

Test Certificate

CERTIFICATE No: TRA033581CC02

ISSUE: C

DATE: 05/09/2017

PURPOSE OF TEST: Temperature Test

CLIENT ORDER No: P37645

CLIENT: FT Technologies (UK) Ltd, Church Lane, Teddington, Middlesex, GB. TW11 8PA.

EQUIPMENT UNDER TEST: Wind Sensor
For specimen details see Overleaf.

TEST SPECIFICATIONS: In accordance with Element quotation TRA-033581-01 dated 10th October 2016
FT Technology Document No. A9450, Issue 1
BS EN 60068 (Multiple sections)
DEF STAN 00-35 Part 3, Issue 4
EN 60529:1992
With changes recorded in CAF 2661 dated 17/11/2016.

TEST DATE: 14/11/2016 to 09/12/2016

TEST LOCATION: Element Materials Technology, Rothwell Road, Warwick, Warwickshire, CV34 5JX

WRITTEN BY:

Daniel Homan

APPROVED BY:

Daniel Homan
Environmental Test
Engineer

Rob Sutton
Verification
Controller

The results herein relate only to the particular samples of equipment tested and the specific tests performed, as detailed above, and in accordance with the contract. Full details of test results, modifications and marginal results are held by Element Materials Technology Warwick Ltd. The quality control arrangements are in accordance with our UKAS accreditation. No representation or warranty is given that the tests performed under the terms of contract constitute, in themselves, a sufficient programme for the client's purpose, nor that the client's equipment is suitable for any particular purpose, nor that any approval has or will be granted by Element Materials Technology Warwick Ltd or any other body. The contents of this certificate shall not be reproduced, except in full, without the written approval of Element Materials Technology Warwick Ltd.

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EQUIPMENT UNDER TEST:

Part Name:	Part No:	Serial No:	Element Stores No:	Test:	Date Received:
Wind Sensor	FT742-D-FF	9000-037	TRA-033581-S1	Cold, Dry Heat, Ther Cyc, Comb Temp	14/11/2016
	FT742-D-FF	9000-039	TRA-033581-S3	Stat Temp, Cyc Temp	
	FT742-A-FF	9000-025	TRA-033581-S4	Cold, Dry Heat, Ther Cyc, Comb Temp	
	FT742-A-FF	9000-030	TRA-033581-S6	Stat Temp, Cyc Temp	
	FT722-D-FF	9000-050	TRA-033581-S7	Cold, Dry Heat, Ther Cyc, Comb Temp	
	FT722-D-FF	9000-041	TRA-033581-S9	Stat Temp, Cyc Temp	
	FT742-D-PM	9000-045	TRA-033581-S10	Cold, Dry Heat, Ther Cyc, Comb Temp	
	FT742-D-PM	9000-049	TRA-033581-S12	Stat Temp, Cyc Temp	
	FT742-A-PM	9000-031	TRA-033581-S13	Cold, Dry Heat, Ther Cyc, Comb Temp	
	FT742-A-PM	9000-035	TRA-033581-S15	Stat Temp, Cyc Temp	
	FT742-D-DM	9000-356	TRA-033581-S16	Cold, Dry Heat, Ther Cyc, Comb Temp	
	FT742-D-DM	9000-361	TRA-033581-S18	Stat Temp, Cyc Temp	
	FT742-A-DM	9000-347	TRA-033581-S19	Cold, Dry Heat, Ther Cyc, Comb Temp	
	FT742-A-DM	9000-349	TRA-033581-S21	Stat Temp, Cyc Temp	
	FT742-D-SM	9001-000	TRA-033581-S22	Cold, Dry Heat, Ther Cyc, Comb Temp	
FT742-D-SM	9001-002	TRA-033581-S24	Stat Temp, Cyc Temp		

TESTS CARRIED OUT:

Temperature Test

Cold Temperature Test

Tested in accordance with FT Technologies Document No. A9450, Issue 1, Section 6.2 and BS EN 60068-2-1:2007, Part 2-1: Test Ad: Cold
 Temperature: -40°C
 Ramp Rate: 1°C minute
 Duration: 16 hours

Dry Heat Test

Tested in accordance with FT Technologies Document No. A9450, Issue 1, Section 6.1 which refers to BS EN 60068-2-2:2007. Test Bd. Dry heat
 Temperature: 85°C
 Ramp Rate: 1°C minute
 Dwell Time: 16 hours

Thermal Cycling Test

Tested in accordance with FT Technologies Document No. A9450, Issue 1, Section 6.3 which refers to BS EN 60068-2-14: 2009, Part 2-14: Test Nb. Change of temperature
 Ramp Rate: 5°C/minute
 Upper Temperature: 85°C (2 hours) Lower Temperature: -40°C (2 hours)
 No Cycles: 16

Stationary Temperature and Humidity Test

Tested in accordance with FT Technologies Document No.A9450, Issue 1, Section 7.1 which refers to BS EN 60068-2-78:2013 Test Cab. Damp heat, steady state.

Test Temperature: 40°C
Relative Humidity: 93%
Duration: 240 Hours

Combined Temperature and Humidity Test

Tested in accordance with FT Technologies Document No. A9450, Issue 1, Section 7.3 which refers to BS EN 60068-2-38:2009, Part 2-38: Test Z/AD, Cold sub cycle included.

Upper Temperature: 65°C Lower Temperature: 25°C
Cold Sub cycle: -10°C
Duration: 10 x 24 hour cycles

Cyclic Temperature and Humidity Test

Testing in accordance with FT Technologies Document No. A9450, Issue 1, Section 7.2 which refers to BS EN 60068-2-30:2005 Test Db

Upper Temperature: 55°C Lower Temperature 25°C
Duration: 6 cycles of 24hours (12hours + 12hours)
Variant: Variant 1

TEST PROCEDURE

For the Temperature Tests, the specimens were attached to a support framework inside the test chamber and a platinum resistance thermometer was positioned adjacent to the test specimens to record the ambient air temperature during the test as shown in Figure 1. A representative of FT Technologies then connected the specimens under test to function test equipment located external to the test chamber. The specimens were placed in an operational state by the representative of FT Technologies and their operation continuously logged by the representative of FT Technologies. The specimens were then tested in accordance with the specification and on completion of the test the specimens were visually inspected for any conspicuous signs of external damage or degradation. For the Humidity Tests the same test procedure was used with the addition of a humidity probe next to the specimens.

TEST RESULTS:

Upon completion of each test the specimens were visually inspected by Element personnel. The specimens completed the testing in accordance with the specification with no conspicuous signs of external damage or degradation except for water marks on the top surface of the specimens upon completion of the Humidity Tests as shown in Figure 2

The specimens were connected to external monitoring equipment for each test and were reported as fully functional throughout by the representative of FT Technologies.



Temperature and Humidity Tests
Example Test Setup – Figure 1



Humidity Tests – Post Test
Inspection – Figure 2