

DOCUMENT TITLE:	TEST SPECIFICATION AND PROCEDURE, CPSM SAMPLE MANAGER FINAL TEST		
SYSTEM/ASSEMBLY NAME:	ACQUITY CPSM SAMPLE MANAGERS		
PART NUMBER AFFECTED	SEE TABLE, PAGE 2, PART NUMBERS AFFECTED		
TEST EQUIPMENT NAME:	CPSM FINAL TEST		
TEST EQUIPMENT NUMBER:	TE83064	TEST SOFTWARE:	See Part Numbers Table
TEST EQUIPMENT NUMBER:	TE0084050	TEST SOFTWARE:	See Part Numbers Table

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NOTE: This test procedure applies to both Test Equipment numbers listed above, using their respective Test Software versions as stated in the Part Numbers table. This allows different locations to use previously qualified Test software versions based on the Part numbers they are testing.

PART NUMBERS

Part Number	Description	TE83064 Test Software Version*	TE0084050 Test Software Version*
N2971031	Altus A-30 Sampling Module	 * 1 . 4 2 *	 * 1 . 0 3 *
186015017	ACQUITY UPLC Sample Manager FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
186015035	ACQUITY UPC2 Sample Manager-Fixed Loop	 * 1 . 4 2 *	 * 1 . 0 3 *
186015040	ACQUITY UPLC H-Class BioSM-FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
186015046	ACQUITY UPLC I-Class Sample Manager-FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
186015051	ACQUITY APC Sample Manager w/FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
186015060	ACQUITY UPLC I-Class Sample Manager-FL	 * 1 . 4 2 *	 * 1 . 0 3 *
186015085	ACQUITY UPLC H-Class PLUS SM FTN-H	 * 1 . 4 2 *	 * 1 . 0 3 *
186015086	ACQUITY UPLC H-Class PLUS Bio SM FTN-H	 * 1 . 4 2 *	 * 1 . 0 3 *
186015087	ACQUITY UPLC I-Class PLUS SM FL-I	 * 1 . 4 2 *	 * 1 . 0 3 *
186015088	ACQUITY UPLC I-Class PLUS SM FTN-I	 * 1 . 4 2 *	 * 1 . 0 3 *
186016012	Micro Sample Manager - Fixed Loop	 * 1 . 4 2 *	 * 1 . 0 3 *

Part Number	Description	TE83064	TE0084050
		Test Software Version*	Test Software Version*
186017001	ACQUITY Arc SM FTN-R with Temp Control	 * 1 . 4 2 *	 * 1 . 0 3 *
186017007	ACQUITY Arc SM FTN-R w/out Temp Control	 * 1 . 4 2 *	 * 1 . 0 3 *
186017011	ACQUITY Arc Bio SM FTN-R w/Temp Control	 * 1 . 4 2 *	 * 1 . 0 3 *
186017017	Arc HPLC SM FTN-R with Temp Control	 * 1 . 4 3 *	 * 1 . 0 3 *
186018002	ACQUITY PREMIER FTN	N/A	 * 1 . 0 3 *
186019002	Arc PREMIER Sample Mgr FTN-R w/Temp Ctrl	N/A	 * 1 . 0 3 *
800000298	Ref. Acquity Sample Mgr FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
800000313	Ref. Acquity H-Class BioSM-FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
800000373	Ref Acq I-Class Sample Mgr-FTN	 * 1 . 4 2 *	 * 1 . 0 3 *
800000410	Ref. Acquity I-Class Sam Mgr-FL	 * 1 . 4 2 *	 * 1 . 0 3 *
800000412	Ref. UPC2 Sam Mgr-Fixed Loop	 * 1 . 4 2 *	 * 1 . 0 3 *
800000429	Ref. APC Sample Manager w/FTN	 * 1 . 4 2 *	 * 1 . 0 3 *

Part Number	Description	TE83064 Test Software Version*	TE0084050 Test Software Version*
800000442	Ref Micro Sample Manager-FL	 * 1 . 4 2 *	 * 1 . 0 3 *
800000461	Refurb Acquity Arc FTN WO Temp	 * 1 . 4 2 *	 * 1 . 0 3 *
800000462	Refurb Acq Arc FTN W/Samp Temp	 * 1 . 4 2 *	 * 1 . 0 3 *
800000472	Refurb Arc Bio SM FTN-R W/TC	 * 1 . 4 2 *	 * 1 . 0 3 *
800000481	Refurb Acq I-Class FL-I Plus	 * 1 . 4 2 *	 * 1 . 0 3 *
800000482	Refurb Acq I-Class FTN-I Plus	 * 1 . 4 2 *	 * 1 . 0 3 *
800000483	Refurb H-Class FTN-H Bio Plus	 * 1 . 4 2 *	 * 1 . 0 3 *
800000489	Refurb Acq H-Class FTN-H Plus	 * 1 . 4 2 *	 * 1 . 0 3 *
800000509	Refurb Arc HPLC SM FTN-R w/Temp Control	 * 1 . 4 3 *	 * 1 . 0 3 *
800000530	Refurb ACQUITY PREMIER FTN	N/A	 * 1 . 0 3 *
800000544	Refurb Arc PREMIER Sample Mgr FTN-r w/TC	N/A	 * 1 . 0 3 *

*The Test Software Versions in this table represents the minimum version for that part number/Test Station. All succeeding versions are acceptable as well.

EQUIPMENT REQUIRED

Quantity	Part Number	Description
1	186015022	Acquity TUV Detector
1	186015000	Acquity SDS 18K
1	186015043	Acquity UPLC CM-A (column manager)
1	205000898	Kit, ACQ. UPLC I-Class CM-A Tubing 2 Col
2	289006760	Assy, Cart, 9 Port CM, 18 KPSI, Dome
1	205015016	Acquity UPLC Cell, TUV
1	725000455	Switch, Ethernet, 10/100 (or equivalent – 4 port minimum)
1	405013532	Calibration Pin
2	405003460	Union, .020 – V Detail
2	186002631	384 Well Plate, 100uL Square well
1	405003743	48 Vial Plate
1	289001680	Assy, Bottle Tray
5	441000371	(or equiv.) Ethernet Cable
1	TE83064	Test System w/cables
1	TE0084050	Test System w/cables
2	999038144	Weighted well plates for testing Theta belt tension
1	999034358	Gap Tool, Needle to Rotary Sample Tray

