of measurement realised at the National Metrology Centre (NMC), Singapore or other recognized national metrology institutes.

The calibration method was carried out according to In-house Technical Calibration Procedure CTTM-T10-2007, as guide.

S.No.	REFERENCE INSTRUMENT(S)	SERIAL NO	DUE DATE
1.	Reference Sensors	(60813824/60562343)/ (S10/34910001/35250025)	16-Aug-18

REVIEWED & ACCEPTED
SIGN: <u>CHANG MEI LAN</u>
DATE: <u>18 JAN 18</u>
REMARKS: <u>FOID 0418</u>
<u>BENNETT CHEONG CHUAN HIN</u>

Calibrated by : Anoop Ummappilly EMP ID : 1039		Approved by : Siva EMP ID : NA	
---	---	---	---

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Document No.: VAL 001270- IQR
Iteration No.: 00
Attachment: 7.5 Page: 1 of 3



CALTEK PTE. LTD.

23 Tagore Lane, #04-08/09/10/11 Tagore 23 Warehouse, Singapore 787601

Tel: (65) 64520300 Fax: (65) 64520500

Email: info@caltekgroup.com Website: www.caltekgroup.com

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER :	CTT-111-1120-18	JOB NUMBER	: CTT18-1117
ISSUE DATE	: 16-Jan-18	PAGE NUMBER	: 2 of 3

RESULTS OF CALIBRATION :

1. The expanded uncertainty of measurement associated with the calibration is estimated at a confidence level of approximately 95 % with a coverage factor of $k=2.00$.
2. The results of calibration are given on the attached calibration data sheet(s).
3. The user should determine the suitability of the instrument for its intended use.
4. No Adjustments done.

Calibration Results:RELATIVE HUMIDITY MEASUREMENT @ FIXED TEMPERATURE OF 21°C

Mean Reference Reading	Mean Instrument Reading - Before Adjustment	Error	Expanded Uncertainty
%rh	%rh	%rh	%rh
23.8	23.0	-0.8	3.5
40.5	40.0	-0.5	3.5
60.5	60.0	-0.5	3.5
80.9	80.0	-0.9	3.5
87.7	86.0	-1.7	3.5

Calibrated by :		Approved by :	
Anoop Ummappilly		Siva	
EMP ID : 1039		EMP ID : NA	

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Document No.: VPL 001270 - 1002
Iteration No.: 00
Attachment: 7.5 Page: 2 of 3



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23 Tagore Lane, #04-08/09/10/11 Tagore 23 Warehouse, Singapore 787601
Tel: (65) 64520300 Fax: (65) 64520500
Email: info@caltekgroup.com Website: www.caltekgroup.com

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER : CTT-111-1120-18

JOB NUMBER : CTJ18-1117

ISSUE DATE : 16-Jan-18

PAGE NUMBER : 3 of 3

Calibration Results: TEMPERATURE MEASUREMENT @ NOMINAL RELATIVE HUMIDITY OF 50%r.h.

Mean Reference Reading	Mean Instrument Reading - Before Adjustment	Error	Expanded Uncertainty
°C	°C	°C	°C
16.3	16.0	-0.3	1.0
18.3	18.0	-0.3	1.0
22.2	22.0	-0.2	1.0
27.3	27.0	-0.3	1.0
30.3	30.0	-0.3	1.0

Calibrated by :

Anoop Ummappilly

EMP ID : 1039

Approved by :

Siva

EMP ID : NA

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Document No.: VAL 001270 - IQR

Iteration No.: 00

Attachment: 7.5 Page: 3 of 3



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2 Loyang Lane #06-03 | Loyang Industrial Estate | Singapore 508913
T: +65 6543 2855 | F: +65 6543 1329 | W: www.tsiasia.com
[Co Reg No: 199202282R | GST Reg No: M2-0106585-2]

CALIBRATION CERTIFICATE

Ref. No. : FMS / 1413

Page : 1 of 6

Customer : Flextronics Manufacturing (Singapore) Pte Ltd
Address : 1 Kallang Place
Singapore 339211

REVIEWED & ACCEPTED
SIGN: <u>CHANG MEI LAN</u>
DATE: <u>01 FEB 18</u>
REMARKS: <u>ESUD 0246</u> <u>Michael Shamsi 01 Feb 18</u>

Equipment ID : 0246
Description : Multimeter
Model : 179
Manufacturer : Fluke
Serial No. : 90240092

Co-ordinator : Neo Hui Hui
Telephone : 6543 2855
Ext : 207

Date Calibrated : 31 Jan 2018
Next Due Date : 31 Jan 2019
Location : Electrical Laboratory

Temperature : (23 ± 3) °C
Humidity : (35 ~ 65) %rh

The above instrument has been tested in general accordance with its manufacturer's published specifications and Performance Test Procedure in Calibration Information PN 1600476 March 2001 Rev. 5, 2/08.

The measurement report attached to this certificate indicates all the test results obtained at the time of testing.
The intended use of the instrument shall be ascertained based on the end user's requirement.
Recalibration interval was determined based on end user's requirements.

As Found : ☒ In / ☐ Out Tolerance
As Left : In Tolerance

Adjustment Done : ☐ Yes / ☒ No

The measurement standards are traceable to SI Units through National Metrology Centre (NMC), Singapore; National Institute of Standards and Technology (NIST), USA; National Physical Laboratory (NPL), UK or other recognised National Standard Laboratories.

The Laboratory's Quality System is in accordance with the Quality Standard ISO 9001:2008.

Conformance terms of "In Tolerance" and "Out of Tolerance" used in this certificate are determined by comparison of measured values against warranted specifications and do not take measurement uncertainties into account.

Test Performed By


Muhammad Azuan Bin Ali
Engineer



Approved By


Wen Tai Chung
Manager, Technical Services
31-Jan-2018

Document No.: VAL001270 - IQR
Iteration No.: 00
Attachment: 7.6 Page: 1 of 6



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MEASUREMENT REPORT

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Date : 31 Jan 2018

Reference : FMS / 1413

Description : Multimeter

Model : 179

Manufacturer : Fluke

Serial Number : 90240092

Measuring Instruments used in this performance test :-

Instrument	Serial No. (Cal Report No.)	Eqpt ID	Due Date	Remarks
MULTI-PRODUCT CALIBRATOR	6775016 (EL005461)	S0289	27 Apr 2018	
TYPE K THERMOCOUPLE	S0350 (TL005739)	S0350	22 Feb 2018	

Legend and Explanations for Measurement Report:

- [*] - If shown next to the result recorded, it means the reading is out of the specified limits
- [Deviation] - If shown, is computed as [Deviation] = [UUT Reading] - [True Value] (Reference: Int Vocab in Metrology JCGM 200:2008)
- [Correction] - If shown, is computed as [Correction] = [True Value] - [UUT Reading]
- Correction is used to apply to the UUT reading (add) to give a true reading.

Test Performed By


Muhammad Azuan Bin Ali

Document No.: VFL001270-1AR

Iteration No.: 00

Attachment: 76 Page: 2 of 6



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2 Loyang Lane #06-03 | Loyang Industrial Estate | Singapore 508913

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MEASUREMENT REPORT

Date : 31 Jan 2018

Ref. No. : FMS / 1413

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Test Specified Limits Results Comments

AC Voltage Test

Auto Range

Freq (Hz)	Input (V)	Min (V)	Max (V)	Reading (V)
45	300 m	296.7 m	303.3 m	300.1 m
500	5	4.947	5.053	4.994
1 k	5	4.897	5.103	4.952
45	50	49.47	50.53	49.94
1 k	50	48.97	51.03	50.06
45	300	296.7	303.3	300.0
500	500	494.7	505.3	500.7
1k	500	489.7	510.3	500.6
45	1000	987	1013	997

AC Volts Frequency Test

Auto Range

Freq (Hz)	Input (V)	Min (Hz)	Max (Hz)	Reading (Hz)
45	1	44.94	45.06	45.00
50 k	5	49.94 k	50.06 k	50.00 k

DC Voltage Test

Auto Range

Input (V)	Min (V)	Max (V)	Reading (V)
0.03	29.8 m	30.2 m	30.0 m
-0.3	-300.5 m	-299.5 m	-299.6 m
0.6	599.3 m	600.7 m	599.3 m
5	4.993	5.007	4.995
300	299.5	300.5	299.7
1000	997	1003	999
-1000	-1003	-997	-999

DC Volts Frequency Test

Auto Range

Freq (Hz)	Input (V)	Min (Hz)	Max (Hz)	Reading (Hz)
45	3	44.94	45.06	45.00
50 k	30	49.94 k	50.06 k	50.00 k

Test Performed By


Muhammad Azuan Bin Ali

Document No.: VAL 001270 - IOR
Iteration No.: 00
Attachment: 7.6 Page: 3 of 6



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2 Loyang Lane #06-03 | Loyang Industrial Estate | Singapore 508913

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MEASUREMENT REPORT

Date : 31 Jan 2018

Ref. No. : FMS / 1413

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Test	Specified Limits	Results	Comments
------	------------------	---------	----------

Resistance Test

Auto Range

Input (Ω)	Min (Ω)	Max (Ω)	Reading (Ω)
500	495.3	504.7	500.0
19 M	18.68 M	19.32 M	18.73 M

Capacitance Test

Auto Range

Input (μ F)	Min (nF)	Max (nF)	Reading (nF)
0.90	887	913	901

Continuity Test

Beeper On < 25 Ω	Pass / Fail	Passed
Beeper Off > 250 Ω	Pass / Fail	Passed

Diode Test

Range (V)	Input (V)	Min (V)	Max (V)	Reading (V)
2.4	2	1.978	2.022	1.999

AC Current Test

Auto Range

Freq (Hz)	Input (A)	Min (A)	Max (A)	Reading (A)
45	0.003	2.92 m	3.08 m	3.01 m
1 k	0.05	49.22 m	50.78 m	49.99 m
1 k	0.4	393.7 m	406.3 m	399.8 m
45	4.0	3.937	4.063	4.001
1 k	9.0	8.83	9.17	9.00

Test Performed By


Muhammad Azuan Bin Ali

Document No.: VP1001270-102
Iteration No.: 00
Attachment: 7.6 Page: 4 of 6



Techsystems Services & Integration Asia Pte Ltd

2 Loyang Lane #06-03 | Loyang Industrial Estate | Singapore 508913

T: +65 6543 2855 | F: +65 6543 1329 | W: www.tsiasia.com

[Co Reg No: 199202282R | GST Reg No: M2-0106585-2]

MEASUREMENT REPORT

Date : 31 Jan 2018

Ref. No. : FMS / 1413

Page : 5 of 6

Test	Specified Limits	Results	Comments
------	------------------	---------	----------

DC Current Test

Auto Range

Input (A)	Min (A)	Max (A)	Reading (A)
0.003	2.94 m	3.06 m	3.01 m
0.05	49.47 m	50.53 m	49.95 m
-0.4	-404.3 m	-395.7 m	-399.7 m
4.0	3.957	4.043	3.996
-9.0	-9.12	-8.88	-8.99

Temperature Test

Temperature Std Used : ITS 90

Type K Thermocouple

Auto Range

Input (°C)	Min (°C)	Max (°C)	Reading (°C)
0	-1.0	1.0	0.4
-40	-41.4	-38.6	-39.5
400	395.0	405.0	399.7

Test Completed

Test Performed By

Muhammad Azuan Bin Ali

Document No.: VAL001270-1QR

Iteration No.: 00

Attachment: 76 Page: 5 of 6



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2 Loyang Lane #06-03 | Loyang Industrial Estate | Singapore 508913

T: +65 6543 2855 | F: +65 6543 1329 | W: www.tsiasia.com

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MEASUREMENT REPORT

Date : 31 Jan 2018

Ref. No. : FMS / 1413

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The Expanded Uncertainties of measurement (excluding the uncertainties of the Unit Under Test) for the results given in this report, with a confidence level of approximately 95% at Coverage Factor $k = 2$, are as follows:

Parameters	Range	Uncertainty
DC Voltage Generation	0 ~ 329.9999 mV	0.0069 % + 3 μ V
	0 ~ 3.299999 V	0.0058 % + 6 μ V
	0 ~ 32.99999 V	0.0058 % + 50 μ V
	30 ~ 329.9999 V	0.0064 % + 500 μ V
	100 ~ 1000 V	0.0064 % + 1.5 mV
AC Voltage Generation	33 ~ 329.99 mV	0.29 % + 58 μ V
	3.3 ~ 32.9999 V	0.05 % + 693 μ V
	33 ~ 329.999 V	0.06 % + 8 mV
	330 ~ 1000 V	0.06 % + 92 mV
AC Current Generation	0.33 ~ 3.2999 mA	0.12 % + 0.35 μ A
	33 ~ 329.99 mA	0.10 % + 35 μ A
	0.33 ~ 2.19999 A	0.12 % + 346 μ A
	2.2 ~ 11 A	0.06 % + 2309 μ A
	2.2 ~ 11 A	0.29 % + 2309 μ A
DC Current Generation	0 ~ 3.29999 mA	0.015 % + 0.06 μ A
	0 ~ 329.999 mA	0.012 % + 3.8 μ A
	0 ~ 2.19999 A	0.035 % + 50.8 μ A
	1 ~ 11 A	0.069 % + 381 μ A
Frequency Generation	12 ~ 119.99 kHz	29 ppm + 17 mHz
Resistance Generation	11 ~ 32.999 Ω	0.014 % + 0.02 Ω
	110 ~ 329.99 Ω	0.010 % + 0.02 Ω
	11 ~ 32.9999 M Ω	0.12 % + 635 Ω
Capacitance Generation	0.33 ~ 1.0999 μ F	0.29 % + 1.2 nF
Temperature Generation	-100 ~ -25 $^{\circ}$ C	0.21 $^{\circ}$ C
Type K Thermocouple	-25 ~ 120 $^{\circ}$ C	0.18 $^{\circ}$ C
	120 ~ 1000 $^{\circ}$ C	0.30 $^{\circ}$ C

Muhammad Azuan Bin Ali

Document No.: VFL001270- IQR

Iteration No.: 00

Attachment: 7.6 Page: 6 of 6



Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

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IQ Test Name: Instrumentation Calibration Verification				Test Script No.: IQ-03	
Equipment No./ID: VAL001270			Equipment Name: Alliance Final Test System		
Installation Site: Flextronics: WPPL, Singapore					
Purpose: To verify that all critical instruments are in the calibration system and calibrated or a preventive maintenance has been performed, as appropriate. Test Execution: List all critical instruments/components and/or sub-systems (System, TUV, Sample Manager, BSM, Column Manager, Test Solutions, Meters, Gauges, Scales, etc.) in the Description column and complete the table below. Verify that all critical instruments have had a preventive maintenance and/or calibration performed, in accordance with the PM and/or Calibration procedures, and have been included in the preventive maintenance/calibration schedule. For test solutions note the expiration date. Enter N/A for any parameter or cell that is not used or applicable. Objective Evidence: Completed Test Script Data Sheet Copies of calibration and/or maintenance certificates.					
Description	Waters P/N and Asset No.	Serial Number	Last Cal/PM Performed Date	PM Cal/Due / Expiration Date	Initial & Date
Prime/Purge Module	TE82733-7 PM 02866	N/A	N/A	13 JUN 19	YH 18 JUN 18
Temperature Control Module	186003441 EQID - 2346	A18TC 24816	N/A	29 JAN 19	YH 18 JUN 18
Temperature Control Module	186003441 EQID - 2347	B18TC 24956	N/A	06 FEB 19	YH 18 JUN 18
Column Heater Module	WAT038040 EQID - 2352	M17CHM834M	N/A	13 JUN 19	YH 18 JUN 18
Column Heater Module	WAT038040 EQID - 2353	M17CHM835M	N/A	13 JUN 19	YH 18 JUN 18
Column Heater Module	WAT038040 EQID - 2354	M17CHM839M	N/A	13 JUN 19	YH 18 JUN 18
Column Heater Module	WAT038040 EQID - 2355	M17CHM840M	N/A	13 JUN 19	YH 18 JUN 18
2489 Detector	186248900 EQID - 2348	C1887E101A	N/A	21 MAR 19	YH 18 JUN 18
2489 Detector	186248900 EQID - 2349	C1887E102A	N/A	21 MAR 19	YH 18 JUN 18
2489 Detector	186248900 EQID - 2350	C1887E106A	N/A	20 MAR 19	YH 18 JUN 18
2489 Detector	186248900 EQID - 2351	D1887E275A	N/A	09 APR 19	YH 18 JUN 18
Empower Work Station	PM 02867	A14L22340W	N/A	13 JUN 19	YH 18 JUN 18
Comments: This is a newly installed system, calibration and preventive maintenance has not yet been performed. Refer Attachment 7.9 and 7.10 for Calibration Database and Preventive Maintenance Database.					
Overall Test Conclusion: ☒ Pass ☐ Fail					

Copy this Test Script as needed

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flex.

S/N	Equipment ID	Equipment Description	Manufacturer	Model	Equipment Serial Number	Calibration Date	Due Date	Vendor	Equipment Tester	Validated By	Comment ID	Comment	Location	Active
112	2346	Temperature Control Module 2	Waters	186021441	A187C2441C1	12 Months	28-Jun-18	Interval	Jed Mansabane Desayo	Y	NA	Waters	Waters - Production	Y
113	2347	Temperature Control Module 2	Waters	186021441	B187C2441C1	12 Months	08-Sep-18	Interval	Jed Mansabane Desayo	Y	NA	Waters	Waters - Production	Y
114	2348	2109 IIV / Variable Detector	Waters	18631093D	C187C101A	12 Months	21-Mar-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
115	2349	2409 IIV / Variable Detector	Waters	18631093D	C187C101A	12 Months	21-Mar-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
116	2350	2409 IIV / Variable Detector	Waters	18631093D	C187C101A	12 Months	25-Mar-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
117	2351	2409 IIV / Variable Detector	Waters	18631093D	D187C271A	12 Months	09-Apr-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
118	2352	Column Heater Module	Waters	WAT03030	M17C104830A	12 Months	13-Jun-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
119	2353	Column Heater Module	Waters	WAT03030	M17C104830A	12 Months	13-Jun-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
120	2354	Column Heater Module	Waters	WAT03030	M17C104830A	12 Months	13-Jun-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y
121	2355	Column Heater Module	Waters	WAT03030	M17C104830A	12 Months	13-Jun-19	Interval	Jed Mansabane Desayo	Y	NA	Waters (Alliance)	Waters - Production	Y

Document No.: VAL001270-10R
 Iteration No.: 00
 Attachment: 1.9 Page: 1 of 1

MONTH / YEAR: JUNE 2018[illegible]

Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

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IQ Test Name: General Safety and Alarms		Test Script No.: IQ-05	
Equipment No./ID: VAL001270		Equipment Name: Alliance Final Test System	
Installation Site: Flextronics: WPPL, Singapore			
Purpose: To verify that the test equipment can operate in a safe manner, within its designated location. Test Execution: List any additional safety related conditions or alarms in the Safety Inspection column. List the associated safety requirement/specification in the Acceptance Criteria column. Perform an inspection/test of the equipment to assess its safety related conditions. Enter N/A for any parameter or cell that is not used or applicable. Objective Evidence: Completed Test Script Data Sheet Photo of the secured glass bottles and/or tanks, if applicable			
Safety Inspection	Acceptance Criteria	Pass/Fail	Initial & Date
Mechanical Safety/ Pinch Points/Sharp Edges	None Found	PASS	YH 14 JUN 18
Electrical Safety Hi Pot/Ground Continuity	Passed per test specification WAT046538	PASS	YH 14 JUN 18
Glass Bottles are secure	Secure	PASS	YH 14 JUN 18
Tanks are secure	Secure	PASS	YH 14 JUN 18
Comments: Tester passed HI-POT test using Equip - 1492 C calibrated on 09 Nov 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail			

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Attachment: 7.11 Page: 1 of 1



MICRO PRECISION CALIBRATION PTE LTD
BLOCK 5008 ANG MO KIO AVENUE 5 #07-04
TECHPLACE II SINGAPORE 569874
65 67484384



Certificate of Calibration

Date: November 09, 2017

Cert No. 512200813106568

Customer:

FLEXTRONICS MANUFACTURING (SINGAPORE) PTE. LTD.
NO.1 KALLANG PLACE SINGAPORE 339211

Work Order #: SG-11006711

MPC Control #: 19032G000182
Asset ID: 1492
Gage Type: ELECTRICAL SAFETY ANALYZER
Manufacturer: CHROMA
Model Number: 19032
Size: N/A
Temp/RH: 22.5°C / 44 %
Location: Calibration performed at MPC facility

Serial Number: 19032G000182
Department: N/A
Performed By: SENGTHYE CHEW
Received Condition: IN TOLERANCE
Returned Condition: IN TOLERANCE
Cal. Date: November 09, 2017
Cal. Interval: 12 MONTHS
Cal. Due Date: November 09, 2018

Calibration Notes:

Please refer to the attached calibration data. (2 pages).

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
AP4205	MULTIMETER	3458A	2823A17096	HEWLETT PACKARD	Aug 10, 2018	512200813159474
DD2799	PRECISION HV METER	4700	019419	VITREK	Dec 4, 2017	222008122796840
CA8100	DECADE RESISTANCE BOX	2793	00060U	YOKOGAWA	May 26, 2018	512200812859599
CH4975	HIGH RESISTANCE DECADE BOX	N/A	N/A	N/A	Aug 24, 2018	512200812995468
CH2775	SYNTHESIZED FUNCTION GENERATOR	3325B	2847A08652	HEWLETT PACKARD	Nov 28, 2017	512200813148305
CN2593	UNIVERSAL COUNTER	53132A	KR91200136	HEWLETT PACKARD	Mar 7, 2018	512200812749000
CH2324	CURRENT SHUNT	34330A	0804	AGILENT	Sep 7, 2018	512200813018499

Procedures Used in this Event

Procedure Name	Description
CHROMA 19032/19032-P	Electrical Safety Analyzer Manual

Calibrating Technician:

SENGTHYE CHEW

QC Approval:

GARLO DOMINGO

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA's Publication and NIST Technical Note 1297, 1994 Edition. Services rendered comply with ISO/IEC 17025:2005, ANSI/NCSL Z540-1:1994, ANSI/NCSL Z540.3-2006, MPC Quality Manual, MPC CSD and with customer purchase order instructions.

Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. The information on this report, pertains only to the instrument identified.

All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. This report may not be reproduced in part or in a whole without the prior written approval of the issuing MPC lab.

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(CERT, Rev 4)

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REVIEWED & ACCEPTED
SIGN: <u>CHANG MEI LAN</u>
DATE: <u>13 NOV 17</u>
REMARKS: <u>EQID 1492</u>
<u>P. Shamsol 14 Nov 17</u>



Chroma 19032 Electrical Safety Analyzer

Procedure: CHROMA 19032/19032-P
 ID Number: 19032G000182
 Asset Number: 1492

Order Number: SG-11006711
 Serial Number: 19032G000182
 Calibration Date: November 9, 2017

AC Voltage Accuracy (@60 Hz)

Range	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
0.5 to 5 kV	1.000 kV	0.986 kV	0.998 kV	0.998 kV	1.015 kV	PASS	0.0027 kV
0.5 to 5 kV	1.350 kV	1.332 kV	1.346 kV	1.346 kV	1.368 kV	PASS	0.0034 kV
0.5 to 5 kV	2.000 kV	1.976 kV	1.995 kV	1.995 kV	2.025 kV	PASS	0.0046 kV
0.5 to 5 kV	2.400 kV	2.372 kV	2.395 kV	2.395 kV	2.429 kV	PASS	0.0053 kV
0.5 to 5 kV	3.000 kV	2.966 kV	2.992 kV	2.992 kV	3.035 kV	PASS	0.0065 kV
0.5 to 5 kV	4.000 kV	3.956 kV	3.985 kV	3.985 kV	4.045 kV	PASS	0.0083 kV
0.5 to 5 kV	5.000 kV	4.946 kV	4.980 kV	4.980 kV	5.055 kV	PASS	0.010 kV

DC Voltage Accuracy

Range	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
0.5 to 6 kV	1.000 kV	0.985 kV	1.000 kV	1.000 kV	1.016 kV	PASS	0.0029 kV
0.5 to 6 kV	1.500 kV	1.476 kV	1.499 kV	1.499 kV	1.525 kV	PASS	0.0046 kV
0.5 to 6 kV	2.000 kV	1.975 kV	1.999 kV	1.999 kV	2.026 kV	PASS	0.0048 kV
0.5 to 6 kV	2.400 kV	2.371 kV	2.400 kV	2.400 kV	2.430 kV	PASS	0.0055 kV
0.5 to 6 kV	3.000 kV	2.965 kV	2.997 kV	2.997 kV	3.036 kV	PASS	0.0066 kV
0.5 to 6 kV	4.000 kV	3.955 kV	3.996 kV	3.996 kV	4.046 kV	PASS	0.009 kV
0.5 to 6 kV	5.000 kV	4.945 kV	4.995 kV	4.995 kV	5.056 kV	PASS	0.010 kV
0.5 to 6 kV	6.000 kV	5.935 kV	5.994 kV	5.994 kV	6.066 kV	PASS	0.012 kV

