

Waters THE SCIENCE OF WHAT'S POSSIBLE.™	Installation Qualification Report	
Report No: TE83021-IQR	Iteration No: 00	SAP No: TE0083021QX

INSTALLATION QUALIFICATION REPORT

For the HTCH GTS Test Fixture (TE83021)

PREPARED BY

Name	Role	Signature	Date
Emma Pierce	Test Validation Engineer		31 Oct 2017

REVIEWED BY

Name	Role	Signature	Date
Matt Brule	Senior Test Engineer		31 Oct 2017

APPROVED BY

Name	Role	Signature	Date
Andre Kopoyan	Senior Operations Quality Engineer		31 Oct 2017

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	Emma Pierce	First document for approval

1.0 Purpose

The HTCH GTS Test Fixture (TE83021) is located in the Venture Contract Manufacturer site in Singapore. The station is used to perform functional testing of the Active Column Heater PCB (P/N: 210000969). This test fixture is used with the Waters Global Test System (TE82988) and supporting test software to complete the following tests:

- On-board power supply
- I-Button interface
- Serial communication
- Status LED outputs
- Heater ID bits
- Door switch interface
- Over temperature interface
- Heater A and Heater B drives

This is an automated test system; upon completion the Test Record is generated and written to the Sigmaquest data collection system via the GTS interface.

2.0 Scope of Report

This Installation Qualification Report details the qualification activities undertaken for the HTCH GTS Test Fixture (TE83021) based on the requirements of the Installation Qualification Procedure 730004135, Ver. 00 and the Validation Assessment Form TE83021-26OCT2017-VAF, which can be found in the TE0083021QX directory of SAP.

This Installation Qualification Report defines the documents used to qualify the HTCH GTS Test Fixture (TE83021).

3.0 Summary of Results - Statement of Fitness for Intended Use

The HTCH GTS Test Fixture 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 HTCH GTS Test Fixture complies with Waters' requirements, the latest relevant quality system regulations, and cGMP practices.

Following the approval of this Qualification Report, the HTCH GTS Test Fixture (TE83021) 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
CH-A	Active Column Heater
GTS	Global Test System
HTCH	High Temperature Column Heater
ID	Identification
IQ	Installation Qualification
IQR	Installation Qualification Report
LED	Light Emitting Diode
N/A	Not Applicable
P/N	Part Number
PCB	Printed Circuit Board
S/N	Serial Number
SAP	Enterprise Planning Software
TSP	Test Specification and Procedure

Term	Explanation
UUT	Unit Under Test
VAF	Validation Assessment Form
VDC	Volts Direct Current

5.0 Training

The operator of the HTCH GTS Test Fixture (TE83021) was trained according to the Waters GTS Operation TSP 735002109, Ver. 00. The executor of this qualification was trained according to the Installation Qualification Procedure 730004135, Ver. 00. Both training records are provided as Attachments 7.1 and 7.2, respectively.

6.0 Qualification Results

- 6.1 Test Script IQ-01: Associated Documentation Verification, Test Script IQ-02: Site Verification, Test Script IQ-03: Instrumentation Calibration Verification, Test Script IQ-04: Software and Instrument Firmware Version, and Test Script IQ-05: General Safety and Alarms were not performed according to TE83021-26OCT2017-VAF.
- 6.2 Test Script IQ-06: Functional Verification was performed according to Installation Qualification Procedure 730004135, Ver. 00 and the Validation Assessment Form TE83021-26OCT2017-VAF.
- 6.2.1 The PCB for the Active Column Heater (P/N: 210000969) was chosen as the UUT for this Installation Qualification because it is the part being added to the test system.
- 6.2.2 Ten (10) UUTs (P/N: 210000969) were tested as defined in TE83021-26OCT2017-VAF using the HTCH GTS Test Fixture (TE83021) with all tests passing. The completed test scripts and corresponding passing test records as printed from the SigmaQuest Database are provided as Attachments to this report. Supplemental Test Records showing the upper and lower test limits are also provided as Attachments to this report. Please refer to Section 7.0 for a more detailed description of each script and record location.
- 6.3 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-06	Pass	Attachments 7.3 through 7.32	None

7.0 Attachments

- 7.1 Completed Operator Training Record 735002109, Ver. 00
- 7.2 Completed Executor Training Record 730004135, Ver. 00
- 7.3 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917028G)
- 7.4 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917028G)
- 7.5 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917029G)
- 7.6 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917029G)
- 7.7 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917030G)
- 7.8 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917030G)
- 7.9 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917063G)
- 7.10 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917063G)
- 7.11 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917096G)

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- 7.12 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917096G)
- 7.13 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917107G)
- 7.14 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917107G)
- 7.15 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917200G)
- 7.16 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917200G)
- 7.17 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917228G)
- 7.18 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917228G)
- 7.19 Completed Test Script IQ-06: Functional Verification P/N: 210000969 (220917338G)
- 7.20 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917338G)
- 7.21 Completed Test Script IQ-06: Functional Verification of P/N: 210000969 (220917350G)
- 7.22 Objective Evidence IQ-06: Passing Test Record for P/N: 210000969 (220917350G)
- 7.23 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917028G)
- 7.24 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917029G)
- 7.25 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917030G)
- 7.26 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917063G)
- 7.27 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917096G)
- 7.28 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917107G)
- 7.29 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917200G)
- 7.30 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917228G)
- 7.31 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917338G)
- 7.32 Objective Evidence IQ-06: Supplemental Test Record for P/N: 210000969 (220917350G)

