NICOMATIC R&D LABORATORY	QUALIFICATION TEST REPORT	QTR18038a
EMM SERIE ACCORDING TO MIL-DTL-83513G STANDARD		Page : 1 /18
		Qualification status : PASSED

MARKING PERFORMANCE

According to MIL-DTL-83513G §3.6 & §4.5.23 & MIL-STD-202G-215K test procedure

ISSUE	MODIFICATION	VISA	DATE
a	Original Issue	AJ	30/06/20
b			
c			

	Name	Duty	Date	Visa
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1 Conclusion

The EMM connectors are **qualified** regarding MARKING PERFORMANCE according to MIL-DTL-83513G standard.

2 Technical Features Proposal

EMM connectors:

3 Connate Reports

4 Information about the tests

4.1 Object

The object of this test is to qualify the EMM connectors regarding Insulation Resistance according to MIL-DTL-83513G standard.

4.2 Reference documents/Qualification Plan

- MDC.P16020.a
- MIL-DTL-83513G
- MIL-STD-202G method 215K

4.3 Tested Products

Designation	Article Reference*	Drawing issue*	Batch / DI*	Quantity
C18892-30 (Female, Straight on PCB, E60 guiding)	C18892-30	na	DI7576	20
C18900-30 (Female Straight on PCB, E50)	C18900-30	na	DI7577	20
C18891-30 (Male, Straight on PCB, E10)	C18891-30	na	DI7579	20
C18904-30 (Male, 90° on PCB, E11 guiding)	C18904-30	na	DI7578	20
C18893-30 (Female, 90° on PCB, E61 guiding)	C18893-30	na	DI7580	20
C18901-30 (Female, 90° on PCB, E51 jackscrew)	C18901-30	na	DI7581	20
C18981-30-0250 (Male, on cable AWG30, E01 jackscrew)	C18981-30-0250	na	DI7592	20
C18980-30-0250 (Male, on cable AWG28, E01 jackscrew)	C18980-30-025	na	DI7591	20
C18902-30-0250 (Male, on cable AWG26, E01 jackscrew)	C18902-30-0250	na	DI7588	20
C18979-30-0250 (Male, on cable AWG24, E01 jackscrew)	C18979-30-0250	na	DI7589	20
C18902-30-0250-BP (Male, on cable AWG26, E01 jackscrew BP)	C18902-30-0250-BP	na	DI7586	20
18224-AWG24	18224-AWG24	na	DI7594	25
18224-AWG26	18224-AWG26	na	DI7596	25
18240-AWG28	18240-AWG28	na	DI7597	25
18240-AWG30	18240-AWG30	na	DI7598	25

4.4 Persons present during the tests

Name	Duty
A.JAGHMIM	Test & Measurement Manager

4.5 Date and place of the tests

NICOMATIC France Lab. from 19/05/18 to 22/05/18

4.6 Environmental conditions

Ambient temperature: 24.3°C
Pressure: 963 mbar
Humidity: 26 % HR

4.7 Incidents during the test

None

4.8 Test Equipments

Designation	Calibration Data	
	Last calibration date	
	Next calibration date	

4.9 Test Tooling

Designation	Tooling reference

5 Requirements

5.1 According to MIL-DTL-83513G standard

Connector marking shall remain permanent and legible when tested as specified in §6 Test Procedure .

5.2 According to MIL-STD-202 method 215 test procedure

After subjection to the test, any specified markings which are missing in whole or in part, faded, smeared, blurred, or shifted (dislodged) to the extent that they cannot be readily identified from a distance of at least 6 inches with normal room lighting without the aid of magnification or with a viewer having a magnification no greater than 3X shall constitute failure.

After subjection to the test, the specimen shall be examined for cracks, separations, crazing, swelling, softening, and degradation of body material, end caps and seals if present, or any other damage or degradation that has occurred due to solvent exposure and which affects the mechanical integrity or reliability shall constitute a failure. The examination shall be made with a viewer having a magnification of 10X maximum.