AC Current Accuracy (@60 Hz)

Range	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
1 µA to 40 mA	0.250 mA	0.208 mA	0.246 mA	0.246 mA	0.293 mA	PASS	0.0080 mA
1 µA to 40 mA	0.500 mA	0.455 mA	0.497 mA	0.497 mA	0.545 mA	PASS	0.0084 mA
1 µA to 40 mA	1.000 mA	0.950 mA	0.996 mA	0.996 mA	1.050 mA	PASS	0.0094 mA
1 µA to 40 mA	2.000 mA	1.940 mA	1.995 mA	1.995 mA	2.060 mA	PASS	0.011 mA
1 µA to 40 mA	5.000 mA	4.910 mA	4.996 mA	4.996 mA	5.090 mA	PASS	0.017 mA
1 µA to 40 mA	10.000 mA	9.860 mA	9.996 mA	9.996 mA	10.140 mA	PASS	0.026 mA
1 µA to 40 mA	20.00 mA	19.76 mA	19.99 mA	19.99 mA	20.24 mA	PASS	0.045 mA
1 µA to 40 mA	35.00 mA	34.61 mA	34.98 mA	34.98 mA	35.39 mA	PASS	0.073 mA
1 µA to 40 mA	38.00 mA	37.58 mA	37.89 mA	37.89 mA	38.42 mA	PASS	0.079 mA

DC Current Accuracy

Range	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
0.1 µA to 12 mA	0.250 mA	0.236 mA	0.246 mA	0.246 mA	0.265 mA	PASS	0.0027 mA
0.1 µA to 12 mA	0.200 mA	0.186 mA	0.196 mA	0.196 mA	0.214 mA	PASS	0.0026 mA
0.1 µA to 12 mA	0.500 mA	0.483 mA	0.500 mA	0.500 mA	0.517 mA	PASS	0.0032 mA
0.1 µA to 12 mA	1.000 mA	0.978 mA	0.997 mA	0.997 mA	1.022 mA	PASS	0.0041 mA
0.1 µA to 12 mA	2.000 mA	1.968 mA	1.997 mA	1.997 mA	2.032 mA	PASS	0.0060 mA
0.1 µA to 12 mA	5.000 mA	4.938 mA	4.982 mA	4.982 mA	5.062 mA	PASS	0.012 mA
0.1 µA to 12 mA	10.000 mA	9.888 mA	9.989 mA	9.989 mA	10.112 mA	PASS	0.021 mA
0.1 µA to 12 mA	12.00 mA	11.87 mA	11.99 mA	11.99 mA	12.13 mA	PASS	0.025 mA

Insulation DC Voltage Accuracy

Function Tested	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
0.050 kV	0.050 kV	0.044 kV	0.051 kV	0.051 kV	0.056 kV	PASS	0.0011 kV
0.500 kV	0.500 kV	0.485 kV	0.501 kV	0.501 kV	0.515 kV	PASS	0.0028 kV
1.000 kV	1.000 kV	0.975 kV	1.003 kV	1.003 kV	1.025 kV	PASS	0.0046 kV

Insulation Resistance Accuracy

Voltage Setting	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
100 V	0.100 MΩ	0.095 MΩ	0.100 MΩ	0.100 MΩ	0.105 MΩ	PASS	0.00094 MΩ
500 V	1.00 MΩ	0.95 MΩ	1.00 MΩ	1.00 MΩ	1.05 MΩ	PASS	0.0094 MΩ
500 V	10.0 MΩ	9.5 MΩ	10.0 MΩ	10.0 MΩ	10.5 MΩ	PASS	0.094 MΩ
500 V	100 MΩ	95 MΩ	100 MΩ	100 MΩ	105 MΩ	PASS	0.94 MΩ
500 V	1.00 GΩ	0.95 GΩ	1.00 GΩ	1.00 GΩ	1.05 GΩ	PASS	0.0094 GΩ
500 V	10.0 GΩ	9.5 GΩ	10.0 GΩ	10.0 GΩ	10.5 GΩ	PASS	0.094 GΩ
1000 V	1.00 MΩ	0.95 MΩ	1.00 MΩ	1.00 MΩ	1.05 MΩ	PASS	0.0094 MΩ
1000 V	10.0 MΩ	9.5 MΩ	10.0 MΩ	10.0 MΩ	10.5 MΩ	PASS	0.094 MΩ
1000 V	100 MΩ	95 MΩ	100 MΩ	100 MΩ	105 MΩ	PASS	0.94 MΩ
1000 V	1.00 GΩ	0.95 GΩ	1.00 GΩ	1.00 GΩ	1.05 GΩ	PASS	0.0094 GΩ
1000 V	10.0 GΩ	9.5 GΩ	9.7 GΩ	9.7 GΩ	10.5 GΩ	PASS	0.094 GΩ

Ground Bond AC Current Accuracy

Function Tested	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
5.000 A	5.000 A	4.921 A	5.005 A	5.005 A	5.079 A	PASS	0.015 A
10.000 A	10.000 A	9.871 A	9.970 A	9.970 A	10.129 A	PASS	0.024 A
15.00 A	15.00 A	14.82 A	14.94 A	14.94 A	15.18 A	PASS	0.033 A
20.00 A	20.00 A	19.77 A	19.90 A	19.90 A	20.23 A	PASS	0.043 A
25.00 A	25.00 A	24.72 A	24.89 A	24.89 A	25.28 A	PASS	0.052 A
30.00 A	30.00 A	29.67 A	29.85 A	29.85 A	30.33 A	PASS	0.062 A

Resistance Accuracy

Function Tested	Nominal Value	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty (±)
@ 10 A	300.0 mΩ	296.49 mΩ	300.5 mΩ	300.5 mΩ	303.51 mΩ	PASS	0.66 mΩ
@ 10 A	500.0 mΩ	494.49 mΩ	500.3 mΩ	500.3 mΩ	505.51 mΩ	PASS	1.0 mΩ
@ 25 A	100.0 mΩ	98.49 mΩ	100.8 mΩ	100.8 mΩ	101.51 mΩ	PASS	0.28 mΩ

Timer Accuracy Check

Nominal Value	As Found	As Left	Uncertainty (±)
2.00 s	2.00 s	2.00 s	0.0057 s
5.00 s	5.00 s	5.00 s	0.0057 s
10.00 s	10.01 s	10.01 s	0.0057 s

Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

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IQ Test Name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: VAL001270		Equipment Name: Alliance Final Test System	
Installation Site: Flextronics: WPPL, Singapore			
Purpose: To verify that system transfer and/or qualification activities have not adversely affected system functionality. Test Execution: One UUT shall be tested to verify that the test equipment functions as expected. If the system creates and/or tests more than one part number, the UUT to be tested per this Script should be a "worst case" product, and defined within the associated Installation Qualification Report. Enter N/A for any parameter or cell that is not used or applicable. Objective Evidence: Completed Test Script Data Sheet Copy of the system Test Record for the UUT, if applicable.			
UUT Part Number/Serial Number	Acceptance Criteria	Pass/Fail	Initial & Date
UUT Part Number: 186269508 UUT Serial Number: F18SM4615A	All required CTQ Specification measurements result in a Pass.	PASS	YH 18 JUN 2018
Comments: THIS UUT WAS TESTED USING ALLIANCE FINAL TEST SYSTEM #6 port #1.			
Overall Test Conclusion: ☒ Pass ☐ Fail			

Copy this Test Script as needed

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Iteration No.: 00

Attachment: 7.13 Page: 1 of 1

WATERS CORPORATION - TEST RECORD

Part Number:	186269506	Product:	eAlliance
Operator:	CHONG WOO KHIP	Start Date/Time:	06 JUN 2018 / 1108
Serial Number:	F18SM4615A	End Date/Time:	13 JUN 2018 / 1700
Test System:	6 / 1	Order:	NA
Test Software:	Empower 2	Location:	5th Floor FLEX

TMD: NA

Firmware: 3.04

Test Name	LSL	Measurement	USL	Unit	Outcome		
Electrical Safety Tests	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
System Initialization	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Power Supply Fan Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Unit Fan Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Keypad Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Display Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Rear Panel Tests	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Degasser Test (if equipped)	—	0.5	1.3	PSIA	PASS ☒	FAIL ☐	See Event Log ☐
Spurge Valve Test (if equipped)	—	—	—	—	PASS ☐	FAIL ☐	See Event Log ☐ NA
Heater/Cooler Test (if equipped)	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Solvent Inlet Plumbing Verification	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Sealwash Test (if equipped)	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Needle Wash Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
System Leak Test	—	60-20	160	PSI	PASS ☒	FAIL ☐	See Event Log ☐
Injector Adjustment Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Top	38	50	50	Steps			
Width	60	76	90	Steps			
Compression Test	—	25.5	50	PSI	PASS ☒	FAIL ☐	See Event Log ☐
Z-Ram Height Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐

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Document No.: VAL001270-102
Iteration No.: 00
Attachment: 7-14 Page 1 of 6

WATERS CORPORATION - TEST RECORD

Part Number: <u>186269506</u>	Serial Number: <u>F185M4615A</u>
-------------------------------	----------------------------------

Test Name	LSL	Measurement	USL	Unit	Outcome		
Carrier Alignment/RV Injection Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Carryover Test	—	0.0016	0.002	%	PASS ☒	FAIL ☐	See Event Log ☐
Linearity - [X-Intercept]	—	-0.153	1.0	—	PASS ☒	FAIL ☐	See Event Log ☐
Linearity - R-Squared	0.999	1.0000	—	—	PASS ☒	FAIL ☐	See Event Log ☐
AC Precision Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
RT Precision	—	0.0006	0.0090	Min.			
Area Precision	—	0.035	0.5	% RSD			
PSI Ripple	—	9.05	65	PSI			
BD Precision Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
RT Precision	—	0.0008	0.0090	Min.			
Area Precision	—	0.291	0.5	% RSD			

Note: Fill in 'N/A' if not applicable.

Instrument Final Test Overall Result -

PASS ☒ FAIL ☐

Signed: CHONG 246026

Date: 13 JUN 2018

END OF DATA

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Effective from: 30.03.2018 thru: ... WAT271129 TSP 000 35 RELEASE GENERAL