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
735002109, Ver. 00	Waters GTS Operation TSP
735004006, Ver.00	Waters GTS Preventative Maintenance and Calibration Procedure
TE83021-26OCT2017-VAF	Validation Assessment Form for HTCH GTS Test Fixture (TE83021)
810000969	Performance Specification for the CH-A PCB

Attachment: 7.1 Page: 1 of 1

Type	Syllabus ID	Syllabus	Course ID	Course	Attended	Freq	Expires	Score	Status
Requirement	MILTESTENG	Test Engineering	730001834-VER-03	Test Engineering Management Policy	6/9/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730001834-VER-02	New Test Equipment Development Procedure	6/12/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730001835-VER-05	Process Validation Procedure for Milford	6/9/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730001836-VER-01	Sustaining Test Equipment Procedure	6/13/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730001936-VER-03	Test Method Validation Protocol	6/14/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730002232-VER-03	Process Validation Master Plan - Milford	6/14/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730002738-VER-00	New Product Intro Process - Milford (WIDP)	6/14/2017	0			Completed
Requirement	MILTESTENG	Test Engineering	730004135-VER-00	Installation Qualification Protocol	6/13/2017	0			Completed
Requirement	MILMFGPSALL	All Milford Manufacturing & Support Personnel	EHS0000-VER-02	EHS Policies	6/6/2017	12	6/6/2018		Completed
Requirement	MILMFGPSALL	All Milford Manufacturing & Support Personnel	LCDHR01-REV-01	Sexual Harassment Policy	6/9/2017	12	6/9/2018		Completed
Requirement	MILMFGPSALL	All Milford Manufacturing & Support Personnel	QA0002-REV-01	Good Manufacturing Practices	6/12/2017	0			Completed
Requirement	MILMFGPSALL	All Milford Manufacturing & Support Personnel	QA0008-REV-01	Quality Management Systems	6/13/2017	0			Completed

Iteration 00
 Document No.: TE 83021-10R
 Attachment: 7.2 Page: 1 of 1

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: TE83021		Equipment Name: HICH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209170286	All required CTQ Specification measurements result in a Pass.	PASS	EEP 31 Oct 2017
Comments: N/A EEP 31 Oct 2017			
Overall Test Conclusion:		☒ Pass ☐ Fail	Iteration 00

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Document No.: TE83021-10R

Attachment: 7.3 Page: 1 of 1

Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 10:37:Serial Number: 220917028GEnd Time: 10/31/2017, 10:39:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.531678181513	2		PASS
Continuity J1.25 - J5.1)	0	1.6418253916578	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0100487840174	5.25		PASS
3.3 VDC	2.5	3.2874900553694	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7923473550716	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2946	3008		PASS
Read Therm A 3000 Ohm Input	13824	14037	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2951	3008		PASS
Read Therm B 3000 Ohm Input	13824	14050	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.9875GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.995GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2125GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.205GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
Document No.: TE83021-1QR
Attachment: 7.4 **Page:** 1 of 1

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Title: Installation Qualification Procedure

Document No: 730004135

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IQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021		Equipment Name: HICH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209170296	All required CTQ Specification measurements result in a Pass.	Pass	Exp 31 Oct 2017
Comments: N/A Exp 31 Oct 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail			

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Iteration 00

Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 10:20:Serial Number: 220917029GEnd Time: 10/31/2017, 10:22:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.4454047483664	2		PASS
Continuity J1.25 - J5.1)	0	1.541528724068	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0099331220224	5.25		PASS
3.3 VDC	2.5	3.2900657338362	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7923325885952	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2949	3008		PASS
Read Therm A 3000 Ohm Input	13824	14036	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2939	3008		PASS
Read Therm B 3000 Ohm Input	13824	14023	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.9775GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.9925GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2125GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.205GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00

Document No.: TE83021-1QRAttachment: 7.6 Page: 1 of 1Signed: Date: 31 Oct 2017Signature indicates record was printed from SigmaQuest Database
EXP 31 Oct 2017

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IOQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021	Equipment Name: HTCH GTS Test Fixture		
Installation Site: Venture: 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: 210000969 UUT Serial Number: 2209170306	All required CTQ Specification measurements result in a Pass.	Pass	Eep 31 Oct 2017
Comments: <i>N/A Eep 31 Oct 2017</i>			
Overall Test Conclusion: ☒ Pass ☐ Fail		Iteration 00	

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Waters Corporation - Test Record

Part Number: <u>210000969</u>	Product:
Operator: <u>tester</u>	Start Time: <u>10/31/2017, 10:28:</u>
Serial Number: <u>220917030G</u>	End Time: <u>10/31/2017, 10:29:</u>
Test System: <u>TE82988-3</u>	