5.3 Internal Requirement

Connector marking shall remain permanent and legible when tested with VIGON A200 and VIGON N600 with procedure of “solvent c” of §6 Test Procedure (defluxer class of fluid)

6 Test Procedure

6.1 Test Procedure for VIGON A200 and VIGON N600

According to VIGON class of fluid (defluxer), it have to be tested like “solvent c” of MIL-STD-202 method 215K

6.2 Test Procedure according to MIL-STD-202 method 215K

The solvent solutions used in this test shall consist of the following (see table I):

A) Mixture consisting of the following:

1. One part by volume of isopropyl alcohol, American Chemical Society (ACS) reagent grade, or isopropyl alcohol in accordance with TT-I-735, grade A or B, and

2. Three parts by volume of mineral spirits in accordance with MIL-PRF-680, type I, or three parts by volume of a mixture of 80 percent by volume of kerosene and 20 percent by volume ethylbenzene.

B) This solvent has been deleted.

C) A terpene defluxer consisting of a minimum of 90 percent d-limonene and 10 percent surfactant. 1/

D) A mixture consisting of the following:

1. Forty-two parts by volume water, 1 megohm-cm minimum resistivity.

2. One part by volume of propylene glycol monomethyl ether (glycol ether PM, 1-methoxy-propanol).

3. One part by volume of monoethanolamine.

Solvent solutions: safety aspects. Solvent solutions listed in 2.1a through 2.1d exhibit some potential for health and safety hazards. Safety precautions as listed in the appropriate manufacturer’s material safety data sheet shall be observed.

Vessel: the vessel for solvent immersion shall be a container made of non-reactive material and of sufficient size to permit complete immersion of the specimens in the solvent solutions

Brush: the brush shall be a toothbrush with a handle made of a non-reactive material. The brush shall have three or four long rows, 1 and 1/8 ±1/8 inch in length, of hard bristles. Each row shall contain eight to twelve tufts, the free ends of which shall lie substantially in the same plane. The brush shall be used with a single solvent and when there is any evidence of softening, bending, wear, or loss of bristles, it shall be discarded.

The specimens subjected to this test shall be divided into three groups of approximately equal size.

a. The first group shall be exposed to the solution specified in 2.1a.

The solution shall be maintained at a temperature of 25°C ±5°C. The specimens shall be completely immersed for 3 minutes +0.5, -0 minutes in the specified solution contained in the vessel specified in 2.2. Immediately following immersion, each specimen shall be tested as follows: The bristle portion of the brush, specified in 2.3, shall be dipped in the solution until wetted and the specimen shall be brushed with normal hand pressure (approximately 2 to 3 ounce force applied normal to the surface) for ten strokes on the portion of the specimen where marking has been applied. The brush stroke shall be directed in a forward direction across the surface of the specimen being tested. Immediately after brushing, the procedure shall be repeated two more times, for a total of three immersions, followed by brushing. After completion of the third immersion and brushing, the specimens shall be air-blown dry. The specimens shall be inspected in accordance with 4.1 and 4.2 to determine the extent, if any, of deterioration that has occurred.

b. This solvent solution has been deleted.

c. The second group shall be exposed to the solution specified in 2.1c.

The solution shall be maintained at a temperature of 25°C ±5°C. The specimens shall be completely immersed for 3 minutes +0.5, -0 minutes in the specified solution contained in the vessel specified in 2.2. Immediately following immersion, each specimen shall be tested as follows: The bristle portion of the brush, specified in 2.3, shall be dipped in the solution until wetted and the specimen shall be brushed with normal hand pressure (approximately 2 to 3 ounce force applied normal to the surface) for ten strokes on the portion of the specimen where marking has been applied. The brush stroke shall be directed in a forward direction across the surface of the specimen being tested. Immediately after brushing, the procedure shall be repeated two more times, for a total of three immersions, followed by brushing. After completion of the third immersion and brushing, the specimens shall be rinsed in approximately 25°C water and all surfaces air-blown dry. The specimens shall be inspected in accordance with 4.1 and 4.2 to determine the extent, if any, of deterioration that has occurred.