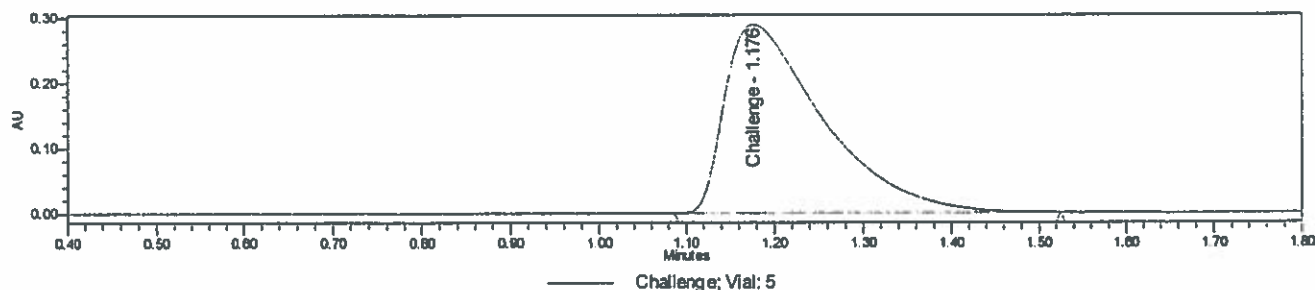
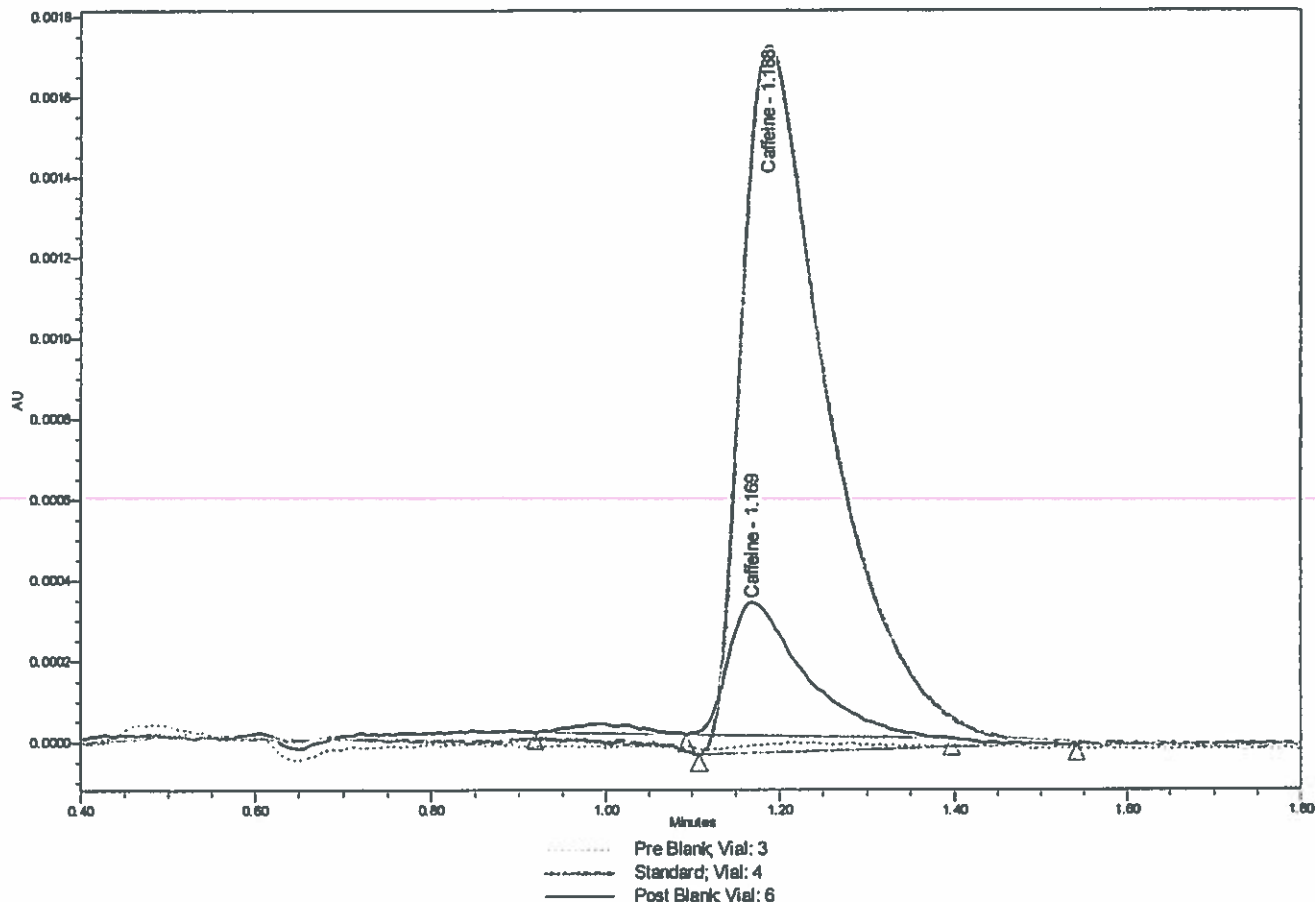
Document No.: VAL001370-12R

Iteration No.: 00

Attachment: 7.14 Page: 3 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_1



	Date Acquired	SampleName	Area	Percent
1	6/13/2018 3:29:37 PM SGT	Pre Blank		
2	6/13/2018 3:32:21 PM SGT	Standard	12375	0.0100
3	6/13/2018 3:35:05 PM SGT	Challenge	2215906	
4	6/13/2018 3:51:02 PM SGT	Post Blank	1960	0.0016

Carryover Test:
 PreBlank injection (to establish system cleanliness)
 Standard (0.4 PPM) Caffeine injection
 Challenge injection (10,000 X Standard = 4,000 PPM)
 PostBlank injection
 $\text{Carryover (\%)} = \frac{\text{Carryover Area}}{\text{Standard Area}} \times 0.010$
 Specification: Post Blank Percent < 0.002
 (or Blank peak(s) missing/blank)

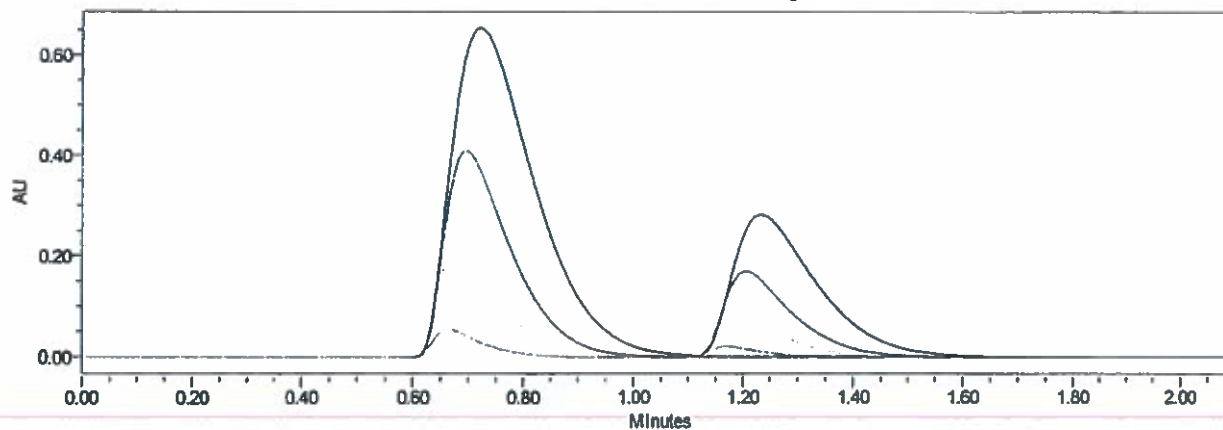
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Document No.: VHL001270-1002
 Iteration No.: 00
 Attachment: 7.14 Page: 3 of 6

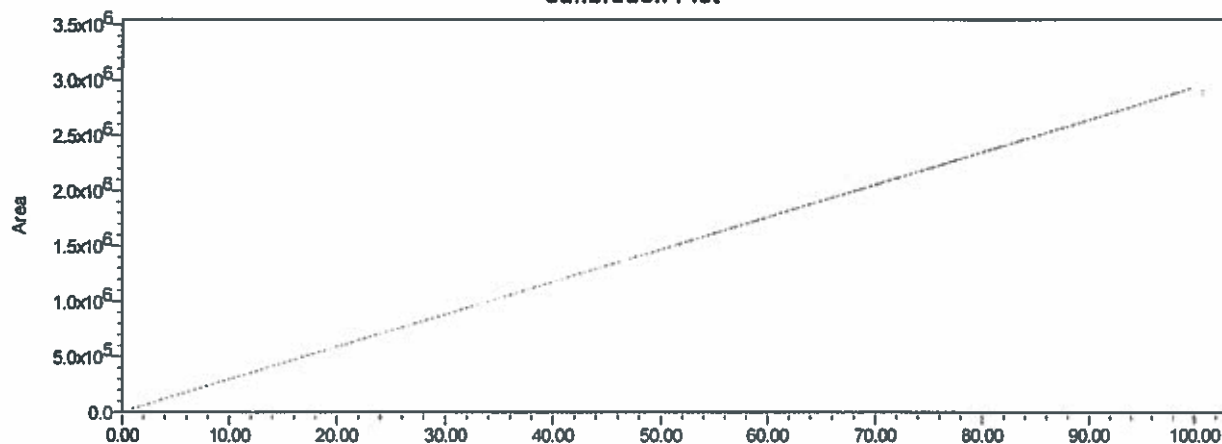
Part Number: 186269506
Tested By: CHONG WQOOI KHIP
Serial Number: F18SM4615A
UUT Firmware: 3.04

Description: 2695 Separations Module
Test Template Revision: 1.8
Test Station: Final-test-6
System: 2695_1

Overlaid Caffeine Peak Chromatograms



Calibration Plot



Injection Linearity and Accuracy

Fit Type Linear (1st Order)	A 4491.688754
Equation $Y = 2.93e+004 X + 4.49e+003$	B 29328.734567
X Intercept -0.153	R ² 1.0000

$1-(A/B) = X \text{ Intercept (ul)}$
Specs $R^2 \geq 0.999$, $|X\text{-Intercept}| \leq 1.0 \text{ ul}$

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Document No.: VAL001270- 10R
Iteration No.: 00
Attachment: 7.14 Page: 4 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_1

Component Summary For Retention Time

	Sample	Vo	Caffeine
1	Precision AC	0.6781	1.1901
2	Precision AC	0.6782	1.1899
3	Precision AC	0.6769	1.1887
4	Precision AC	0.6771	1.1885
5	Precision AC	0.6780	1.1890
6	Precision AC	0.6772	1.1889
Std. Dev.		0.0006	0.0006

Component Summary For Area

	Sample	Caffeine
1	Precision AC	3506246
2	Precision AC	3504672
3	Precision AC	3502925
4	Precision AC	3505837
5	Precision AC	3504271
6	Precision AC	3505607
% RSD		0.035

Component Summary For Pressure_Ripple

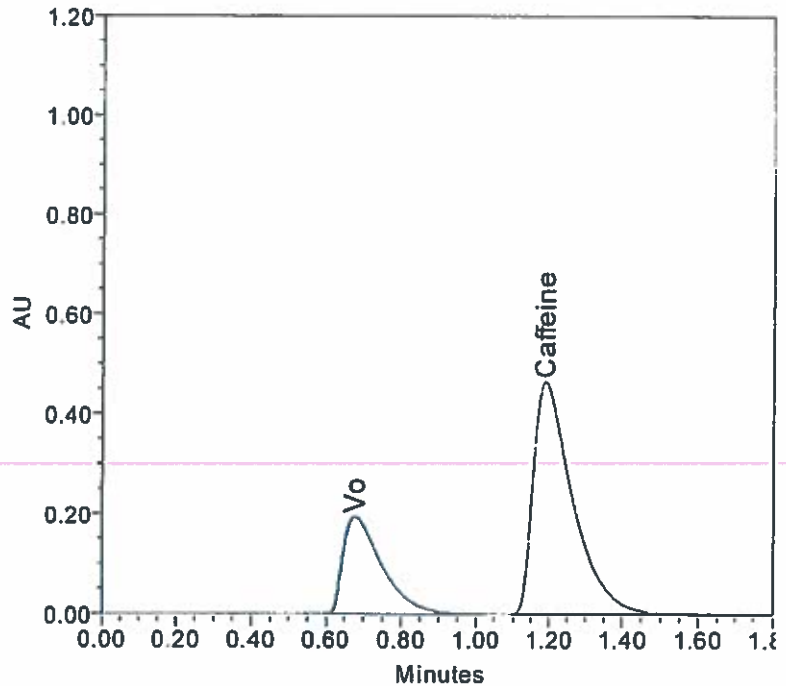
	Date Acquired	
1	6/13/2018 4:10:02 PM SGT	10.35
2	6/13/2018 4:12:44 PM SGT	11.21
3	6/13/2018 4:15:26 PM SGT	8.89
4	6/13/2018 4:18:10 PM SGT	7.00
5	6/13/2018 4:20:53 PM SGT	7.30
6	6/13/2018 4:23:35 PM SGT	9.53
Mean		9.05

Specifications:

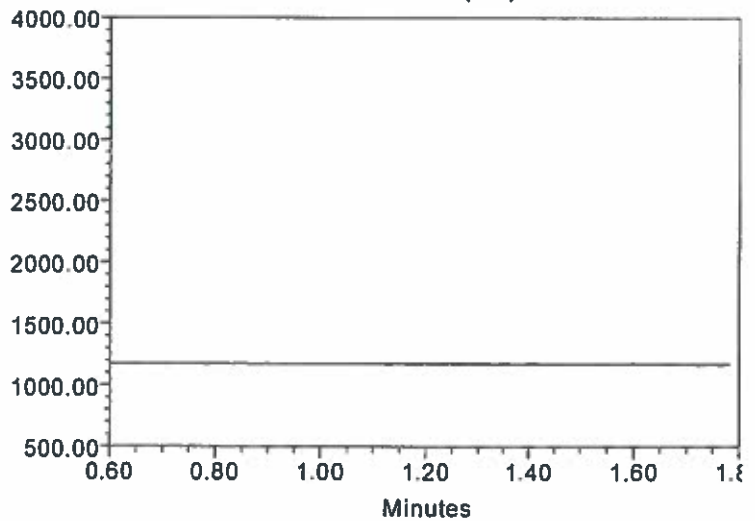
Retention Time Standard Deviation: <= 0.0090 min

Area % RSD: <= 0.500

Mean Pressure Ripple < 65 PSI



SYSTEM PRESSURE (PSI)