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.4999925273604	2		PASS
Continuity J1.25 - J5.1)	0	1.6032376566673	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0101404095716	5.25		PASS
3.3 VDC	2.5	3.2573417201785	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7925138575492	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2939	3008		PASS
Read Therm A 3000 Ohm Input	13824	14031	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2945	3008		PASS
Read Therm B 3000 Ohm Input	13824	14042	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.99GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.9925GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2275GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.22GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
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IOQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021		Equipment Name: HICH GTS Test Fixture	
Installation Site: Venture : 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: 210000969	All required CTQ Specification measurements result in a Pass.	Pass	Exp 31 Oct 2017
UUT Serial Number: 2209170636			
Comments: N/A Exp 31 Oct 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail		Iteration 00	

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Waters Corporation - Test Record

Part Number: <u>210000969</u>	Product:
Operator: <u>tester</u>	Start Time: <u>10/31/2017, 10:55:</u>
Serial Number: <u>220917063G</u>	End Time: <u>10/31/2017, 10:56:</u>
Test System: <u>TE82988-3</u>	

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.605967045617	2		PASS
Continuity J1.25 - J5.1)	0	1.7180124568585	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0102761574222	5.25		PASS
3.3 VDC	2.5	3.2790246462841	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7886744481286	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2938	3008		PASS
Read Therm A 3000 Ohm Input	13824	14019	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2933	3008		PASS
Read Therm B 3000 Ohm Input	13824	14015	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.975GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.99GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2125GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.2025GELE(>= <=)			PASS

210000969 Overall Result - PASS

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IOQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021		Equipment Name: HTCH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209170969	All required CTQ Specification measurements result in a Pass.	Pass	Eep 31 Oct 2017
Comments: N/A Eep 31 Oct 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail		Iteration 00	

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Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 10:52:Serial Number: 220917096GEnd Time: 10/31/2017, 10:53:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.5504694703065	2		PASS
Continuity J1.25 - J5.1)	0	1.6468292713989	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0099719685627	5.25		PASS
3.3 VDC	2.5	3.2938018397263	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7931179507014	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2937	3008		PASS
Read Therm A 3000 Ohm Input	13824	14020	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2939	3008		PASS
Read Therm B 3000 Ohm Input	13824	14021	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.9975GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.995GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.245GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.24GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
Document No.: TE83021-10K
Attachment: 7.12 **Page:** 1 of 1

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Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

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IOQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021	Equipment Name: HTCH GTS Test Fixture		
Installation Site: Venture : 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: 210000969 UUT Serial Number: 22091710761	All required CTQ Specification measurements result in a Pass.	Pass	Eep 31 Oct 2017
Comments: <i>N/A Eep 31 Oct 2017</i>			
Overall Test Conclusion: ☒ Pass ☐ Fail			

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Template 730000483 V06

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Document No.: TE83021-1QR

Attachment: 7.13 Page: 1 of 1

Iteration 00

Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 10:09:Serial Number: 220917107GEnd Time: 10/31/2017, 10:11:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.3927151704692	2		PASS
Continuity J1.25 - J5.1)	0	1.4655774842581	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0097492044664	5.25		PASS
3.3 VDC	2.5	3.2822604925008	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7901757921425	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2949	3008		PASS
Read Therm A 3000 Ohm Input	13824	14041	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2947	3008		PASS
Read Therm B 3000 Ohm Input	13824	14040	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.9925GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.9975GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.215GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.2125GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
Document No.: TE83021-1QR
Attachment: 7.14 **Page:** 1 **of** 1

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Title: Installation Qualification Procedure

Document No: 730004135

Version No: 00

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IOQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021		Equipment Name: HTCH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209172004	All required CTQ Specification measurements result in a Pass.	Pass	Exp 31 Oct 2017
Comments: N/A Exp 31 Oct 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail		Iteration 00	

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Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 10:31:Serial Number: 220917200GEnd Time: 10/31/2017, 10:32:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.5403831023606	2		PASS
Continuity J1.25 - J5.1)	0	1.6299980395424	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0100943499698	5.25		PASS
3.3 VDC	2.5	3.2867419196473	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7906779098308	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2945	3008		PASS
Read Therm A 3000 Ohm Input	13824	14037	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2951	3008		PASS
Read Therm B 3000 Ohm Input	13824	14052	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.985GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.995GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2075GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.1975GELE(>= <=)			PASS

Iteration 00
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210000969 Overall Result - PASS

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Title: Installation Qualification Procedure

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IQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021		Equipment Name: HTH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209172286	All required CTQ Specification measurements result in a Pass.	Pass	Exp 31 Oct 2017
Comments: N/A Exp 31 Oct 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail			

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Iteration 00

Attachment: 7.17 Page: 1 of 1

Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 11:00:Serial Number: 220917228GEnd Time: 10/31/2017, 11:02:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.6101397375052	2		PASS
Continuity J1.25 - J5.1)	0	1.7135420837393	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0101899308671	5.25		PASS
3.3 VDC	2.5	3.2845967264355	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7911901525582	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2940	3008		PASS
Read Therm A 3000 Ohm Input	13824	14027	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2949	3008		PASS
Read Therm B 3000 Ohm Input	13824	14044	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.99GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.9925GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2225GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.2125GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
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Title: Installation Qualification Procedure