d. The third group shall be exposed to the solution specified in 2.1d

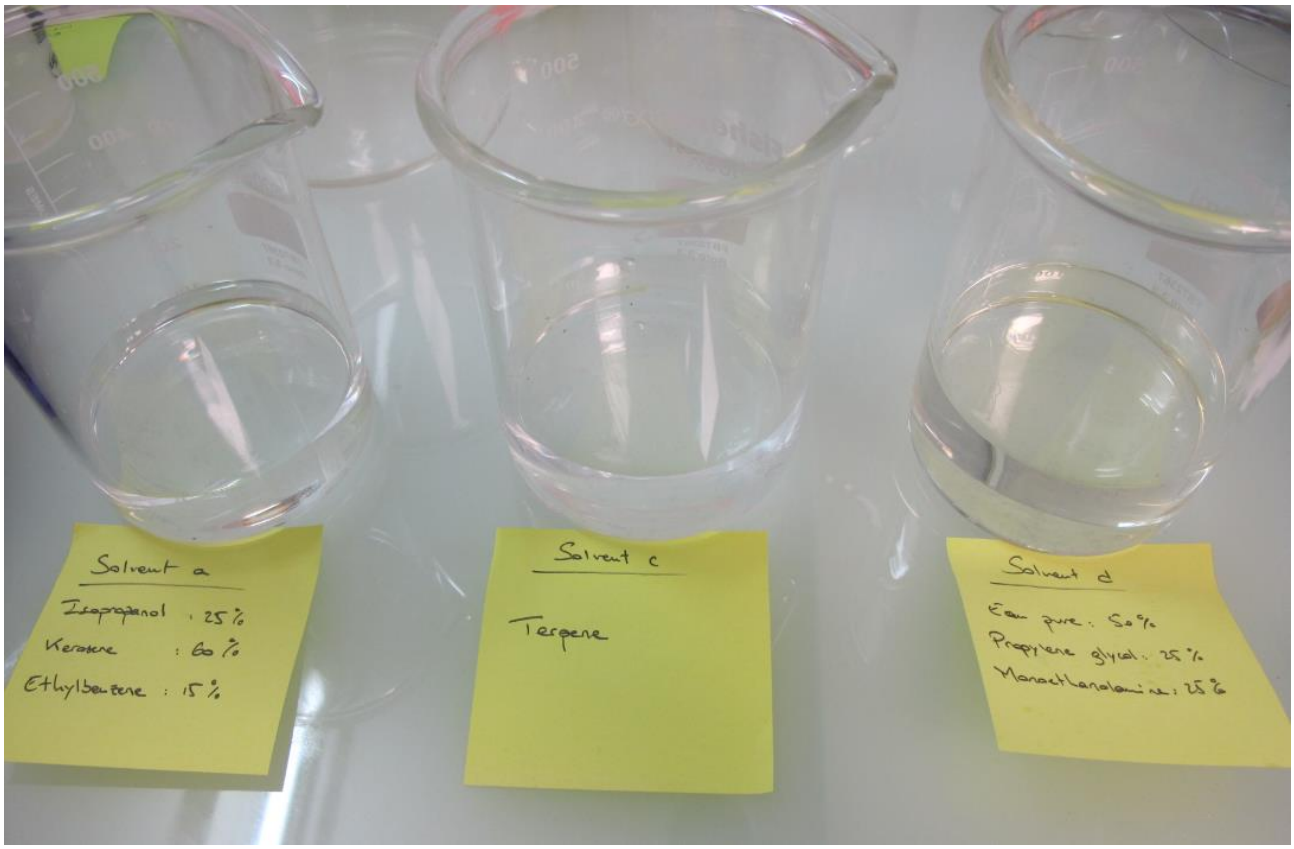
The solution shall be maintained at a temperature of 63°C to 70°C. The specimens shall be completely immersed for 3 minutes +0.5, -0 minutes in the specified solution contained in the vessel specified in 2.2. Immediately following immersion, each specimen shall be tested as follows: The bristle portion of the brush, specified in 2.3, shall be dipped in the solution until wetted and the specimen shall be brushed with normal hand pressure (approximately 2 to 3 ounce force applied normal to the surface) for ten strokes on the portion of the specimen where marking has been applied. The brush stroke shall be directed in a forward direction across the surface of the specimen being tested. Immediately after brushing, the procedure shall be repeated two more times, for a total of three immersions, followed by brushing. After completion of the third immersion and brushing, the specimens shall be rinsed in approximately 25°C water and all surfaces air-blown dry. The specimens shall be inspected in accordance with 4.1 and 4.2 to determine the extent, if any, of deterioration that has occurred.