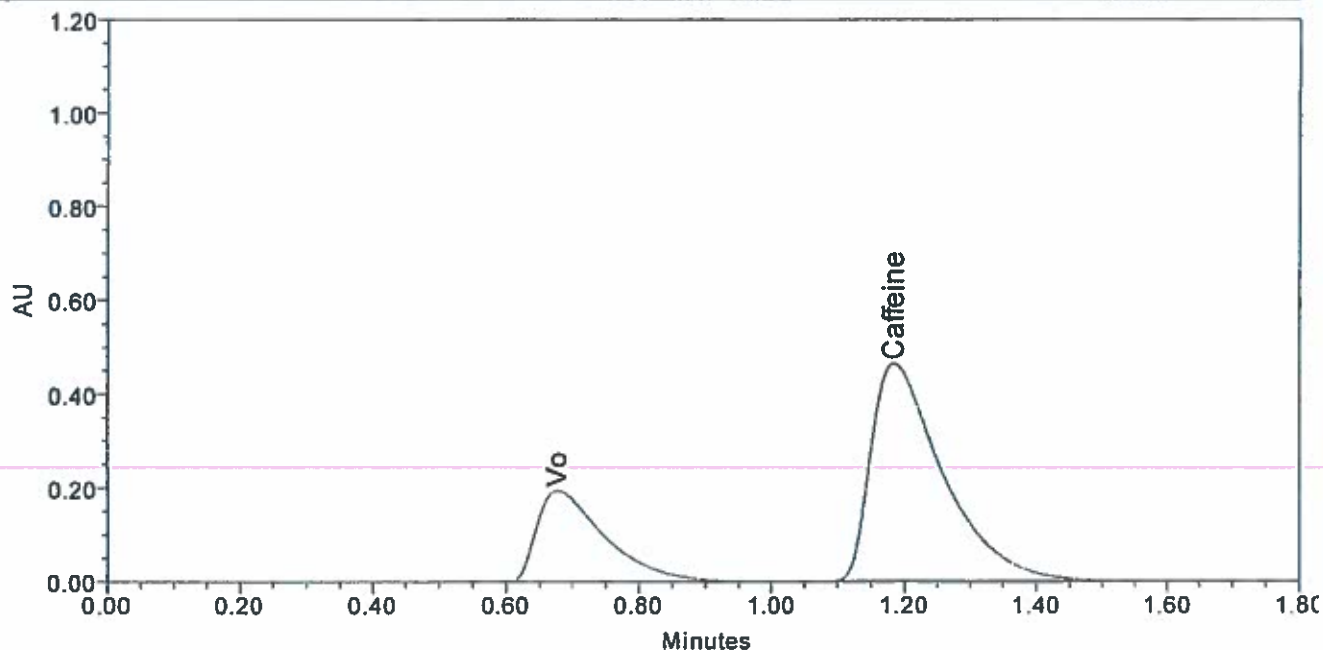


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Document No.: VML-001370-1.0R
 Iteration No.: 00
 Attachment: 7-14 Page: 5 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_1



Component Summary For Retention Time

	Sample	Date	Vo	Caffeine
1	Precision BD	6/13/2018 4:37:17 PM SGT	0.6778	1.1845
2	Precision BD	6/13/2018 4:39:57 PM SGT	0.6790	1.1862
3	Precision BD	6/13/2018 4:42:40 PM SGT	0.6783	1.1845
4	Precision BD	6/13/2018 4:45:20 PM SGT	0.6776	1.1843
5	Precision BD	6/13/2018 4:48:02 PM SGT	0.6774	1.1848
6	Precision BD	6/13/2018 4:50:42 PM SGT	0.6773	1.1840
Std. Dev.			0.0006	0.0008

Component Summary For Area

	Sample	Date	Caffeine
1	Precision BD	6/13/2018 4:37:17 PM SGT	3504351.46
2	Precision BD	6/13/2018 4:39:57 PM SGT	3528818.14
3	Precision BD	6/13/2018 4:42:40 PM SGT	3505425.76
4	Precision BD	6/13/2018 4:45:20 PM SGT	3504712.63
5	Precision BD	6/13/2018 4:48:02 PM SGT	3504753.92
6	Precision BD	6/13/2018 4:50:42 PM SGT	3501201.58
% RSD			0.291

Specifications:
 Retention Time Standard Deviation: <= 0.0090 minutes
 Area % RSD: <= 0.500

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Document No.: VAL 001240 - IQR
 Revision No.: 00
 Attachment: 7.14 Page: 6 of 6



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WORK INSTRUCTION / OPERATING PROCEDURE

Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

Page 5 of 5

IQ Test Name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: VAL001270		Equipment Name: Alliance Final Test System	
Installation Site: Flextronics: WPPL, Singapore			
Purpose: To verify that system transfer and/or qualification activities have not adversely affected system functionality.			
Test Execution: One UUT shall be tested to verify that the test equipment functions as expected. If the system creates and/or tests more than one part number, the UUT to be tested per this Script should be a "worst case" product, and defined within the associated Installation Qualification Report. Enter N/A for any parameter or cell that is not used or applicable.			
Objective Evidence: Completed Test Script Data Sheet Copy of the system Test Record for the UUT, if applicable.			
UUT Part Number/Serial Number	Acceptance Criteria	Pass/Fail	Initial & Date
UUT Part Number: 186269506 UUT Serial Number: FLSM4615A	All required CTQ Specification measurements result in a Pass.	PASS	YH 18 JUN 2018
Comments: This UUT was tested using Alliance Final Test System # 6 port # 2.			
Overall Test Conclusion: ☒ Pass ☐ Fail			

Copy this Test Script as needed

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Template 730000483 V06

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Document No.: VAL001270- IQR

Iteration No.: 00

Attachment: 7.15 Page: 1 of 1

WATERS CORPORATION - TEST RECORD

Part Number:	186269506	Product:	eAlliance
Operator:	CHONG WOOI KHIP	Start Date/Time:	06 JUN 2018 / 1108
Serial Number:	F18SM 4615A	End Date/Time:	14 JUN 2018 / 1045
Test System:	6/2	Order:	NA
Test Software:	Empower2	Location:	5th floor FLEX

TMD: NA

Firmware: 3.04

Test Name	LSL	Measurement	USL	Unit	Outcome		
Electrical Safety Tests	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
System Initialization	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Power Supply Fan Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Unit Fan Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Keypad Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Display Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Rear Panel Tests	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Degasser Test (if equipped)	—	0.5	1.3	PSIA	PASS ☒	FAIL ☐	See Event Log ☐
Spurge Valve Test (if equipped)	—	—	—	—	PASS ☐	FAIL ☐	See Event Log ☐ NA
Heater/Cooler Test (if equipped)	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Solvent Inlet Plumbing Verification	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Sealwash Test (if equipped)	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Needle Wash Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
System Leak Test	—	60.20	160	PSI	PASS ☒	FAIL ☐	See Event Log ☐
Injector Adjustment Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Top	38	50	50	Steps			
Width	60	76	90	Steps			
Compression Test	—	25.5	50	PSI	PASS ☒	FAIL ☐	See Event Log ☐
Z-Ram Height Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐

WATERS CORPORATION - TEST RECORD

Part Number: 186269506 Serial Number: F185M 4615A

Test Name	LSL	Measurement	USL	Unit	Outcome		
Carrier Alignment/RV Injection Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Carryover Test	—	0.0012	0.002	%	PASS ☒	FAIL ☐	See Event Log ☐
Linearity - [X-Intercept]	—	-0.089	1.0	—	PASS ☒	FAIL ☐	See Event Log ☐
Linearity - R-Squared	0.999	1.0000	—	—	PASS ☒	FAIL ☐	See Event Log ☐
AC Precision Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
RT Precision	—	0.0007	0.0090	Min.			
Area Precision	—	0.054	0.5	% RSD			
PSI Ripple	—	9.02	65	PSI			
BD Precision Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
RT Precision	—	0.0005	0.0090	Min.			
Area Precision	—	0.073	0.5	% RSD			

Note: Fill in 'N/A' if not applicable.

Instrument Final Test Overall Result -

PASS ☒ FAIL ☐

Signed: CHONG 246026

Date: 14 JUN 2018

END OF DATA

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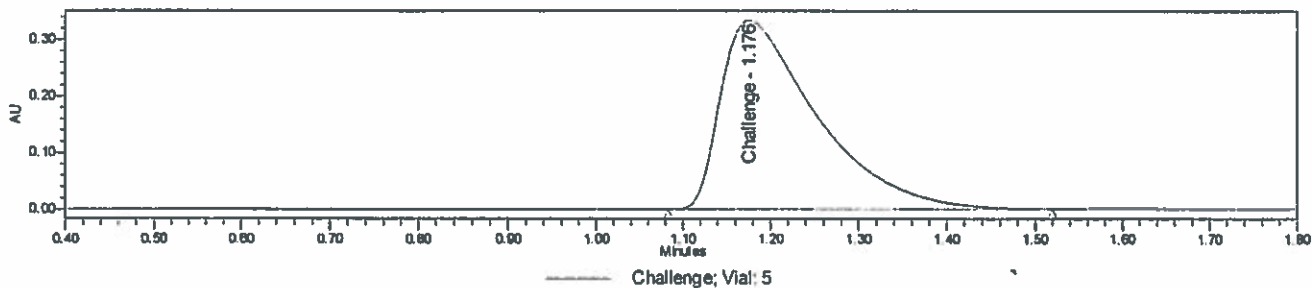
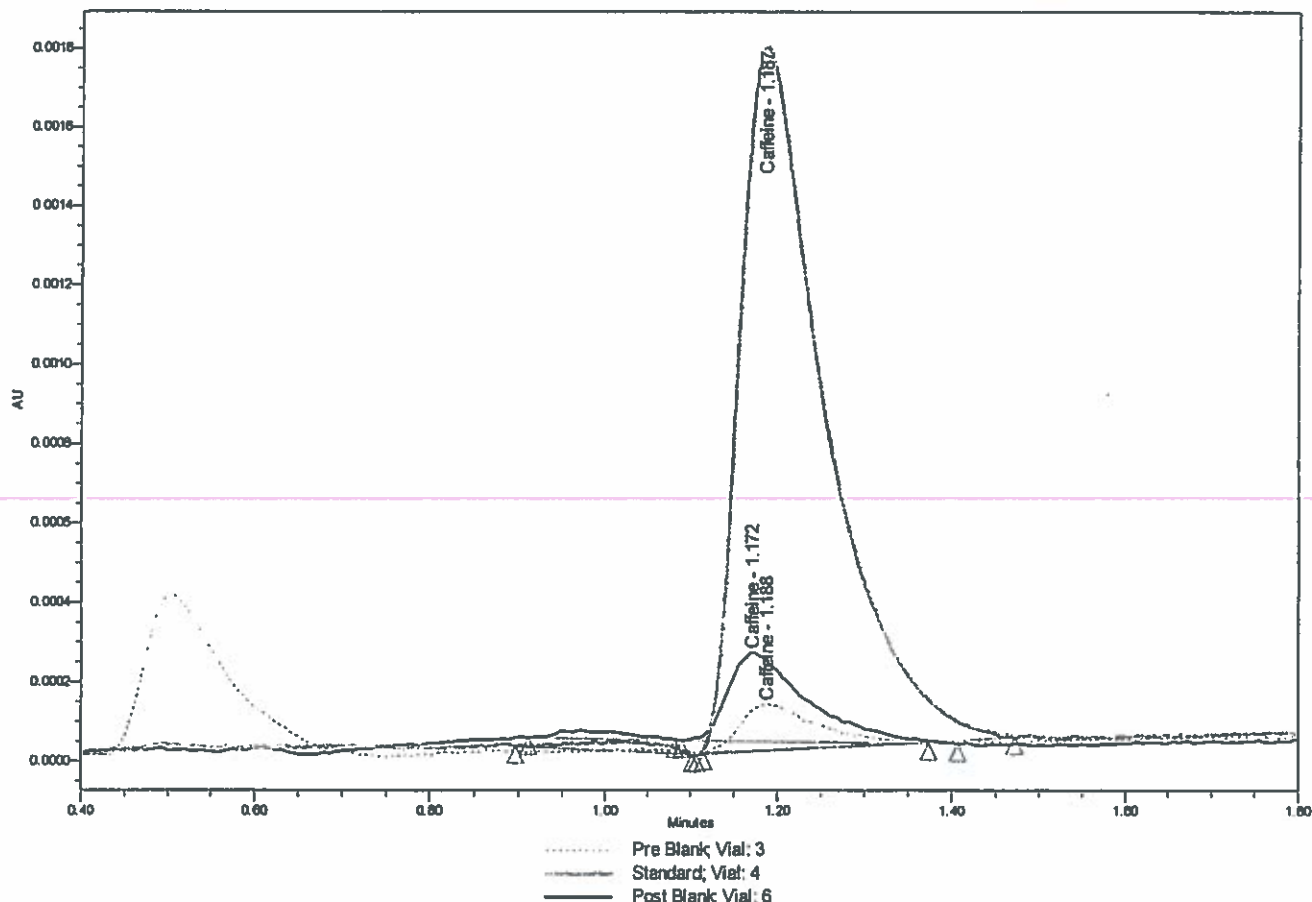
Document No.: VRL 00070- 1002