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IOQ Test name: Functional Verification		Test Script No.: IQ-06	
Equipment No./ID: TE83021		Equipment Name: HTCH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209173386	All required CTQ Specification measurements result in a Pass.	Pass	Eep 31 Oct 2017
Comments: N/A Eep 31 Oct 2017			
Overall Test Conclusion: ☒ Pass ☐ Fail		Iteration 00	

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Waters Corporation - Test Record

Part Number: <u>210000969</u>	Product:
Operator: <u>tester</u>	Start Time: <u>10/31/2017, 10:57:</u>
Serial Number: <u>220917338G</u>	End Time: <u>10/31/2017, 10:59:</u>
Test System: <u>TE82988-3</u>	

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.5801950675221	2		PASS
Continuity J1.25 - J5.1)	0	1.7129299686538	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0102573337823	5.25		PASS
3.3 VDC	2.5	3.2857344985385	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7926006907463	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2946	3008		PASS
Read Therm A 3000 Ohm Input	13824	14032	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2936	3008		PASS
Read Therm B 3000 Ohm Input	13824	14023	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.985GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.995GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.2175GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.2125GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
 Document No.: TE83021-10R
 Attachment: 7.20 Page: 1 of 1

Signed: Amel Prit

Date: 31 Oct 2017

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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: TE83021		Equipment Name: HTCH GTS Test Fixture	
Installation Site: Venture : 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: 210000969 UUT Serial Number: 2209173506	All required CTQ Specification measurements result in a Pass.	Pass	Eep 31 Oct 2017
Comments: <i>N/A Eep 31 Oct 2017</i>			

Overall Test Conclusion: ☒ Pass ☐ Fail

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Iteration 00

Document No.: TE83021-1QR

Attachment: 7.21 **Page:** 1 of 1

Waters Corporation - Test Record

Part Number: 210000969

Product:

Operator: testerStart Time: 10/31/2017, 10:24:Serial Number: 220917350GEnd Time: 10/31/2017, 10:25:Test System: TE82988-3

Name	LSL	Measurement	USL	Unit	Outcome
I Button Interface					PASS
Continuity J1.13 - J5.2)	0	1.4984706159583	2		PASS
Continuity J1.25 - J5.1)	0	1.5936847953434	2		PASS
Onboard Voltages					PASS
5 VDC	4.75	5.0100077766477	5.25		PASS
3.3 VDC	2.5	3.2781109619092	3.5		PASS
ID Bits					PASS
ID0 A Input					PASS
ID1 A Input					PASS
ID0 B Input					PASS
ID1 B Input					PASS
Door					PASS
Over Temp Input A					PASS
Over Temp Input B					PASS
Leak Detect Input					PASS
Leak LED	2	3.7910441671678	5		PASS
Leak Input Open					PASS
Leak Input Closed					PASS
Leak Input Open					PASS
Thermister A					PASS
Read Therm A 30000 Ohm Input	2883	2948	3008		PASS
Read Therm A 3000 Ohm Input	13824	14032	14079		PASS
Thermister B					PASS
Read Therm B 30000 Ohm Input	2883	2939	3008		PASS
Read Therm B 3000 Ohm Input	13824	14025	14079		PASS
Test Heater A (J2-1 J2-3)					PASS
Heater Voltage and Current		22.9725GELE(>= <=)			PASS
Test Heater A (J2-2 J2-4)					PASS
Heater Voltage and Current		22.99GELE(>= <=)			PASS
Test Heater B (J3-1 J3-3)					PASS
Heater Voltage and Current		23.21GELE(>= <=)			PASS
Test Heater B (J3-2 J3-4)					PASS
Heater Voltage and Current		23.2GELE(>= <=)			PASS

210000969 Overall Result - PASS

Iteration 00
Document No.: TE83021-10K
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Iteration 00

Document No.: TE83021-10R

Attachment: 7.23 Page: 1 of 2

210000969-PASS

Serial #: 220917028G

Duration: 00:01:40

10/31/2017, 10:37:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.531678181513	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.6418253916578	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0100487840174	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2874900553694	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7923473550716	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2946	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14037	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:03
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2951	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14050	14079			

1.10	Test Heater A (J2-1 J2-3)					PASS	00:00:01
1.10.1	Heater Voltage and Current					PASS	00:00:00.000
1.10.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22	22.9875	25 Volts			
	COMP		GELE(>= <=)				
1.10.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75	1.905	2.1 Amps			
	COMP		GELE(>= <=)				
1.11	Test Heater A (J2-2 J2-4)					PASS	00:00:01
1.11.1	Heater Voltage and Current					PASS	00:00:00.000
1.11.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22	22.995	25 Volts			
	COMP		GELE(>= <=)				
1.11.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75	1.9125	2.1 Amps			
	COMP		GELE(>= <=)				
1.12	Test Heater B (J3-1 J3-3)					PASS	00:00:01
1.12.1	Heater Voltage and Current					PASS	00:00:00.000
1.12.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22	23.2125	25 Volts			
	COMP		GELE(>= <=)				
1.12.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65	0.725625	0.85 Amps			
	COMP		GELE(>= <=)				
1.13	Test Heater B (J3-2 J3-4)					PASS	00:00:01
1.13.1	Heater Voltage and Current					PASS	00:00:00.000
1.13.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22	23.205	25 Volts			
	COMP		GELE(>= <=)				
1.13.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65	0.72375	0.85 Amps			
	COMP		GELE(>= <=)				