DISPOSABLES REQUIRED

Quantity	Part Number	Description
60"	WAT027-08	Tubing, .062 x.040 PEEK
36"	430001054	½" Tygon Tubing (SM waste line)
A/R	405005721	Screw, Comp, HPFT
A/R	405004241	Collet, HPFT
A/R	415000786	Ferrule, PEEK, HPFT
A/R	WAT027-01	Tubing, .062 x .005 PEEK
A/R	Various	12 x 32 mm Vials and caps, from the following list:
A/R	186003886C	Amber Max Recovery Vial Kit (vials and blue preslit septum caps)
A/R	186002127	Screw Cap with Preslit Septum, Green
A/R	186002128	Screw Cap with Preslit Septum, Red
A/R	186002457	Screw Cap with Preslit Septum, White
45"	430001102	Tube, 316L, SS, 1/16OD X .010 ID, 16 RMA
30"	430001101	Tube, 316L, SS, 1/16OD X .005 ID, 16 RMA
A/R	405003608	Scr, Comp, 10-32, 1/4 Hex, 304 SS, Gold, FLT
A/R	410001349	Ferrule, Set, .062. Two-Piece
A/R	410001125	Ferrule, Flangeless
A/R	410001124	Screw, Flangeless, Comp, SM
A/R	700004107	Acquity UPLC Carryover Test Solutions (Carryover Challenge & Calibration Standard)
A/R	700004105	Acquity UPLC Production Test Solution (Precision and Linearity)

A/R	See Appendix B	Carryover Blank Test Solution
1 Liter	See Appendix B	Needlewash & Mobile Phase solution, 5%/95% MeOH/Milli-Q H ₂ O
A/R	A454-4	Optima Methanol, Fisher Scientific
1	186002350	Acquity UPLC BEH C18 1.7µm 2.1x50 mm Column
1	186006049	XBridge BEH C8 2.5µm 4.6x50mm XP col

REFERENCE DOCUMENTATION

Document #	Description
WAT046538	HI Pot and Ground Continuity Test Procedure
721001299	Acquity Common Platform Sample Manager (H-Class / Bio H-Class / Nano / I-Class / I-Class IVD / UPC ²) FTN and FL Functional Specification
721007514	Velox FTN Functional Specification
721003992	Veyron CPSM FTN Functional Specification
721013356	Acquity Arc Bio FTN Functional Specification
721020210	Product Requirements Document, ARC HPLC
721020317	Product Requirements Document, Inert LC Product Requirements

DEFINITIONS AND ABBREVIATIONS

Term	Definition
PSC	Production Support Check
CPSM	Common Platform Sample Manager
FTN	Flow Thru Needle Sample Manager
FL	Fixed Loop Sample Manager
IVD	In-Vitro Diagnostic
BSM	Binary Solvent Manager
CM	Column Manager
TUV	Tunable Ultra Violet Absorption Detector

TEST SPECIFICATIONS AND TRACEABILITY MATRIX

Note:

1. Part Number 186018002 is not specifically covered in an FSD. Instead the PRD, 721020317 section 5.2 references FSD 721001299 for Performance specifications.
2. Part Number 186017017 is not specifically covered in an FSD. Instead the PRD, 721020210 section 5.2 references FSD 721007514 for Performance Specifications.

Common Specifications

Applies to Part Numbers: **186015017, 186015040, 186016012, 186015060, 186015046, 186015035, 186015051, 186015085, 186015086, 186015087, 186015088, N2971031, 186018002**

TEST STEP	SPECIFICATION	721001299 REFERENCE
Electrical Safety Test	see test procedure WAT046538	PSC - GMP
Power-on Initialization	Initializes without alarms	PSC – Preparation for test

Z axis	-20 to 20 Lost Steps	5.15.1.7 and 5.15.2.5.3
R axis	-20 to 20 Lost Steps	5.15.1.8 and 5.15.2.5.4
Sample Cooling Test	≤ -0.6 deg C/Min	5.15.1.9. and 5.15.2.6
BOS Pump Test	Fluid flows from the Waste port	5.1.1.1.14 PSC - This step verifies the build process which is not validated
Test Pressure Transducer	0.45 to 0.55 Volts	5.15.1.10
Needlewash Prime	Action – Completes without errors	Preparation for Chemistry tests
Test Preblank Injections	≤ 10% of previous Calibration Injection Area	5.15.2.13 Preparation for Carryover testing
Chemistry Precision Area	0.0 to 0.5 %RSD	5.15.1.11 & 5.15.1.32
Chemistry Precision Height	0.0 to 0.9 %RSD	5.15.1.12 & 5.15.1.33
Chemistry Linearity R ²	0.999 to 1.000 R ²	5.15.1.13 & 5.15.1.34
Chemistry X-Intercept	-.2 to 0.2 uL	5.15.1.14 & 5.15.1.35
Methanol Purge	Action – Completes without errors	Preparation for Shipping
Air Purge	Action – Completes without errors	Preparation for Shipping
Park Inject Valve	Action – Completes without errors	Preparation for Shipping
Home Needle	Action – Completes without errors	Preparation for Shipping
Save Serial Number	Write Scanned Serial Number. Read Back Serial Number = Scanned Serial Number	Preparation for Customer Use

SPECIFICATIONS UNIQUE TO H-CLASS FTN SAMPLE MANAGERS

Applies to Part Numbers: 186015017, 186015040, 186015085, 186015086, N2971031, 186018002

TEST STEP	SPECIFICATION	721001299 REFERENCE
Jumper Configuration	Jumpers = 129	PSC – This step verifies the build process which is not validated
Needle Seal Calibration	Action – Completes without errors	5.15.2.8
Needle Seal Force	48 to 68 lbs/in	5.15.1.36
Needle Seal Position	55 to 58 mm	5.15.1.41
Methanol Prime	Action – Completes without errors	Preparation for Decay and Dynamic Leak tests
Sample Syringe Decay	-15 to 15 PSI	5.15.1.38
Dynamic Leak Test	≤ 0.5 uL/min.	5.15.1.37
Carryover	≤ 0.128 PPM (0.0032%)	5.15.1.29
Carryover (186015085 and 186015086)	≤ 0.06 PPM (0.0015%)	5.15.1.29

SPECIFICATIONS UNIQUE TO I-CLASS FTN SAMPLE MANAGERSApplies to Part Numbers: **186015046, 186015088**

TEST STEP	SPECIFICATION	721001299 REFERENCE
Jumper Configuration	Jumpers = 133	PSC - This step verifies the build process which is not validated
Needle Seal Calibration	Action – Completes without errors	5.15.2.8
Needle Seal Force	48 to 68 lbs/in	5.15.1.36
Needle Seal Position	55 to 58 mm	5.15.1.41
Methanol Prime	Action – Completes without errors	Preparation for Decay and Dynamic Leak tests
Sample Syringe Decay	-15 to 15 PSI	5.15.1.38
Dynamic Leak Test	≤ 0.5 uL/min.	5.15.1.37
Carryover	≤ 0.04 PPM (0.001%)	5.15.1.30