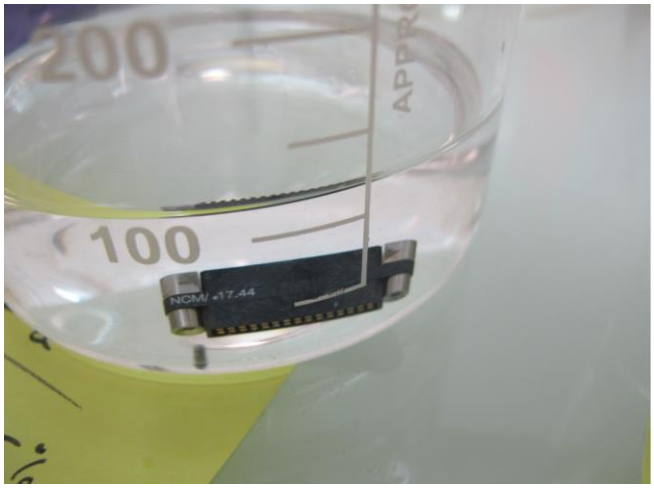
TABLE I. Summary table for resistance to solvents.

Solvent 1	Solvent 2	Solvent 3	Solvent 4
1 part (by volume) of isopropyl alcohol (ACS) reagent grade or TT-I-735, grade A or B and 3 parts (by volume) of mineral spirits per Mil-Prf-680, type I, or three parts (by volume) of a mixture of 80% (by volume) of kerosene and 20% (by volume) ethylbenzene.	This solvent has been deleted.	Terpene defluxer	42 parts (by volume) of water 1 part (by volume) of propylene glycol monomethyl ether 1 part (by volume) of monoethanolamine
Immersion 3 +.5, -0 minutes, 25°C ±5°C		Immersion 3 +.5, -0 minutes, 25°C, ±5°C	Immersion 3 +.5, -0 minutes, 63°C to 70°C
Brush 10 strokes (wet bristle) 2 to 3 oz.		Brush 10 strokes (wet bristle) 2 to 3 oz.	Brush 10 strokes (wet bristle) 2 to 3 oz.
Immersion 3 +.5, -0 minutes, 25°C ±5°C.		Immersion 3 +.5, -0 minutes, 25°C ±5°C.	Immersion 3 +.5, -0 minutes, 63°C to 70°C.
Brush 10 strokes (wet bristle) 2 to 3 oz.		Brush 10 strokes (wet bristle) 2 to 3 oz.	Brush 10 strokes (wet bristle) 2 to 3 oz.
Immersion 3 +.5, -0 minutes, 25°C ±5°C.		Immersion 3 +.5, -0 minutes, 25°C ±5°C.	Immersion 3 +.5, -0 minutes, 63°C to 70°C.
Brush 10 strokes (wet bristle) 2 to 3 oz.		Brush 10 strokes (wet bristle) 2 to 3 oz.	Brush 10 strokes (wet bristle) 2 to 3 oz.
		Rinse in water	Rinse in water.
Air blow dry.		Air blow dry	Air blow dry.
Inspect at 3X maximum for marking. Inspect at 10X maximum for part damage.		Inspect at 3X maximum for marking. Inspect at 10X maximum for part damage.	Inspect at 3X maximum for marking. Inspect at 10X maximum for part damage.