Iteration 00
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210000969-PASS

Iteration 00
Document No.: TE83021-1QR
Attachment: 7.24 **Page:** 1 of 2

Serial #:220917029G

Duration: 00:01:40

10/31/2017, 10:20:

Quantity: 1

Part Number: 210000969

Station: TE82988-3 TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.4454047483664	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.541528724068	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0099331220224	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2900657338362	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7923325885952	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2949	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14036	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2939	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14023	14079			

		COMP		GELE(>= <=)			
1.10	Test Heater A (J2-1 J2-3)					PASS	00:00:01
1.10.1	Heater Voltage and Current					PASS	00:00:00.000
1.10.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.9775	25 Volts		
		COMP		GELE(>= <=)			
1.10.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.905	2.1 Amps		
		COMP		GELE(>= <=)			
1.11	Test Heater A (J2-2 J2-4)					PASS	00:00:01
1.11.1	Heater Voltage and Current					PASS	00:00:00.000
1.11.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.9925	25 Volts		
		COMP		GELE(>= <=)			
1.11.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.9125	2.1 Amps		
		COMP		GELE(>= <=)			
1.12	Test Heater B (J3-1 J3-3)					PASS	00:00:01
1.12.1	Heater Voltage and Current					PASS	00:00:00.000
1.12.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.2125	25 Volts		
		COMP		GELE(>= <=)			
1.12.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps		
		COMP		GELE(>= <=)			
1.13	Test Heater B (J3-2 J3-4)					PASS	00:00:01
1.13.1	Heater Voltage and Current					PASS	00:00:00.000
1.13.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.205	25 Volts		
		COMP		GELE(>= <=)			
1.13.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps		
		COMP		GELE(>= <=)			

Iteration 00

Document No.: TE83021-10R

Attachment: 7.24 Page: 2 of 2

Iteration 00

Document No.: TE83021-12K

210000969-PASS

Attachment: 7.25 Page: 1 of 2

Serial #: 220917030G

Duration: 00:01:39

10/31/2017, 10:28:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:39
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.4999925273604	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.6032376566673	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0101404095716	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2573417201785	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7925138575492	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2939	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14031	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2945	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14042	14079			

		COMP		GELE(>= <=)			PASS	00:00:01
1.10	Test Heater A (J2-1 J2-3)						PASS	00:00:00.000
1.10.1	Heater Voltage and Current						PASS	00:00:00.000
1.10.1.1	Measurement 0						PASS	00:00:00.000
		Measurement 0	22	22.99	25 Volts			
		COMP		GELE(>= <=)			PASS	00:00:00.000
1.10.1.2	Measurement 1						PASS	00:00:00.000
		Measurement 1	1.75	1.906875	2.1 Amps			
		COMP		GELE(>= <=)			PASS	00:00:01
1.11	Test Heater A (J2-2 J2-4)						PASS	00:00:00.000
1.11.1	Heater Voltage and Current						PASS	00:00:00.000
1.11.1.1	Measurement 0						PASS	00:00:00.000
		Measurement 0	22	22.9925	25 Volts			
		COMP		GELE(>= <=)			PASS	00:00:00.000
1.11.1.2	Measurement 1						PASS	00:00:00.000
		Measurement 1	1.75	1.914375	2.1 Amps			
		COMP		GELE(>= <=)			PASS	00:00:01
1.12	Test Heater B (J3-1 J3-3)						PASS	00:00:00.000
1.12.1	Heater Voltage and Current						PASS	00:00:00.000
1.12.1.1	Measurement 0						PASS	00:00:00.000
		Measurement 0	22	23.2275	25 Volts			
		COMP		GELE(>= <=)			PASS	00:00:00.000
1.12.1.2	Measurement 1						PASS	00:00:00.000
		Measurement 1	0.65	0.725625	0.85 Amps			
		COMP		GELE(>= <=)			PASS	00:00:01
1.13	Test Heater B (J3-2 J3-4)						PASS	00:00:00.000
1.13.1	Heater Voltage and Current						PASS	00:00:00.000
1.13.1.1	Measurement 0						PASS	00:00:00.000
		Measurement 0	22	23.22	25 Volts			
		COMP		GELE(>= <=)			PASS	00:00:00.000
1.13.1.2	Measurement 1						PASS	00:00:00.000
		Measurement 1	0.65	0.72375	0.85 Amps			
		COMP		GELE(>= <=)				

Iteration 00
Document No.: TE83021-10R
Attachment: 7.25 Page: 2 of 2

Iteration 00

Document No.: TE83021-1QR

Attachment: 7.26 Page: 1 of 2

210000969-PASS

Serial #:220917063G

Duration: 00:01:39

10/31/2017, 10:55:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:39
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.605967045617	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.7180124568585	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0102761574222	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2790246462841	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.78867444481286	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2938	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14019	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2933	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14015	14079			

