



Reliability Laboratory

TEST REPORT

Report No.: HC30221B/2018

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Date: April 25, 2018

SAMOA MTM+ TECHNOLOGY CORPORATION TAIWAN BRANCH
7F, NO.178, MINQUAN EAST ROAD SECTION 3,
SONGSHAN DISTRICT, TAIPEI, TAIWAN, R.O.C.

The following merchandise was submitted and identified by the vendor as:

Product Description: Data Collection Station
Style/ Item No.: DCS V1.1/ S18030001, S18030002;
DCS V2.1/ S18030002, S18030004
Manufacturer/ Vendor: Samoa MtM+ Technology Corporation Taiwan Branch
Country of Origin: Taiwan
Quantity: Total 4 pieces
Testing Period: Mar. 29, 2018 to Apr. 3, 2018

We have tested the submitted sample(s) as requested and the following results were obtained:

Test Required: (According to client's test specification, please see following sheets in detail.)

1. Thermal Shock Test
2. Temperature / Humidity Cycling Test
3. Vibration Test

Test Results: – PLEASE SEE ATTACHED SHEETS –

Signed for and on behalf of
SGS TAIWAN Ltd.

Winson Tseng
Technical Manager

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1. Thermal Shock Test:

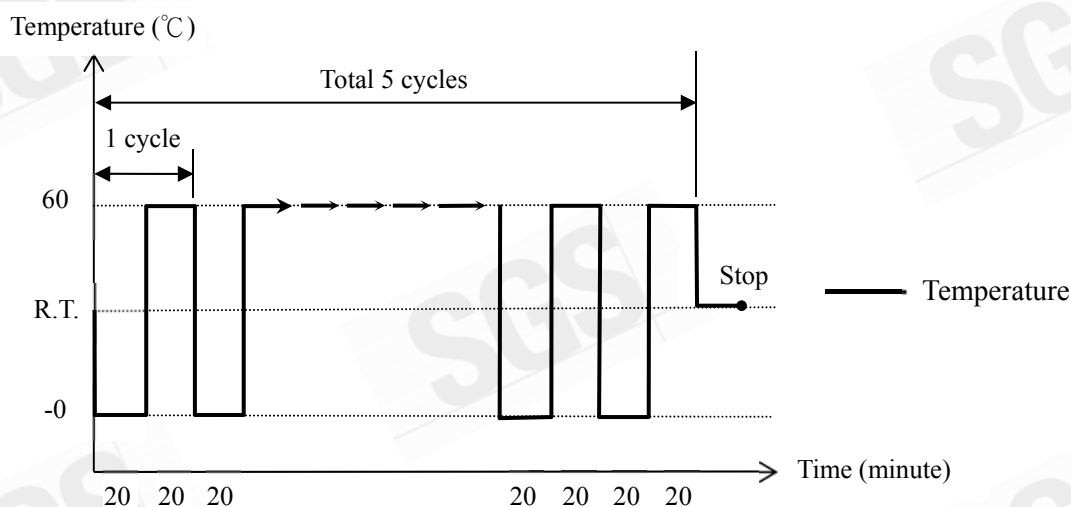
Test Equipment:

Name	Brand	Model	Serial No.
Thermal Shock Testing Chamber	ESPEC	EGNX28-15CW	1737004

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$ Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:



Sample condition: Non-Operating.

- The temperature transition time shall be 20K/ minute.
- Examine the appearance of specimen(s) by visual check and perform functional check after this test.
- Functional check: Connect specimen(s) with rated power 110 V_{AC}, then examine whether the booting function could be work normally or not.

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Specimen:Style/ Item No.: DCS V1.1/ S18030001;DCS V2.1/ S18030002Quantity: Total 2 piecesTest Result:

Check Item Style/ Item No.	Appearance Check (visual check)	Functional check
DCS V1.1/ S18030001	No visible damage	Normal
DCS V2.1/ S18030002	No visible damage	Normal

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2. Temperature / Humidity Cycling Test:

Test Equipment:

Name	Brand	Model	Serial No.
Programmable Temperature & Humidity Chamber	KSON	THS-D6TS-150+LN2	A0559

Lab Environmental Conditions:Ambient temperature: $(25 \pm 3) ^\circ\text{C}$ Ambient humidity: $(55 \pm 20) \% \text{RH}$ Test Method/ Specification:

Step	Temperature ($^\circ\text{C}$)	Humidity (%RH)	Time (hours)
1	25→0	50→-	-
2	0	-	6
3	0→40	-→75	-
4	40	75	4
5	40→60	75→95	-
6	60	95	6
7	60→25	95→50	-
Total cycle: Total 1 cycle			

- Sample condition: Operating.
- Examine the appearance of specimen(s) by visual check and perform functional check after this test.
- Functional check: Connect specimen(s) with rated power 110 V_{AC}, then examine whether the booting function could be work normally or not.

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Specimen:

Style/ Item No.: DCS V1.1/ S18030001, S18030002;
DCS V2.1/ S18030002, S18030004

Quantity: Total 4 pieces

Test Result:

Check Item Style/ Item No.	Appearance Check (Visual check)	Functional check
DCS V1.1/ S18030001	No visible damage	Normal
DCS V1.1/ S18030002	No visible damage	Normal
DCS V2.1/ S18030002	No visible damage	Normal
DCS V2.1/ S18030004	No visible damage	Normal

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3. Vibration Test:

Test Equipment:

Name	Brand	Model	Serial No.
Vibration Test System	King Design	EM-800F2K-50N120	RU104080389
Controller	Dactron	COMET 200	10539718
Control Accelerometer	PCB	353B34	143550
Vibration Test System	King Design	EM-5000F2K-75N600	10923742
Controller	Crystal	spider	1001664
Control Accelerometer	WR	793-6	A4632
ICP Accelerometer	PCB	356A24	162319

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$ Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:

Sample condition: Non-OperatingWave form: SinusoidalFrequency: $(5 \sim 33) \text{ Hz}$ Amplitude (D_{p-p}): 0.19mmSweep Rate: 1 octave/ minuteDirection: X, Y, Z axes (As show in photo 9 ~ 20)Test duration: 3 minutes/ axis

- Measuring accelerometer is attached on the designated position of specimen in each axis for Resonance search. (As show in photo 9 ~ 11, 15 ~ 17)
- Examine the appearance of specimen(s) by visual check and perform functional check after this test.
- Functional check: Connect specimen(s) with rated power 110 V_{AC}, then examine whether the booting function could be work normally or not.