SPECIFICATIONS UNIQUE TO FL SAMPLE MANAGERSApplies to Part Numbers: **186015060, 186015035, 186016012, 186015087**

TEST STEP	SPECIFICATION	721001299 REFERENCE
Jumper Configuration	Jumpers = 129	PSC - This step verifies the build process which is not validated
Needle Seal Position	57 to 61 mm	5.15.1.29
Wash Syringe Prime	Action – Completes without errors	Preparation for Decay tests
Sample Syringe Prime	Action – Completes without errors	Preparation for Decay tests
Strong Wash Syringe Decay	-5 to 30 psig	5.15.1.17
Weak Wash Syringe Decay	-5 to 30 psig	5.15.1.18
Sample Syringe Decay	-5 to 40 psig	5.15.1.19
Needle Seal Decay	-5 to 50 psig	5.15.1.20
Back Pressure Regulator	135 to 165 psig	5.15.1.21
Air Sensor Calibration	7 to 10 uL	5.15.1.22
Dislodge Bubbles	Action – Completes without errors	Preparation for volume measurements
Loop Volume (186015060, 1860150350)	7.5 to 13 uL	5.15.1.23
Loop Volume (186016012)	3.0 to 7.5 uL	5.15.1.24
Needle Volume	9 to 13 uL	5.15.1.25
System Compliance (186016012)	0.0 to 2.0 uL	5.15.1.26
Carryover (186015060)	≤ 0.04 PPM (0.001%)	5.15.1.15
Carryover (186015035, 186016012)	≤ 0.128 PPM (0.0032%)	5.15.1.16
Empty Wash Syringes	Action – Completes without errors	Preparation for Shipping

SPECIFICATIONS FOR ARC SAMPLE MANAGERSApplies to Part Numbers: **186017001, 186017007, 186017017**

TEST STEP	SPECIFICATION	721007514 REFERENCE
Electrical Safety Test	see test procedure WAT046538	PSC - GMP
Power-on Initialization	Initializes without alarms	PSC – Preparation for test
Fans	Verify Fans are ON	PSC – This step verifies the build process which is not validated
Firmware Download	Firmware downloads without errors	PSC – Preparation for test
Restart Initialization	Instrument initializes without Alarms	PSC – This test step runs only if firmware was downloaded. It ensures the UUT is in a ready state and is able to continue testing
Sample Compartment Door & Lights	Open door lights turn on	5.1.1.18 and 5.2.3.1

	Close door lights turn off	PSC - This step verifies the build process which is not validated
Jumper Configuration	Jumpers = 128	PSC - This step verifies the build process which is not validated
Test Event Inputs	Set Input high = Read back High Set Input low = Read back Low	5.2.2.4.2 and Control Board Performance Spec sec. 5.3 of 810000367
Test Event Outputs	Set Event High = Event Output High Set Event Low = Event Output Low	5.2.2.4.1 and Control Board Performance Spec sec. 5.4 of 810000367
Test Leak Detectors	See Table 1.0	5.1.1.7 PSC - This step verifies the build process which is not validated
Test SPI Interface	Dump HTCH = Active Preheater ID: 1 \[connected\ & Column Heater ID : 2 \[connected\ &	5.2.2.3.3. PSC - Active Preheater and Column Heater chosen among variety of Waters peripherals to challenge the Interface function.
Ecord Interface	Perform writes and read back to iButton device	5.2.2.1 PSC – This step verifies the build process which is not validated
Theta Drive Calibration	Action – Completes without errors	5.14.2.1
Tray Cal Offset	-180 to 180 Degrees	5.14.1.1
R Axis Calibration	Action – Completes without errors	5.14.2.2
R Offset	-3.00 to 3.00 mm	5.14.1.2
Z Axis Calibration	Action – Completes without errors	5.14.2.3 and 5.14.2.4
Z Offset	-3.00 to 3.00 mm	5.14.1.3
Zp Offset	-3.00 to 3.00 mm	5.14.1.4
Sample Tray Select Switch	Open Door = tray 1 presented Select tray 2 = tray 2 presented Select tray 1 = tray 1 presented	5.1.1.5 PSC - This step verifies the build process which is not validated
Check Theta Drive Belt	Action - Completes without instrument alarms	PSC - This step verifies the build process which is not validated
R/Theta Positioner Test	Action – Completes without errors	5.14.2.5
1 st Move Error	-0.3 to 0.3 Degrees	5.14.1.5
Zp Pierce Lost Steps	-20 to 20 Lost Steps	5.14.1.6
Z Pierce Lost Steps	-20 to 20 Lost Steps	5.14.1.7
R Lost Steps	-20 to 20 Lost Steps	5.14.1.8
Sample Cooler Decay (186017001 and 186017017 only)	≤ -0.6 deg C/min	5.14.1.9
Methanol Prime	Action – Completes without errors	Preparation Dynamic Leak tests
BOS Pump Test	Fluid flows from the Waste port	5.1.1.16

		PSC - This step verifies the build process which is not validated
Dynamic Leak Test	≤ 0.5 uL/min.	5.14.1.18
Needlewash Prime	Action – Completes without errors	Preparation for Chemistry tests
Test Preblank Injections	≤ 10% of previous Calibration Injection Area	5.15.2.13 Preparation for Carryover testing
Carryover	≤ 0.06 PPM (0.0015%)	5.15.1.12
Chemistry Precision Area	0.0 to 0.25 %RSD	5.15.1.13
Chemistry Precision Height	0.0 to 0.9 %RSD	5.15.1.14
Chemistry Linearity R ²	0.999 to 1.000 R ²	5.15.1.15
Chemistry X-Intercept	-.2 to 0.2 uL	5.15.1.16
Methanol Purge	Action – Completes without errors	Preparation for Shipping
Air Purge	Action – Completes without errors	Preparation for Shipping
Park Inject Valve	Action – Completes without errors	Preparation for Shipping
Home Needle	Action – Completes without errors	Preparation for Shipping
Save Serial Number	Write Scanned Serial Number. Read Back Serial Number = Scanned Serial Number	Preparation for Customer Use

SPECIFICATIONS UNIQUE TO VEYRON FTN (APC) SAMPLE MANAGER

Applies to Part Numbers: **186015051**

NOTE: FSD 721003992 Section 1 “The Veyron SM-FTN will conserve all functionality except if stated in the contents of this FSD performance and functionality of an H-Class FTN”.