		COMP		GELE(>= <=)			PASS	00:00:01
1.10	Test Heater A (J2-1 J2-3)						PASS	00:00:00.000
1.10.1	Heater Voltage and Current						PASS	00:00:00.000
1.10.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		22.975	25 Volts			
		COMP		GELE(>= <=)				
1.10.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	1.75		1.905	2.1 Amps			
		COMP		GELE(>= <=)				
1.11	Test Heater A (J2-2 J2-4)						PASS	00:00:01
1.11.1	Heater Voltage and Current						PASS	00:00:00.000
1.11.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		22.99	25 Volts			
		COMP		GELE(>= <=)				
1.11.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	1.75		1.9125	2.1 Amps			
		COMP		GELE(>= <=)				
1.12	Test Heater B (J3-1 J3-3)						PASS	00:00:01
1.12.1	Heater Voltage and Current						PASS	00:00:00.000
1.12.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		23.2125	25 Volts			
		COMP		GELE(>= <=)				
1.12.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps			
		COMP		GELE(>= <=)				
1.13	Test Heater B (J3-2 J3-4)						PASS	00:00:01
1.13.1	Heater Voltage and Current						PASS	00:00:00.000
1.13.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		23.2025	25 Volts			
		COMP		GELE(>= <=)				
1.13.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps			
		COMP		GELE(>= <=)				

Iteration 00
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Iteration 00

Document No.: TE83021-10R

210000969-PASS

Attachment: 7.27 Page: 1 of 2

Serial #:220917096G

Duration: 00:01:40

10/31/2017, 10:52:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.5504694703065	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.6468292713989	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0099719685627	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2938018397263	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7931179507014	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2937	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14020	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2939	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14021	14079			

		COMP		GELE(>= <=)			
1.10	Test Heater A (J2-1 J2-3)					PASS	00:00:01
1.10.1	Heater Voltage and Current					PASS	00:00:00.000
1.10.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.9975	25 Volts		
		COMP		GELE(>= <=)			
1.10.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.906875	2.1 Amps		
		COMP		GELE(>= <=)			
1.11	Test Heater A (J2-2 J2-4)					PASS	00:00:01
1.11.1	Heater Voltage and Current					PASS	00:00:00.000
1.11.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.995	25 Volts		
		COMP		GELE(>= <=)			
1.11.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.914375	2.1 Amps		
		COMP		GELE(>= <=)			
1.12	Test Heater B (J3-1 J3-3)					PASS	00:00:01
1.12.1	Heater Voltage and Current					PASS	00:00:00.000
1.12.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.245	25 Volts		
		COMP		GELE(>= <=)			
1.12.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.725625	0.85 Amps		
		COMP		GELE(>= <=)			
1.13	Test Heater B (J3-2 J3-4)					PASS	00:00:01
1.13.1	Heater Voltage and Current					PASS	00:00:00.000
1.13.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.24	25 Volts		
		COMP		GELE(>= <=)			
1.13.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps		
		COMP		GELE(>= <=)			

Iteration 00

Document No.: TE83021-1QR

Attachment: 7.27 Page: 2 of 2

Iteration 00

Document No.: TE83021-1QR

Attachment: 7.28 Page: 1 of 2

210000969-PASS

Serial #:220917107G

Duration: 00:01:40

10/31/2017, 10:09:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.3927151704692	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.4655774842581	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0097492044664	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2822604925008	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7901757921425	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:02
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2949	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14041	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2947	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14040	14079			

		COMP		GELE(>= <=)					
1.10	Test Heater A (J2-1 J2-3)							PASS	00:00:01
1.10.1	Heater Voltage and Current							PASS	00:00:00.000
1.10.1.1	Measurement 0							PASS	00:00:00.000
	Measurement 0	22		22.9925	25	Volts			
		COMP		GELE(>= <=)					
1.10.1.2	Measurement 1							PASS	00:00:00.000
	Measurement 1	1.75		1.906875	2.1	Amps			
		COMP		GELE(>= <=)					
1.11	Test Heater A (J2-2 J2-4)							PASS	00:00:01
1.11.1	Heater Voltage and Current							PASS	00:00:00.000
1.11.1.1	Measurement 0							PASS	00:00:00.000
	Measurement 0	22		22.9975	25	Volts			
		COMP		GELE(>= <=)					
1.11.1.2	Measurement 1							PASS	00:00:00.000
	Measurement 1	1.75		1.914375	2.1	Amps			
		COMP		GELE(>= <=)					
1.12	Test Heater B (J3-1 J3-3)							PASS	00:00:01
1.12.1	Heater Voltage and Current							PASS	00:00:00.000
1.12.1.1	Measurement 0							PASS	00:00:00.000
	Measurement 0	22		23.215	25	Volts			
		COMP		GELE(>= <=)					
1.12.1.2	Measurement 1							PASS	00:00:00.000
	Measurement 1	0.65		0.725625	0.85	Amps			
		COMP		GELE(>= <=)					
1.13	Test Heater B (J3-2 J3-4)							PASS	00:00:01
1.13.1	Heater Voltage and Current							PASS	00:00:00.000
1.13.1.1	Measurement 0							PASS	00:00:00.000
	Measurement 0	22		23.2125	25	Volts			
		COMP		GELE(>= <=)					
1.13.1.2	Measurement 1							PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85	Amps			
		COMP		GELE(>= <=)					