Iteration No.: 00

Attachment: 7.16 Page: 2 of 6

Part Number: 186269506
 Tested By: CHONG WOOL KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_2



	Date Acquired	SampleName	Area	Percent
1	6/14/2018 9:52:26 AM SGT	Pre Blank	734	0.0006
2	6/14/2018 9:55:07 AM SGT	Standard	12187	0.0100
3	6/14/2018 9:57:52 AM SGT	Challenge	2530122	
4	6/14/2018 10:13:49 AM SGT	Post Blank	1416	0.0012

Carryover Test:
 PreBlank injection (to establish system cleanliness)
 Standard (0.4 PPM) Caffeine injection
 Challenge injection (10,000 X Standard = 4,000 PPM)
 PostBlank injection
 $\text{Carryover (\%)} = \frac{\text{Carryover Area}}{\text{Standard Area}} \times 0.010$

Specification: Post Blank Percent < 0.002
 (or Blank peak(s) missing/blank)

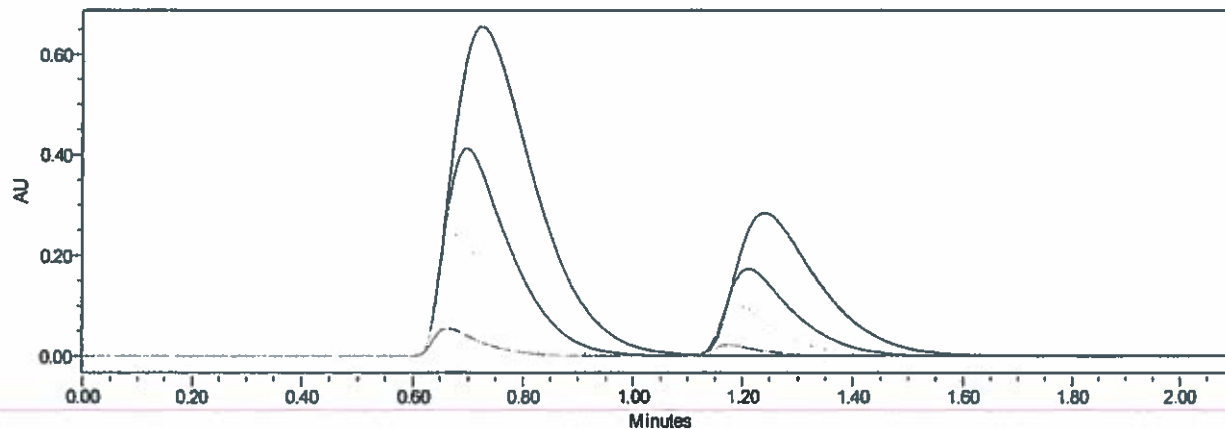
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Document No.: VAL001270-1002
 Iteration No.: 00
 Attachment: 7-16 Page: 3 of 6

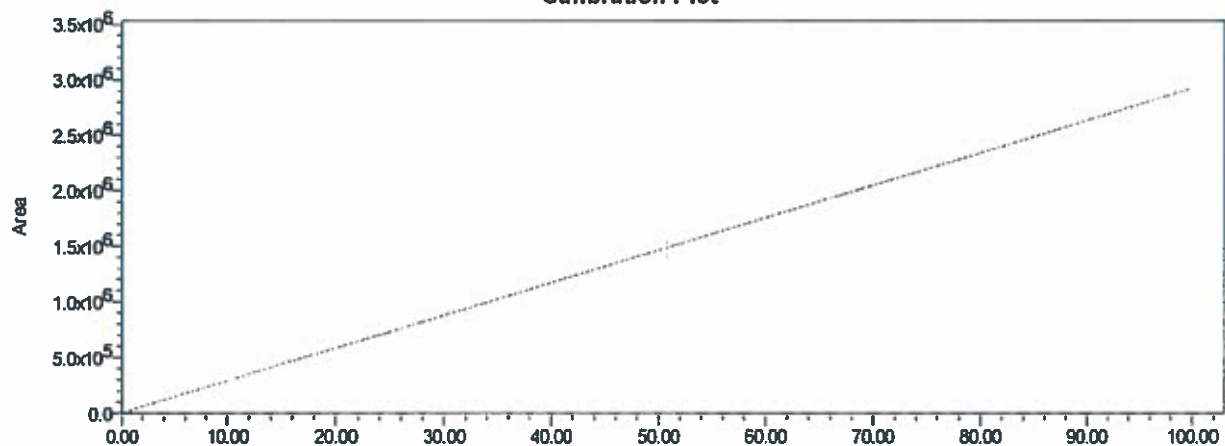
Part Number: 186269506
Tested By: CHONG WQOOI KHIP
Serial Number: F18SM4615A
UUT Firmware: 3.04

Description: 2695 Separations Module
Test Template Revision: 1.8
Test Station: Final-test-6
System: 2695_2

Overlaid Caffeine Peak Chromatograms



Calibration Plot



Injection Linearity and Accuracy

Fit Type Linear (1st Order)

A 2594.499960

Equation $Y = 2.92e+004 X + 2.59e+003$

B 29238.080143

X_Intercept -0.089

R^2 1.0000

$$1-(A/B) = X \text{ Intercept (ul)}$$

Specs: $R^2 \geq 0.999$, $|X\text{-Intercept}| \leq 1.0 \text{ ul}$

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Document No.: VAL001270-IGL
Iteration No.: 00
Attachment: 7.16 Page: 4 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_2

Component Summary For Retention Time

	Sample	Vo	Caffeine
1	Precision AC	0.6783	1.1951
2	Precision AC	0.6773	1.1938
3	Precision AC	0.6761	1.1932
4	Precision AC	0.6776	1.1945
5	Precision AC	0.6775	1.1939
6	Precision AC	0.6784	1.1949
Std. Dev.		0.0008	0.0007

Component Summary For Area

	Sample	Caffeine
1	Precision AC	3520515
2	Precision AC	3521317
3	Precision AC	3523631
4	Precision AC	3522028
5	Precision AC	3520733
6	Precision AC	3517889
% RSD		0.054

Component Summary For Pressure_Ripple

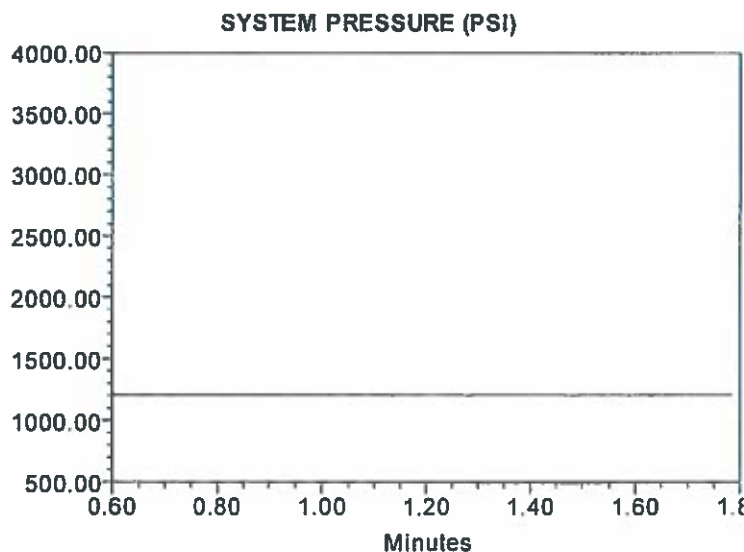
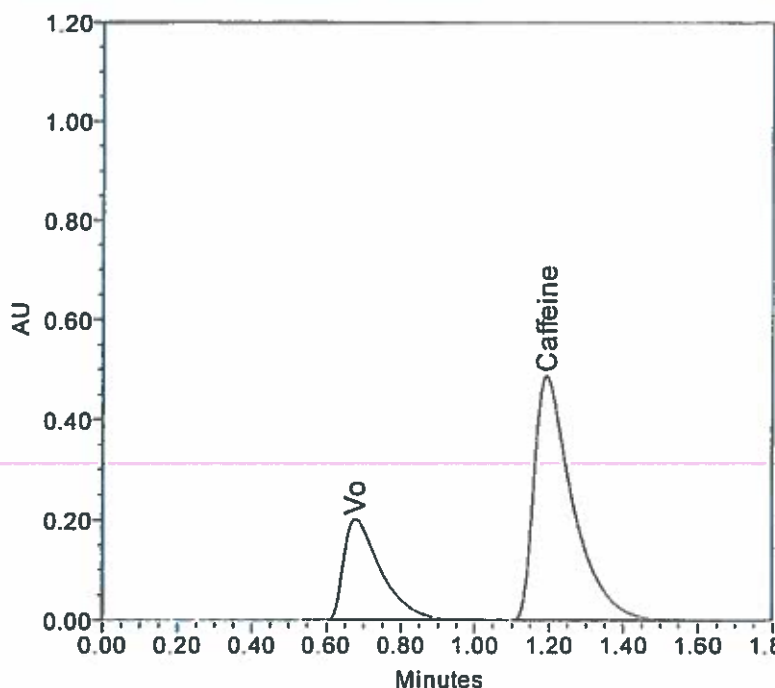
	Date Acquired	
1	6/13/2018 6:34:53 PM SGT	10.26
2	6/13/2018 6:37:37 PM SGT	10.78
3	6/13/2018 6:40:19 PM SGT	9.26
4	6/13/2018 6:43:02 PM SGT	6.68
5	6/13/2018 6:45:44 PM SGT	7.60
6	6/13/2018 6:48:28 PM SGT	9.57
Mean		9.02

Specifications:

Retention Time Standard Deviation: ≤ 0.0090 min

Area % RSD: ≤ 0.500

Mean Pressure Ripple < 65 PSI

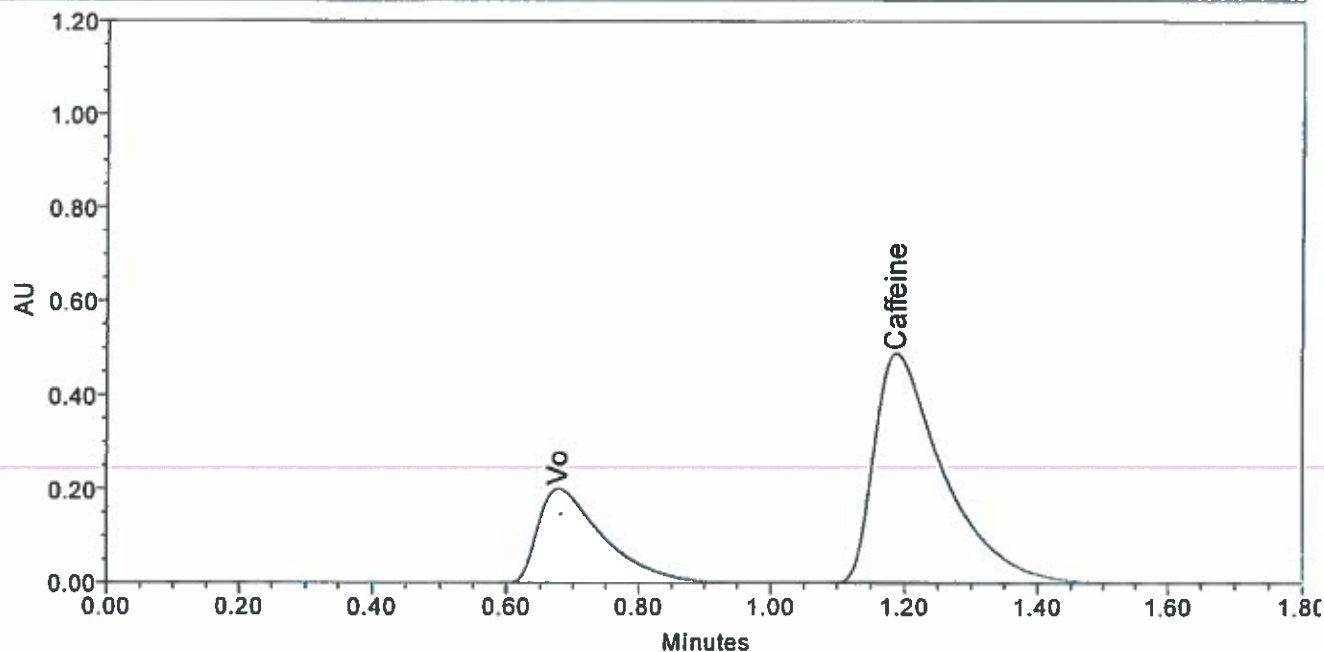


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Document No.: VAL001270 - 10K
 Iteration No.: 00
 Attachment: 7/16 Page: 5 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_2