TEST STEP	SPECIFICATION	721003992 REFERENCE
Jumper Config	129	PSC - This step verifies the build process which is not validated
Needle Seal Calibration	Action – Completes without errors	5.16.2.8
Needle Seal Force	48 to 68 lbs/in	5.16.1.17
Needle Seal Position	55 to 58 mm	5.16.1.11
Sample Syringe Decay	-15 to 15 PSI	5.16.1.19
Dynamic Leak Test	≤ 0.5 uL/min.	PSC – Not Specified. Tested to be consistent with other FTN models. Reference 721001299 line 5.15.1.35
Carryover	≤ 0.128 PPM (0.0032%)	5.16.1.16
Chemistry Precision Area	0.0 to 0.5 %RSD	5.16.1.12
Chemistry Precision Height	0.0 to .9%RSD	5.16.1.13
Chemistry Linearity R ²	0.999 to 1.000 R ²	5.16.1.14
Chemistry X-Intercept	-.2 to 0.2 uL	5.16.1.15

SPECIFICATIONS FOR ARC-BIO SAMPLE MANAGERS

Applies to Part Numbers: **186017011**

TEST STEP	SPECIFICATION	721013356 REFERENCE
Electrical Safety Test	see test procedure WAT046538	PSC - GMP
Power-on Initialization	Initializes without alarms	PSC – Preparation for test
Fans	Verify Fans are ON	PSC – This step verifies the build process which is not validated
Firmware Download	Firmware downloads without errors	PSC – Preparation for test
Restart Initialization	Instrument initializes without Alarms	PSC – This test step runs only if firmware was downloaded. It ensures the UUT is in a ready state and is able to continue testing
Sample Compartment Door & Lights	Open door lights turn on Close door lights turn off	5.1.1.18 and 5.2.3.1 PSC - This step verifies the build process which is not validated
Jumper Configuration	Jumpers = 128	PSC - This step verifies the build process which is not validated
Test Event Inputs	Set Input high = Read back High Set Input low = Read back Low	5.2.2.4.2 and Control Board Performance Spec sec. 5.3 of 810000367
Test Event Outputs	Set Event High = Event Output High Set Event Low = Event Output Low	5.2.2.4.1 and Control Board Performance Spec sec. 5.4 of 810000367
Test Leak Detectors	See Table 1.0	5.1.1.7 PSC - This step verifies the build process which is not validated
Test PSPI Interface	Dump HTCH = Active Preheater ID: 1 \[connected\ & Column Heater ID : 2 \[connected\ &	5.2.2.3.3. PSC - Active Preheater and Column Heater chosen among variety of Waters peripherals to challenge the Interface function.
Ecord Interface	Perform writes and read back to iButton device	5.2.2.1 PSC – This step verifies the build process which is not validated
Theta Drive Calibration	Action – Completes without errors	5.14.3.1
Tray Cal Offset	-180 to 180 Degrees	5.14.1.1
R Axis Calibration	Action – Completes without errors	5.14.3.2
R Offset	-3.00 to 3.00 mm	5.14.1.2
Z Axis Calibration	Action – Completes without errors	5.14.3.3 and 5.14.2.4
Z Offset	-3.00 to 3.00 mm	5.14.1.3
Zp Offset	-3.00 to 3.00 mm	5.14.1.4
Sample Tray Select Switch	Open Door = tray 1 presented Select tray 2 = tray 2 presented	5.1.1.5

	Select tray 1 = tray 1 presented	PSC - This step verifies the build process which is not validated
Check Theta Drive Belt	Action - Completes without instrument alarms	PSC - This step verifies the build process which is not validated
R/Theta Positioner Test	Action – Completes without errors	5.14.3.5
1 st Move Error	-0.3 to 0.3 Degrees	5.14.1.5
Zp Pierce Lost Steps	-20 to 20 Lost Steps	5.14.1.6
Z Pierce Lost Steps	-20 to 20 Lost Steps	5.14.1.7
R Lost Steps	-20 to 20 Lost Steps	5.14.1.8
Sample Cooler Decay (186017001 only)	≤ -0.6 deg C/min	5.14.1.9
Methanol Prime	Action – Completes without errors	Preparation Dynamic Leak tests
BOS Pump Test	Fluid flows from the Waste port	5.1.1.16 PSC - This step verifies the build process which is not validated
Dynamic Leak Test	≤ 0.5 uL/min.	5.14.1.18
Needlewash Prime	Action – Completes without errors	Preparation for Chemistry tests
Test Preblank Injections	≤ 10% of previous Calibration Injection Area	5.14.2.13 Preparation for Carryover testing
Carryover	≤ 0.06 PPM (0.0015%)	5.14.1.12
Chemistry Precision Area	0.0 to 0.25 %RSD	5.14.1.13
Chemistry Precision Height	0.0 to 0.9 %RSD	5.14.1.14
Chemistry Linearity R ²	0.999 to 1.000 R ²	5.14.1.15
Chemistry X-Intercept	-.2 to 0.2 uL	5.14.1.16
Methanol Purge	Action – Completes without errors	Preparation for Shipping
Air Purge	Action – Completes without errors	Preparation for Shipping
Park Inject Valve	Action – Completes without errors	Preparation for Shipping
Home Needle	Action – Completes without errors	Preparation for Shipping
Save Serial Number	Write Scanned Serial Number. Read Back Serial Number = Scanned Serial Number	Preparation for Customer Use

TABLE 1.0 Leak Detector Test States

Inputs				Read back			
Upper Power	Upper State	Lower Power	Lower State	Upper Sensor Present	Upper Sensor Status	Lower Sensor Present	Lower Sensor Status
0	0	0	0	not present	no leak	not present	no leak
1	0	1	0	present	no leak	present	no leak
1	1	1	1	present	leak	present	leak
0	1	0	1	not present	no leak	not present	no leak

TEST PROCEDURE

1. TEST SETUP

- 1.1. See Appendices A for Cable and Fluidic setup details.
- 1.2. Power up the Acquity TUV Detector.
- 1.3. Power up the Acquity Solvent Delivery System.
- 1.4. Power up the Acquity Column Manager.
- 1.5. Power up PC and Monitor.
- 1.6. The test program should automatically boot-up after logging in. If it is not running, double-click the "CPSM Final Test System" desktop icon.
- 1.7. Fill vials with chemistry solutions and populate a 48 position vial plate as follows:

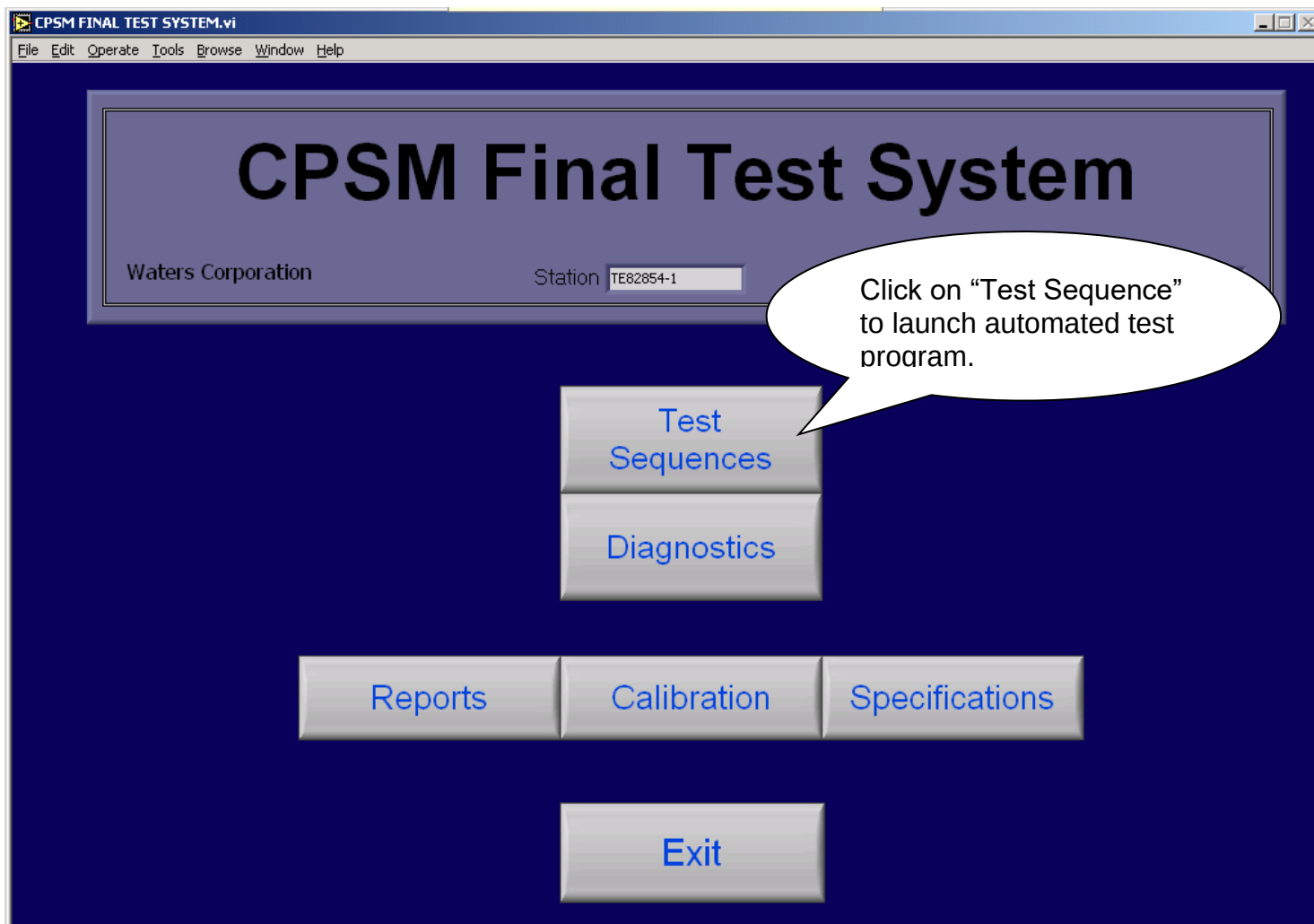
Vial Position	Test	Solution	Vial/Cap color
F1	Precision & Linearity	700004105	Amber/Blue
A1	Carryover (Blank)	See Appendix B	Amber/White
A2	Carryover (Calibration)	700004107	Amber/Green
A3	Carryover (Challenge)	700004107	Amber/Red

Note: Make Needlewash/ Mobile Phase solution (5/95 MeOH/Milli-Q water) in batches no larger than 1 week's supply per test station. Discard at week's end. See Appendix B

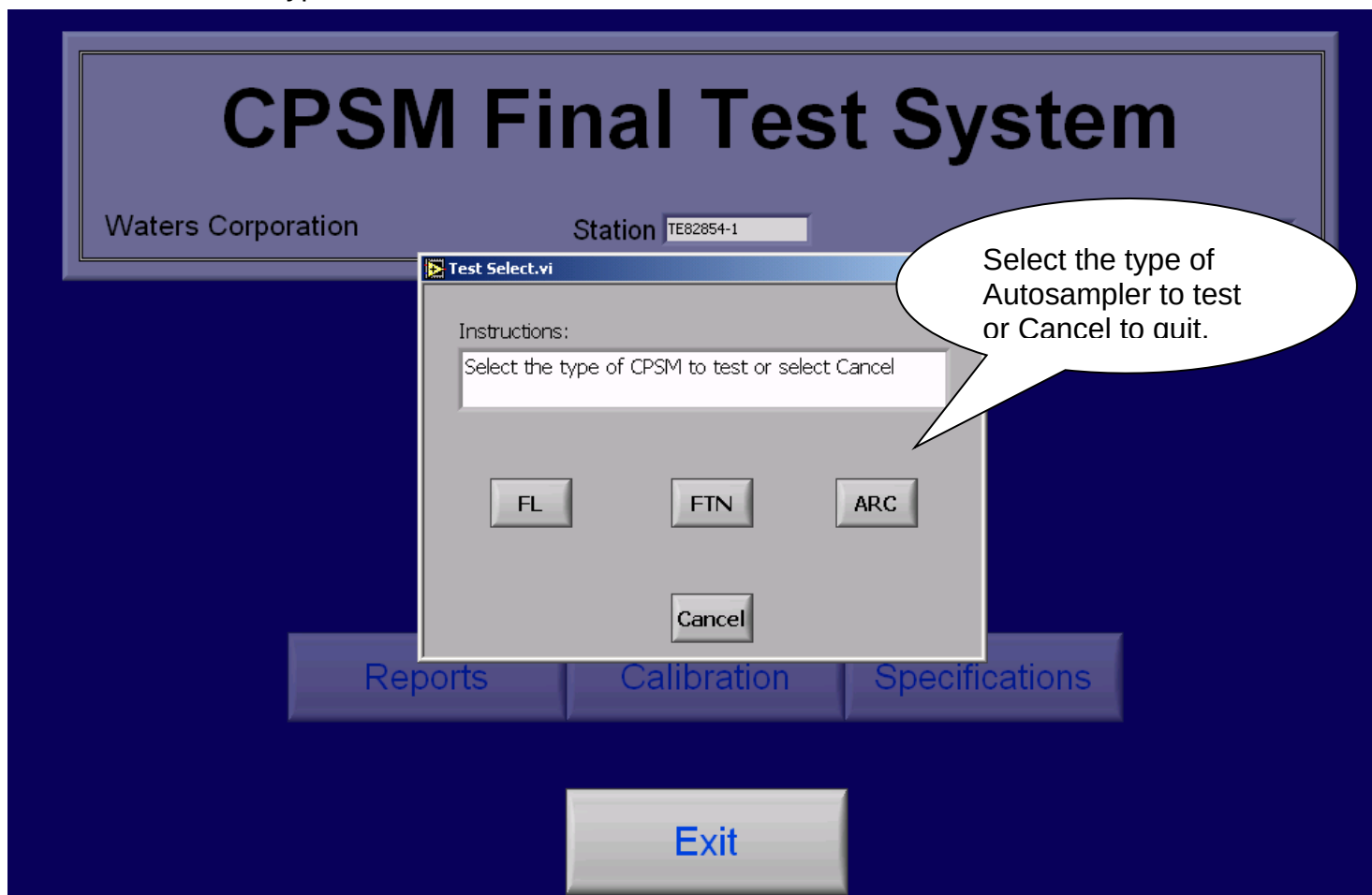
Note: Whenever either the Needlewash or the MEOH bottle is replaced the BSM must be primed. Use Console to prime the BSM prior to starting a test.