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Specimen:

Style/ Item No.: DCS V1.1/ S18030001, S18030002;
DCS V2.1/ S18030002, S18030004

Quantity: Total 4 pieces

Test Result:

1. Resonance Search Result:

Check Item Style/Item No.	Major Resonance Frequency		
	X axis	Y axis	Z axis
DCS V1.1/ S18030001	No resonance	No resonance	No resonance
DCS V1.1/ S18030002	No resonance	No resonance	No resonance
DCS V2.1/ S18030002	No resonance	No resonance	No resonance
DCS V2.1/ S18030004	No resonance	No resonance	No resonance

2. Examination of Product (Appearance check) & Functional check:

Check Item Style/ Item No.	Appearance Check (Visual check)	Functional check
DCS V1.1/ S18030001	No visible damage	Normal
DCS V1.1/ S18030002	No visible damage	Normal
DCS V2.1/ S18030002	No visible damage	Normal
DCS V2.1/ S18030004	No visible damage	Normal







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Test Photos:

	
1. Appearance of specimen: DCS V1.1/ S18030001	2. Appearance of specimen: DCS V1.1/ S18030002
	
3. Appearance of specimen: DCS V2.1/ S1803002	4. Appearance of specimen: DCS V2.1/ S1803004
	
5. Thermal Shock Test	6. Thermal Shock Test







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<p>7. Temperature / Humidity Cycling Test</p>	<p>8. Temperature / Humidity Cycling Test</p>
	
<p>9. Location of measuring accelerometer attached (X axis): DCS V1.1/ S18030001</p>	<p>10. Location of measuring accelerometer attached (Y axis): DCS V1.1/ S18030001</p>
	
<p>11. Location of measuring accelerometer attached (X axis): DCS V1.1/ S18030001</p>	<p>12. Vibration Test: X axis DCS V1.1/ S18030001, S18030002</p>


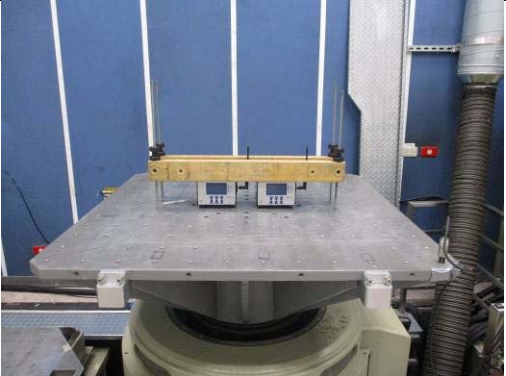




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<p>13. Vibration Test: Y axis DCS V1.1/ S18030001, S18030002</p>	<p>14. Vibration Test: Z axis DCS V1.1/ S18030001, S18030002</p>
	
<p>15. Location of measuring accelerometer attached (X axis): DCS V2.1/ S18030002</p>	<p>16. Location of measuring accelerometer attached (Y axis): DCS V2.1/ S18030002</p>
	
<p>17. Location of measuring accelerometer attached (Z axis): DCS V2.1/ S18030002</p>	<p>18. Vibration Test: X axis DCS V2.1/ S18030002, S18030004</p>

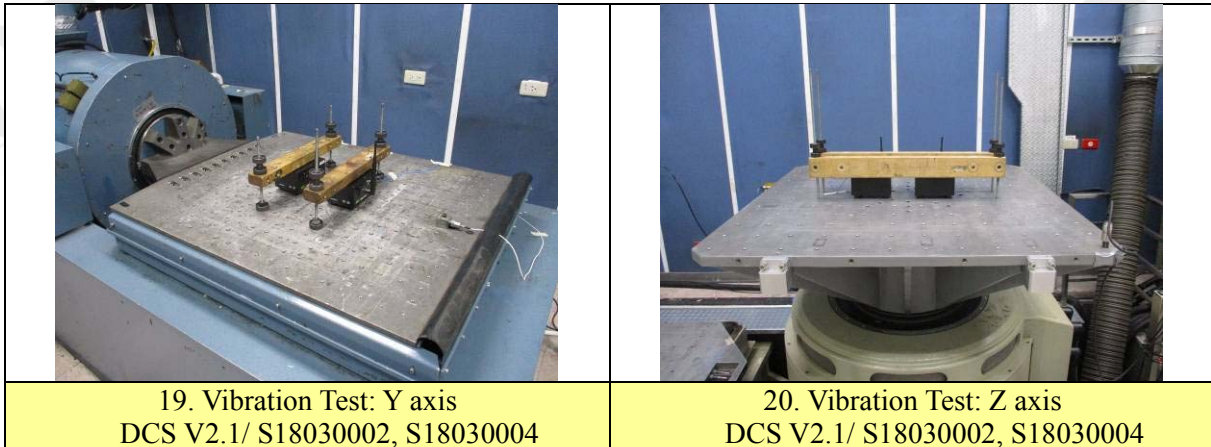
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Test Photos--Continued:



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