Component Summary For Retention Time

	Sample	Date	Vo	Caffeine
1	Precision BD	6/13/2018 7:02:11 PM SGT	0.6774	1.1871
2	Precision BD	6/13/2018 7:04:56 PM SGT	0.6770	1.1875
3	Precision BD	6/13/2018 7:07:38 PM SGT	0.6786	1.1880
4	Precision BD	6/13/2018 7:10:18 PM SGT	0.6781	1.1882
5	Precision BD	6/13/2018 7:13:02 PM SGT	0.6771	1.1872
6	Precision BD	6/13/2018 7:15:45 PM SGT	0.6768	1.1871
Std. Dev.			0.0007	0.0005

Component Summary For Area

	Sample	Date	Caffeine
1	Precision BD	6/13/2018 7:02:11 PM SGT	3515629.51
2	Precision BD	6/13/2018 7:04:56 PM SGT	3517719.66
3	Precision BD	6/13/2018 7:07:38 PM SGT	3521502.12
4	Precision BD	6/13/2018 7:10:18 PM SGT	3522656.69
5	Precision BD	6/13/2018 7:13:02 PM SGT	3519153.34
6	Precision BD	6/13/2018 7:15:45 PM SGT	3520393.19
% RSD			0.073

Specifications:
 Retention Time Standard Deviation: <= 0.0090 minutes
 Area % RSD: <= 0.500

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Document No.: VRL001370-10R
 Iteration No.: 00
 Attachment: 7-16 Page: 6 of 6



THE SCIENCE OF WHAT'S POSSIBLE™

WORK INSTRUCTION / OPERATING PROCEDURE

Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

Page 5 of 5

IQ Test Name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: VAL001270		Equipment Name: Alliance Final Test System	
Installation Site: Flextronics: WPPL, Singapore			
Purpose: To verify that system transfer and/or qualification activities have not adversely affected system functionality.			
Test Execution: One UUT shall be tested to verify that the test equipment functions as expected. If the system creates and/or tests more than one part number, the UUT to be tested per this Script should be a "worst case" product, and defined within the associated Installation Qualification Report. Enter N/A for any parameter or cell that is not used or applicable.			
Objective Evidence: Completed Test Script Data Sheet Copy of the system Test Record for the UUT, if applicable.			
UUT Part Number/Serial Number	Acceptance Criteria	Pass/Fail	Initial & Date
UUT Part Number: 186269506 UUT Serial Number: F186M4615A	All required CTQ Specification measurements result in a Pass.	PASS	YH 18 JUN 2018
Comments: This UUT was tested using Alliance Final Test System # 6 port #3.			
Overall Test Conclusion: ☒ Pass ☐ Fail			

Copy this Test Script as needed

Waters Confidential

Template 730000483 V06

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Document No.: VAL001270-IQR

Iteration No.: 00

Attachment: 3.17 Page: 1 of 1

WATERS CORPORATION - TEST RECORD

Part Number:	186269506	Product:	EA1119nd
Operator:	CHONG WOOL KHIP	Start Date/Time:	06JUN 2018/1108
Serial Number:	F18SM4615A	End Date/Time:	14 JUN 2018/1615
Test System:	613	Order:	NA
Test Software:	Empower2	Location:	5th floor FLEX

TMD: NA

Firmware: 3.04

Test Name	LSL	Measurement	USL	Unit	Outcome		
Electrical Safety Tests	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
System Initialization	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Power Supply Fan Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Unit Fan Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Keypad Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Display Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Rear Panel Tests	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Degasser Test (if equipped)	—	0.5	1.3	PSIA	PASS ☒	FAIL ☐	See Event Log ☐
Sparge Valve Test (if equipped)	—	—	—	—	PASS ☐	FAIL ☐	See Event Log ☐ NA
Heater/Cooler Test (if equipped)	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Solvent Inlet Plumbing Verification	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Sealwash Test (if equipped)	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Needle Wash Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
System Leak Test	—	60.20	160	PSI	PASS ☒	FAIL ☐	See Event Log ☐
Injector Adjustment Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Top	38	50	50	Steps			
Width	60	76	90	Steps			
Compression Test	—	25.5	50	PSI	PASS ☒	FAIL ☐	See Event Log ☐
Z-Ram Height Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐

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Effective from: 30.03.2018 thru: ... WAT271129 TSP 000 35 RELEASE GENERAL

Document No.: VAL001270-102

Iteration No.: 00

Attachment: 7.18 Page: 1 of 6

WATERS CORPORATION - TEST RECORD

Part Number: <u>186269506</u>	Serial Number: <u>F18SM 4615A</u>
-------------------------------	-----------------------------------

Test Name	LSL	Measurement	USL	Unit	Outcome		
Carrier-Alignment/RV Injection Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
Carryover Test	—	0.0019	0.002	%	PASS ☒	FAIL ☐	See Event Log ☐
Linearity – [X-Intercept]	—	-0.229	1.0	—	PASS ☒	FAIL ☐	See Event Log ☐
Linearity – R-Squared	0.999	1.0000	—	—	PASS ☒	FAIL ☐	See Event Log ☐
AC Precision Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
RT Precision	—	0.0006	0.0090	Min.			
Area Precision	—	0.048	0.5	% RSD			
PSI Ripple	—	9.23	65	PSI			
BD Precision Test	—	—	—	—	PASS ☒	FAIL ☐	See Event Log ☐
RT Precision	—	0.0009	0.0090	Min.			
Area Precision	—	0.054	0.5	% RSD			

Note: Fill in 'N/A' if not applicable.

Instrument Final Test Overall Result -

PASS ☒ FAIL ☐

Signed: CHONG 246026

Date: 14 JUN 2018

END OF DATA

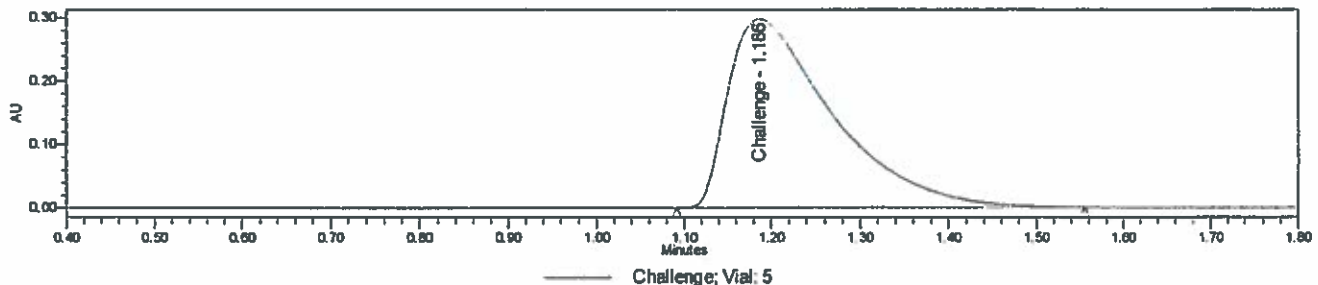
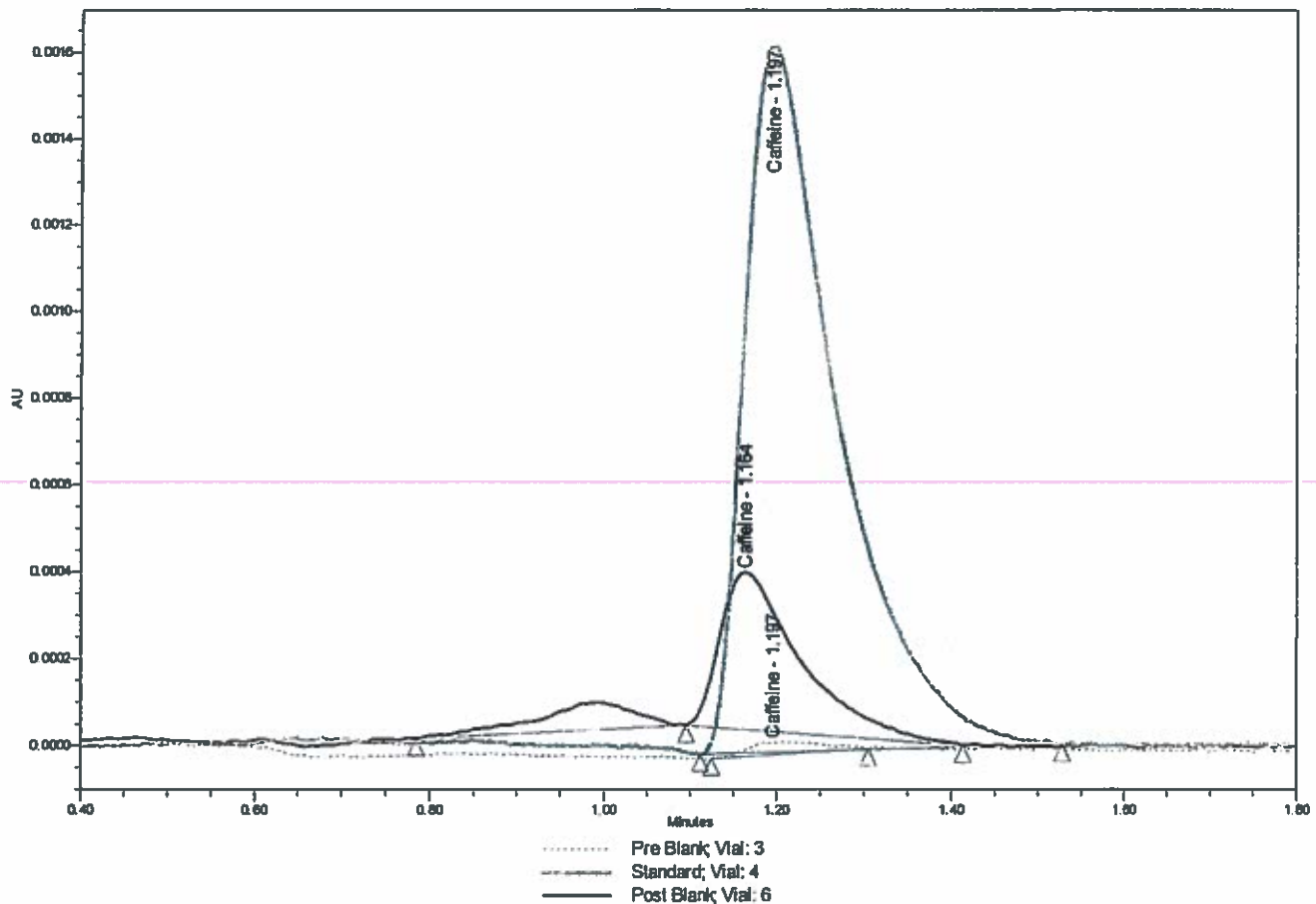
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Effective from: 30.03.2018 thru: ... WAT271129 TSP 000 35 RELEASE GENERAL

Document No.: WAT001270-108
Iteration No.: 00
Attachment: 7.18 Page: 2 of 6

Part Number: 186269506
 Tested By: CHONG WOOL KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_3



	Date Acquired	SampleName	Area	Percent
1	6/14/2018 3:28:22 PM SGT	Pre Blank	166	0.0001
2	6/14/2018 3:31:04 PM SGT	Standard	12074	0.0100
3	6/14/2018 3:33:44 PM SGT	Challenge	2439926	
4	6/14/2018 3:49:39 PM SGT	Post Blank	2316	0.0019

Carryover Test:
 PreBlank Injection (to establish system cleanliness)
 Standard (0.4 PPM) Caffeine injection
 Challenge injection (10,000 X Standard = 4,000 PPM)
 PostBlank Injection
 $\text{Carryover (\%)} = \frac{\text{Carryover Area}}{\text{Standard Area}} \times 0.010$

Specification: Post Blank Percent < 0.002
 (or Blank peak(s) missing/blank)