2. TEST

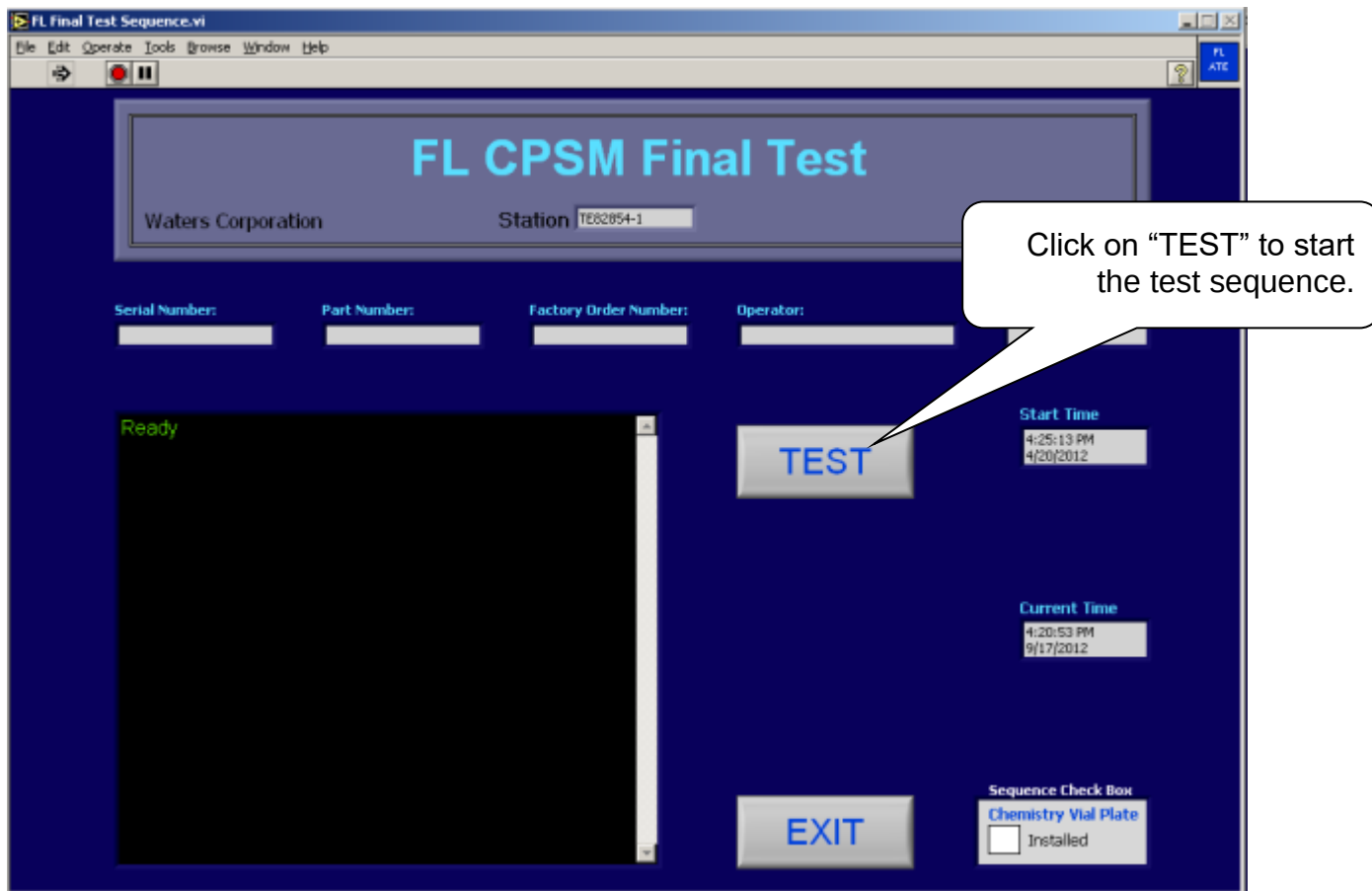
2.1. Click “Test Sequence” button



2.2. Select the type of CPSM FL, FTN or ARC



2.3. Click the “Test” button to begin testing.

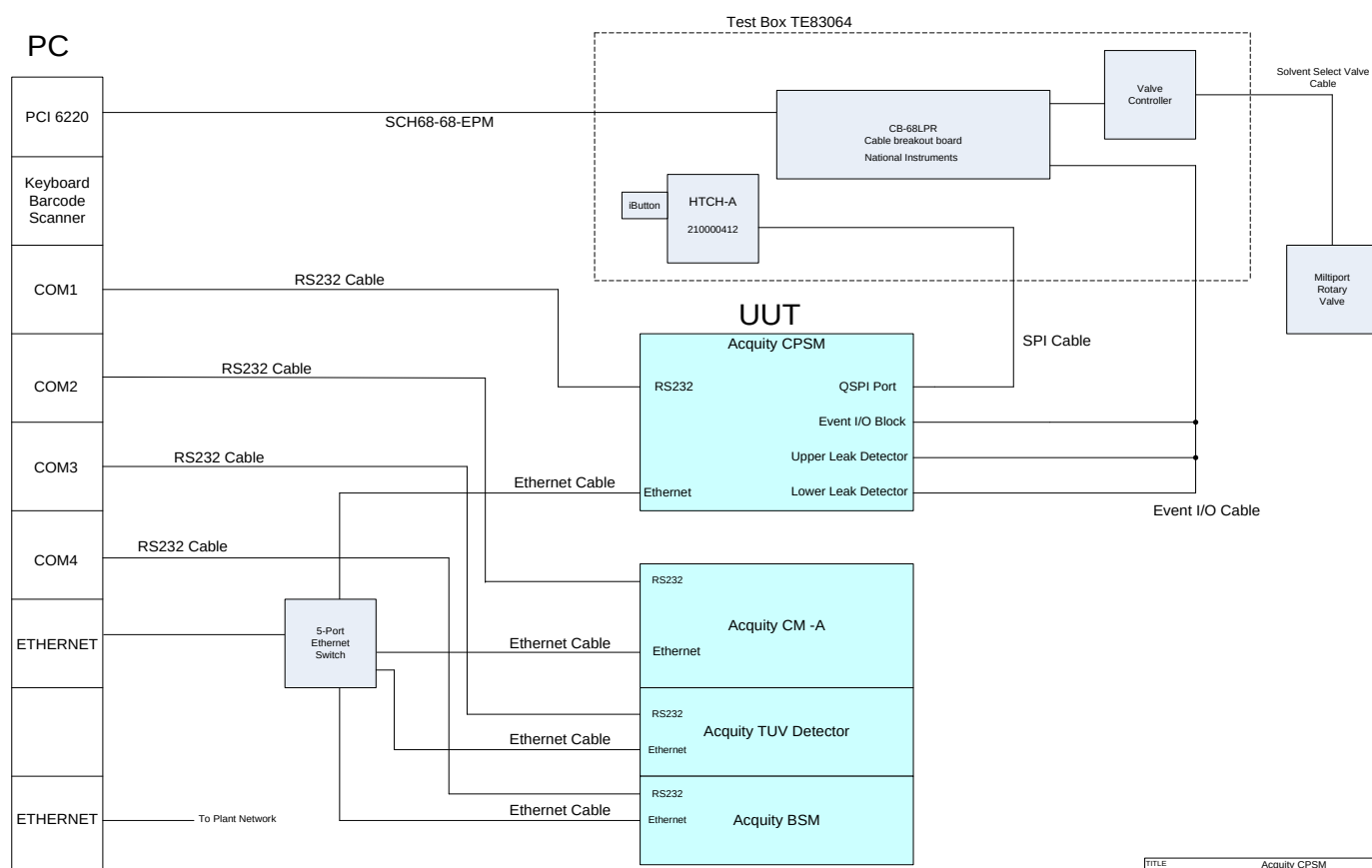


2.4. Test sequence provides on time, pop-up windows with step-by-step instructions for the operator.

2.5. When testing is completed for the day EXIT the test sequence.

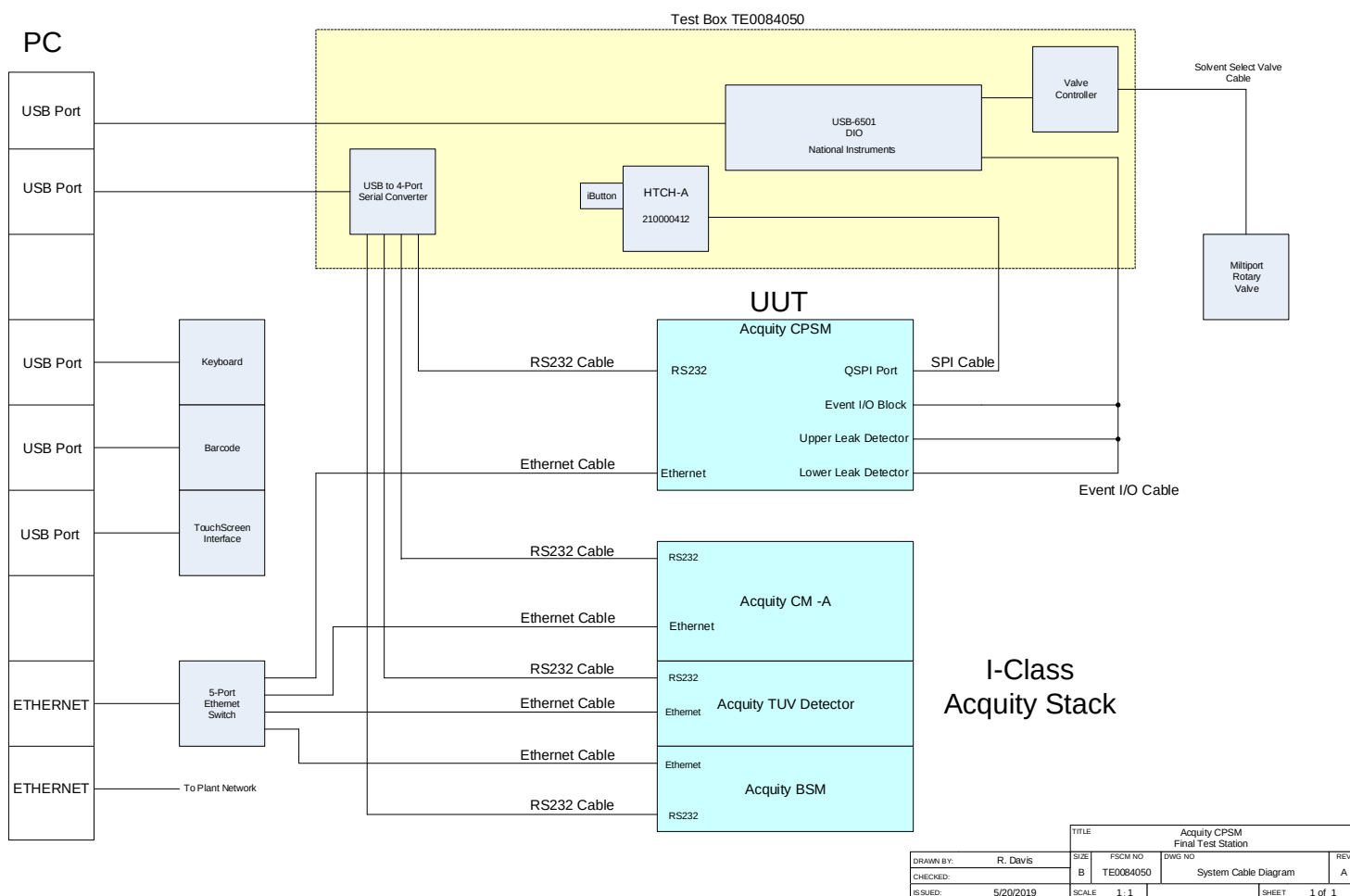
Appendix A– TE83064 Test Station Setup

1. Place SDS on bench, Column Manager on SDS, TUV on Column Manager, and solvent tray on TUV.
2. Install Flowcell into TUV Detector.
3. Install XBridge BEH C8 2.5µm 4.6x50mm XP Column in column manager position '2' and Acquity UPLC BEH C18 1.7µm 2.1x50 mm Column in position "4". Pin-plug unused valve ports (purge air from right valve, port 5).
4. Plug the PC, Monitor, Tester, Acquity SDS, Acquity TUV Detector, and Ethernet Hub into properly grounded AC outlets.
5. Connect the PC and instruments per cable diagram below for TE83064.