Iteration 00
Document No.: TE83021-1&R
Attachment: 7.28 Page: 2 of 2

Iteration 00

Document No.: TE83021-10K

Attachment: 7.29 Page: 1 of 2

210000969-PASS

Serial #:220917200G

Duration: 00:01:40

10/31/2017, 10:31:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.5403831023606	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.6299980395424	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0100943499698	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2867419196473	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7906779098308	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2945	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14037	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2951	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14052	14079			

		COMP		GELE(>= <=)			
1.10	Test Heater A (J2-1 J2-3)					PASS	00:00:01
1.10.1	Heater Voltage and Current					PASS	00:00:00.000
1.10.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.985	25 Volts		
		COMP		GELE(>= <=)			
1.10.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.905	2.1 Amps		
		COMP		GELE(>= <=)			
1.11	Test Heater A (J2-2 J2-4)					PASS	00:00:01
1.11.1	Heater Voltage and Current					PASS	00:00:00.000
1.11.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.995	25 Volts		
		COMP		GELE(>= <=)			
1.11.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.914375	2.1 Amps		
		COMP		GELE(>= <=)			
1.12	Test Heater B (J3-1 J3-3)					PASS	00:00:01
1.12.1	Heater Voltage and Current					PASS	00:00:00.000
1.12.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.2075	25 Volts		
		COMP		GELE(>= <=)			
1.12.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.725625	0.85 Amps		
		COMP		GELE(>= <=)			
1.13	Test Heater B (J3-2 J3-4)					PASS	00:00:01
1.13.1	Heater Voltage and Current					PASS	00:00:00.000
1.13.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.1975	25 Volts		
		COMP		GELE(>= <=)			
1.13.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps		
		COMP		GELE(>= <=)			

Iteration 00

Document No.: TE83021-1QR

Attachment: 7.29 **Page:** 2 of 2

210000969-PASS

Iteration 00
 Document No.: TE83021-1QR
 Attachment: 7.30 Page: 1 of 2

Serial #: 220917228G

Duration: 00:01:39

10/31/2017, 11:00:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:39
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.6101397375052	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.7135420837393	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0101899308671	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2845967264355	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7911901525582	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:02
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2940	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14027	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:03
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2949	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14044	14079			
	COMP		GELE(>= <=)				

		COMP		GELE(>= <=)			
1.10	Test Heater A (J2-1 J2-3)					PASS	00:00:01
1.10.1	Heater Voltage and Current					PASS	00:00:00.000
1.10.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.99	25 Volts		
		COMP		GELE(>= <=)			
1.10.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.906875	2.1 Amps		
		COMP		GELE(>= <=)			
1.11	Test Heater A (J2-2 J2-4)					PASS	00:00:01
1.11.1	Heater Voltage and Current					PASS	00:00:00.000
1.11.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.9925	25 Volts		
		COMP		GELE(>= <=)			
1.11.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.91625	2.1 Amps		
		COMP		GELE(>= <=)			
1.12	Test Heater B (J3-1 J3-3)					PASS	00:00:01
1.12.1	Heater Voltage and Current					PASS	00:00:00.000
1.12.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.2225	25 Volts		
		COMP		GELE(>= <=)			
1.12.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.725625	0.85 Amps		
		COMP		GELE(>= <=)			
1.13	Test Heater B (J3-2 J3-4)					PASS	00:00:01
1.13.1	Heater Voltage and Current					PASS	00:00:00.000
1.13.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.2125	25 Volts		
		COMP		GELE(>= <=)			
1.13.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps		
		COMP		GELE(>= <=)			

Iteration 00

Document No.: TE83021-10R

Attachment: 7.30 **Page:** 2 **of** 2

210000969-PASSIteration 00
Document No.: TE83021-1QR

Attachment: 7.31 Page: 1 of 2

Serial #:220917338G

Duration: 00:01:40

10/31/2017, 10:57:

Quantity: 1

Part Number: 210000969

Station: TE82988*3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.5801950675221	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.7129299686538	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0102573337823	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2857344985385	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7926006907463	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:02
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2946	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14032	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:02
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2936	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14023	14079			

		COMP		GELE(>= <=)			
1.10	Test Heater A (J2-1 J2-3)					PASS	00:00:01
1.10.1	Heater Voltage and Current					PASS	00:00:00.000
1.10.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.985	25 Volts		
		COMP		GELE(>= <=)			
1.10.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.905	2.1 Amps		
		COMP		GELE(>= <=)			
1.11	Test Heater A (J2-2 J2-4)					PASS	00:00:01
1.11.1	Heater Voltage and Current					PASS	00:00:00.000
1.11.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		22.995	25 Volts		
		COMP		GELE(>= <=)			
1.11.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	1.75		1.9125	2.1 Amps		
		COMP		GELE(>= <=)			
1.12	Test Heater B (J3-1 J3-3)					PASS	00:00:01
1.12.1	Heater Voltage and Current					PASS	00:00:00.000
1.12.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.2175	25 Volts		
		COMP		GELE(>= <=)			
1.12.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps		
		COMP		GELE(>= <=)			
1.13	Test Heater B (J3-2 J3-4)					PASS	00:00:01
1.13.1	Heater Voltage and Current					PASS	00:00:00.000
1.13.1.1	Measurement 0					PASS	00:00:00.000
	Measurement 0	22		23.2125	25 Volts		
		COMP		GELE(>= <=)			
1.13.1.2	Measurement 1					PASS	00:00:00.000
	Measurement 1	0.65		0.725625	0.85 Amps		
		COMP		GELE(>= <=)			