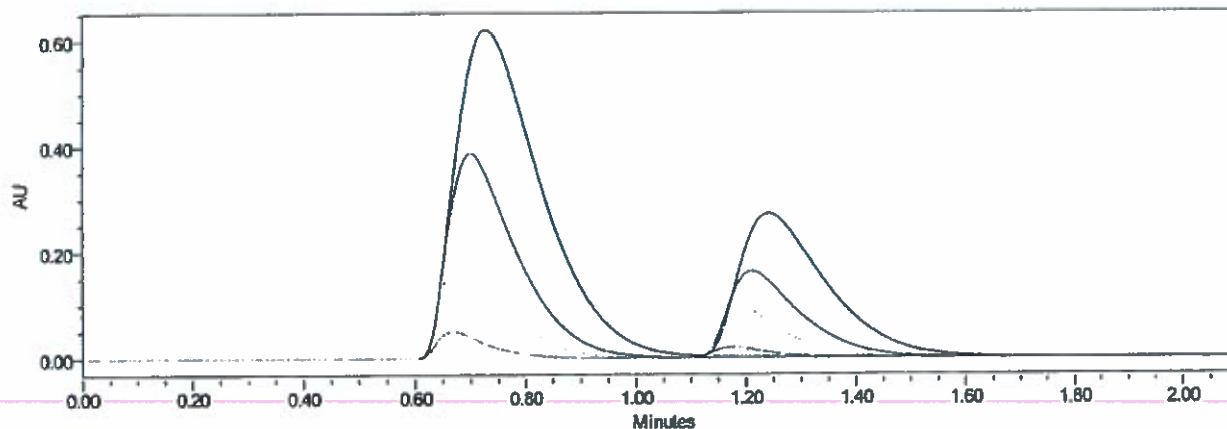
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Document No.: VAL001270-1002
 Iteration No.: 00
 Attachment: 7-18 Page: 3 of 6

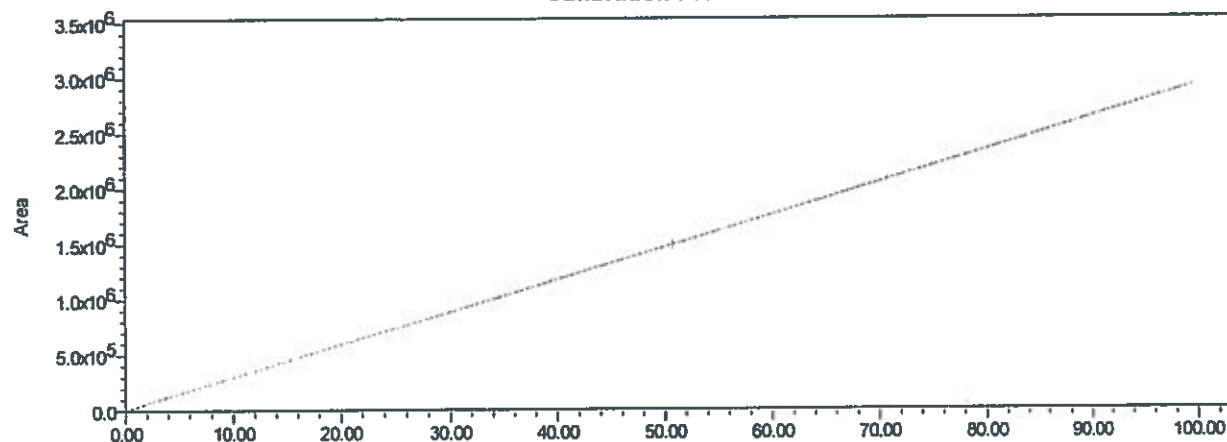
Part Number: 186269506
Tested By: CHONG WQOOI KHIP
Serial Number: F18SM4615A
UUT Firmware: 3.04

Description: 2695 Separations Module
Test Template Revision: 1.8
Test Station: Final-test-6
System: 2695_3

Overlaid Caffeine Peak Chromatograms



Calibration Plot



Injection Linearity and Accuracy

Fit Type Linear (1st Order)	A 6685.877748
Equation $Y = 2.92e+004 X + 6.69e+003$	B 29212.564681
X_Intercept -0.229	R^2 1.0000

$$1-(A/B) = X \text{ Intercept (ul)}$$

Specs: $R^2 \geq 0.999$, $|X\text{-Intercept}| \leq 1.0 \text{ ul}$

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Document No.: VM001270-2012
Iteration No.: 00
Attachment: 7.12 Page: 4 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_3

Component Summary For Retention Time

	Sample	Vo	Caffeine
1	Precision AC	0.6810	1.1955
2	Precision AC	0.6814	1.1959
3	Precision AC	0.6809	1.1959
4	Precision AC	0.6823	1.1969
5	Precision AC	0.6823	1.1970
6	Precision AC	0.6812	1.1959
Std. Dev.		0.0006	0.0006

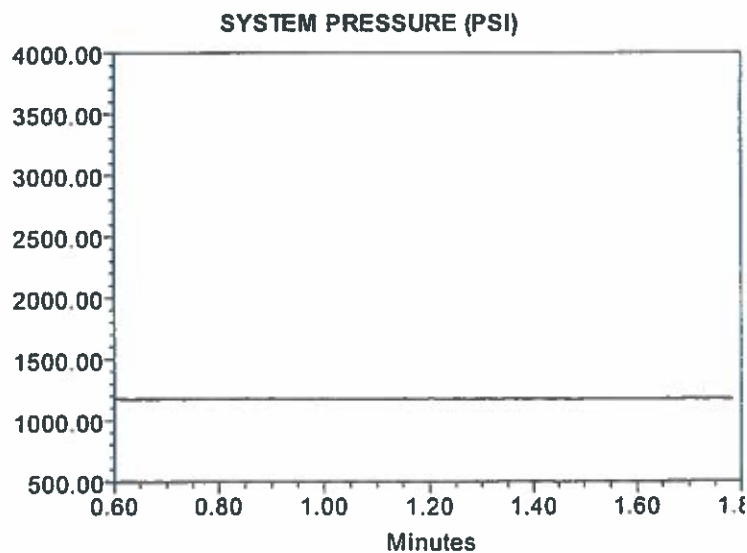
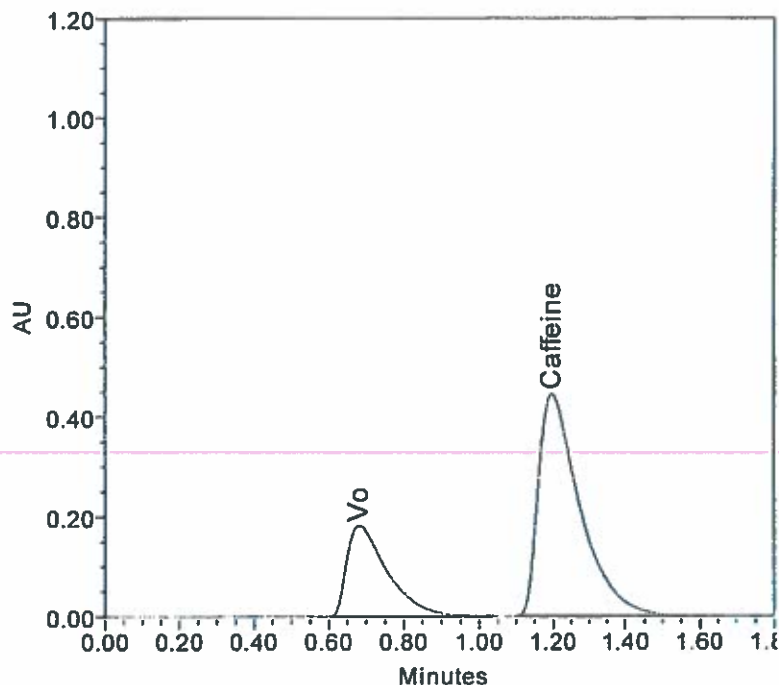
Component Summary For Area

	Sample	Caffeine
1	Precision AC	3541447
2	Precision AC	3541302
3	Precision AC	3544004
4	Precision AC	3543431
5	Precision AC	3542810
6	Precision AC	3539321
% RSD		0.048

Component Summary For Pressure_Ripple

	Date Acquired	
1	6/14/2018 12:13:15 PM SGT	9.72
2	6/14/2018 12:15:57 PM SGT	11.03
3	6/14/2018 12:18:42 PM SGT	9.52
4	6/14/2018 12:21:24 PM SGT	9.56
5	6/14/2018 12:24:06 PM SGT	6.28
6	6/14/2018 12:26:48 PM SGT	9.27
Mean		9.23

Specifications:
 Retention Time Standard Deviation: <= 0.0090 min
 Area % RSD: <= 0.500
 Mean Pressure Ripple < 65 PSI

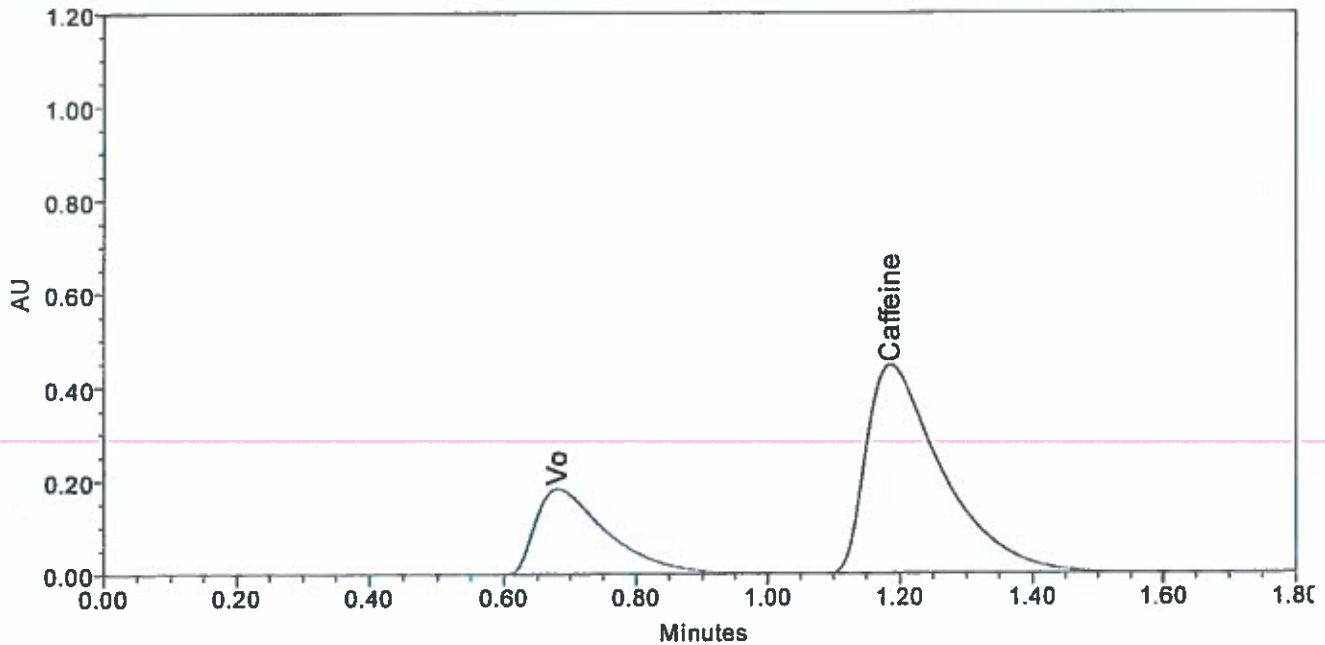


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Document No.: VRL001270-1402
 Iteration No.: 00
 Attachment: 7.18 Page: 5 of 6

Part Number: 186269506
 Tested By: CHONG WQOOI KHIP
 Serial Number: F18SM4615A
 UUT Firmware: 3.04

Description: 2695 Separations Module
 Test Template Revision: 1.8
 Test Station: Final-test-6
 System: 2695_3



Component Summary For Retention Time

	Sample	Date	Vo	Caffeine
1	Precision BD	6/14/2018 12:40:38 PM SGT	0.6807	1.1857
2	Precision BD	6/14/2018 12:43:22 PM SGT	0.6823	1.1876
3	Precision BD	6/14/2018 12:46:06 PM SGT	0.6812	1.1858
4	Precision BD	6/14/2018 12:48:48 PM SGT	0.6806	1.1852
5	Precision BD	6/14/2018 12:51:31 PM SGT	0.6818	1.1867
6	Precision BD	6/14/2018 12:54:15 PM SGT	0.6811	1.1861
Std. Dev.			0.0007	0.0009

Component Summary For Area

	Sample	Date	Caffeine
1	Precision BD	6/14/2018 12:40:38 PM SGT	3539757.64
2	Precision BD	6/14/2018 12:43:22 PM SGT	3542933.76
3	Precision BD	6/14/2018 12:46:06 PM SGT	3539657.10
4	Precision BD	6/14/2018 12:48:48 PM SGT	3538698.16
5	Precision BD	6/14/2018 12:51:31 PM SGT	3538121.82
6	Precision BD	6/14/2018 12:54:15 PM SGT	3542100.13
% RSD			0.054

Specifications:
 Retention Time Standard Deviation: <= 0.0090 minutes
 Area % RSD: <= 0.500

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Document No.: VP001270-102
 Iteration No.: 00
 Attachment: 7.18 Page: 6 of 6