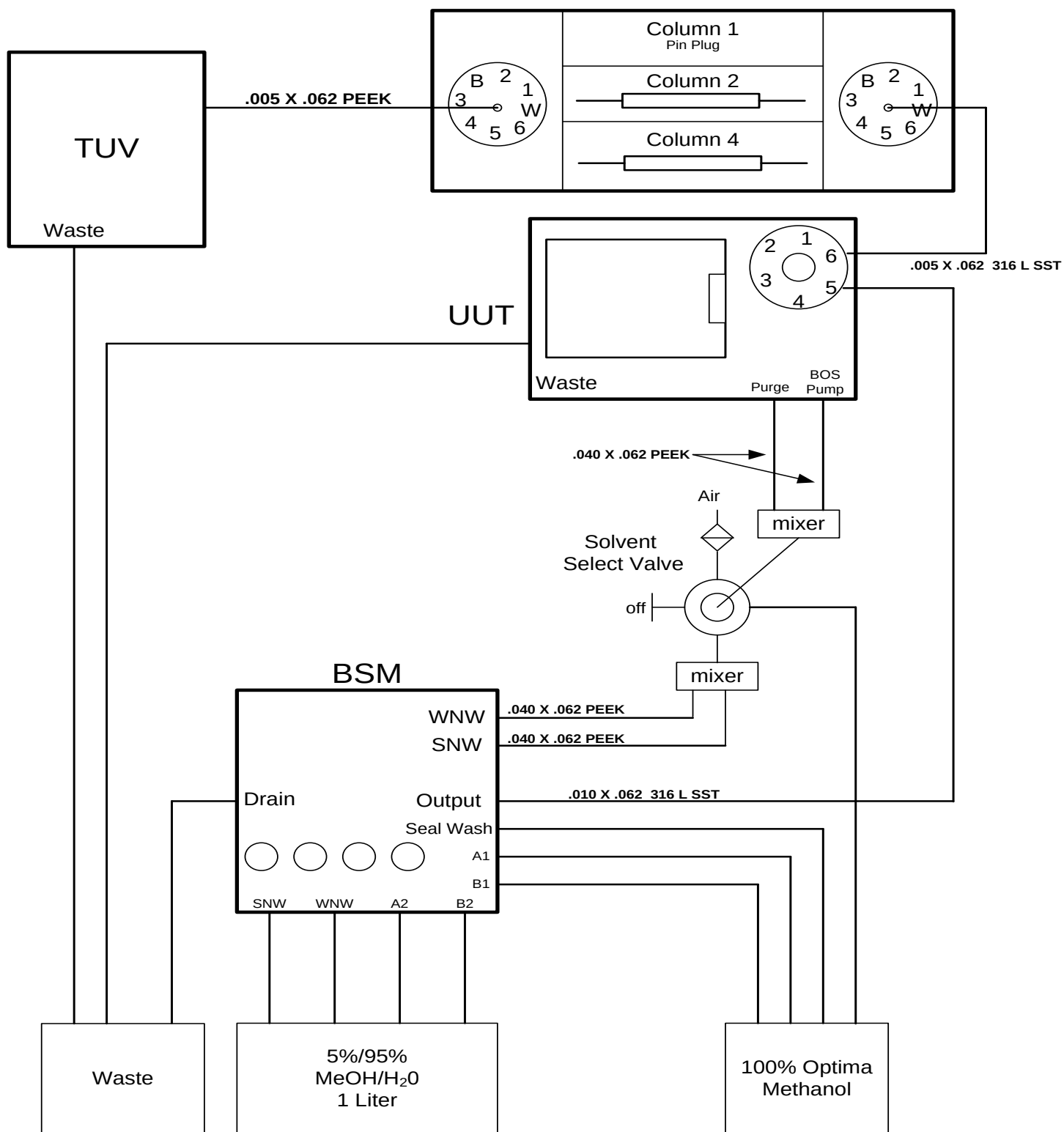
TITLE				
Acquity CPSM Final Test Station				
DRAWN BY:	R. Davis	SIZE	FSCM NO.	REV
CHECKED:	B	TE83064	System Cable Diagram	B
ISSUED:	4/25/14	SCALE	1:1	SHEET 1 of 1

6. Connect the PC and instruments per cable diagram below for TE0084050.



- Place a bottle of Fisher Optima Methanol in solvent tray and connect to BSM and the solvent select valve per Fluidics Diagram below.
- Place a 1 Liter bottle of 5% methanol / 95% Milli-Q water in solvent tray and connect to BSM per Fluidics Diagram below.
- Connect BSM waste port to a waste bottle.
- Prime BSM pumps A and B.

Column Manager



TE83064/TE0084050 Fluidics Diagram

Appendix B

1. PREPARING NEEDLE WASH AND BLANK SAMPLE

1.1. Needle Wash Solution

- 1.1.1. Discard the Needle Wash at the end of the work week.
- 1.1.2. Do not let Needle Wash bottles with Needle Wash solution sit out over holidays and/or weekends.
- 1.1.3. Protect the BSM lines over holidays and/or weekends by placing them in a sealed, clean, empty bottle or in a clean bag.
- 1.1.4. Prepare fresh Needle Wash solution at the beginning of each work week.
- 1.1.5. Clean the Needle Wash bottles and caps by rinsing with 100% MEOH.
- 1.1.6. Clean the graduated cylinders and funnels used to prepare Needle Wash each time the solution is made by rinsing with 100% MEOH.
- 1.1.7. Do not make more Needle Wash than can be used in the work week.

1.2. Preparing Blank Sample

- 1.2.1. Always use new vials and vial caps. Do not reuse vials or vial caps.
- 1.2.2. Prepare the Blank Sample when the Needle Wash solution is made. Do not open the Needle Wash bottle at the test system to aspirate more Blank Solution.
- 1.2.3. Using a new pipette aspirate some of the Needle Wash solution and dispense in a new vial. It is not required to fill the vial. About ¼ full is adequate. If the pipette cannot reach the Needle Wash solution in its bottle, pour some of the Needle Wash into a clean flask and aspirate from there.
- 1.2.4. Cap Blank vials using a white vial cap and store in a well plate.
- 1.2.5. Prepare as many vials as there are instruments to test that week.
- 1.2.6. Use a new blank vial on each UUT.

1.3. Sample Handling

- 1.3.1. Do not allow well plates with sample vials to sit out on benches. Store in a cabinet or drawer.
- 1.3.2. Do not touch the top of the vial caps.
- 1.3.3. Discard Blank sample vial after each UUT is tested. Do not reuse on the next UUT.
- 1.3.4. Discard all unused sample vials at the end of the work week.