Iteration 00

Document No.: TE83021-101R

Attachment: 7.31 Page: 2 of 2

210000969-PASS

Iteration 00
 Document No.: TE83021-10K
 Attachment: 7.32 Page: 1 of 2

Serial #: 220917350G

Duration: 00:01:40

10/31/2017, 10:24:

Quantity: 1

Part Number: 210000969

Station: TE82988-3

TEST OPERATOR: tester

Sequence	Name	LSL	Measurement	USL	Unit	Outcome	Duration
1	210000969					PASS	00:01:40
1.1	I Button Interface					PASS	00:00:08
1.1.1	Continuity J1.13 - J5.2)					PASS	00:00:00.000
	Continuity J1.13 - J5.2)	0	1.4984706159583	2			
	COMP		GTLT(> <)				
1.1.2	Continuity J1.25 - J5.1)					PASS	00:00:00.000
	Continuity J1.25 - J5.1)	0	1.5936847953434	2			
	COMP		GTLT(> <)				
1.2	Onboard Voltages					PASS	00:00:05
1.2.1	5 VDC					PASS	00:00:00.000
	5 VDC	4.75	5.0100077766477	5.25			
	COMP		GTLT(> <)				
1.2.2	3.3 VDC					PASS	00:00:00.000
	3.3 VDC	2.5	3.2781109619092	3.5			
	COMP		GTLT(> <)				
1.3	ID Bits					PASS	00:00:17
1.3.1	ID0 A Input					PASS	00:00:04
1.3.2	ID1 A Input					PASS	00:00:04
1.3.3	ID0 B Input					PASS	00:00:04
1.3.4	ID1 B Input					PASS	00:00:04
1.4	Door					PASS	00:00:01
1.5	Over Temp Input A					PASS	00:00:01
1.6	Over Temp Input B					PASS	00:00:01
1.7	Leak Detect Input					PASS	00:00:05
1.7.1	Leak LED					PASS	00:00:00.000
	Leak LED	2	3.7910441671678	5			
	COMP		GTLT(> <)				
1.7.2	Leak Input Open					PASS	00:00:00.000
1.7.3	Leak Input Closed					PASS	00:00:00.000
1.7.4	Leak Input Open					PASS	00:00:00.000
1.8	Thermister A					PASS	00:00:03
1.8.1	Read Therm A 30000 Ohm Input					PASS	00:00:01
	Read Therm A 30000 Ohm Input	2883	2948	3008			
	COMP		GELE(>= <=)				
1.8.2	Read Therm A 3000 Ohm Input					PASS	00:00:01
	Read Therm A 3000 Ohm Input	13824	14032	14079			
	COMP		GELE(>= <=)				
1.9	Thermister B					PASS	00:00:03
1.9.1	Read Therm B 30000 Ohm Input					PASS	00:00:01
	Read Therm B 30000 Ohm Input	2883	2939	3008			
	COMP		GELE(>= <=)				
1.9.2	Read Therm B 3000 Ohm Input					PASS	00:00:01
	Read Therm B 3000 Ohm Input	13824	14025	14079			
	COMP		GELE(>= <=)				

		COMP		GELE(>= <=)			PASS	00:00:01
1.10	Test Heater A (J2-1 J2-3)						PASS	00:00:00.000
1.10.1	Heater Voltage and Current						PASS	00:00:00.000
1.10.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		22.9725	25 Volts			
	COMP			GELE(>= <=)				
1.10.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	1.75		1.906875	2.1 Amps			
	COMP			GELE(>= <=)				
1.11	Test Heater A (J2-2 J2-4)						PASS	00:00:01
1.11.1	Heater Voltage and Current						PASS	00:00:00.000
1.11.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		22.99	25 Volts			
	COMP			GELE(>= <=)				
1.11.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	1.75		1.9125	2.1 Amps			
	COMP			GELE(>= <=)				
1.12	Test Heater B (J3-1 J3-3)						PASS	00:00:01
1.12.1	Heater Voltage and Current						PASS	00:00:00.000
1.12.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		23.21	25 Volts			
	COMP			GELE(>= <=)				
1.12.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps			
	COMP			GELE(>= <=)				
1.13	Test Heater B (J3-2 J3-4)						PASS	00:00:01
1.13.1	Heater Voltage and Current						PASS	00:00:00.000
1.13.1.1	Measurement 0						PASS	00:00:00.000
	Measurement 0	22		23.2	25 Volts			
	COMP			GELE(>= <=)				
1.13.1.2	Measurement 1						PASS	00:00:00.000
	Measurement 1	0.65		0.72375	0.85 Amps			
	COMP			GELE(>= <=)				

Iteration 00

Document No.: TE83021-10K

Attachment: 7.32 Page: 2 of 2