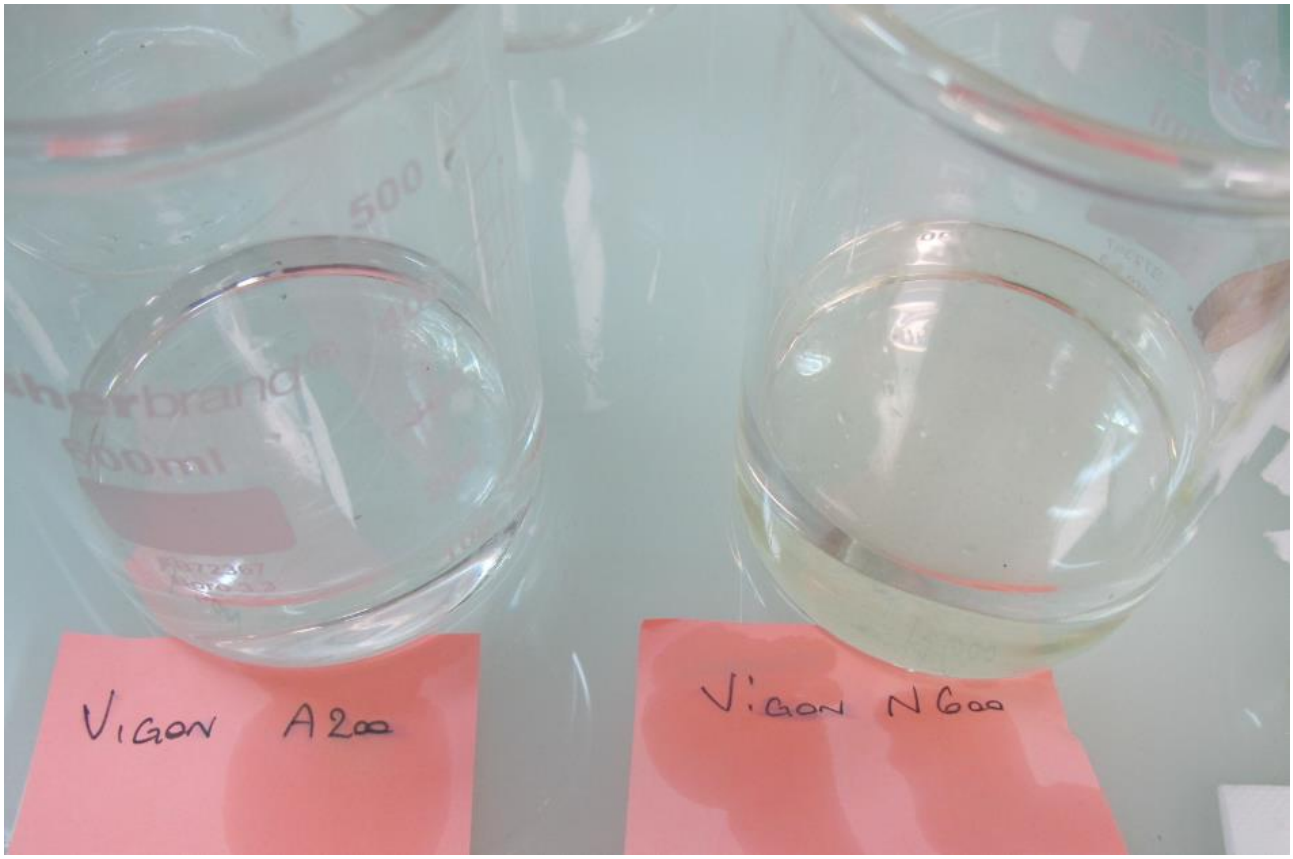
7 Test setup

7.1 MIL-STD-202g method 215K test setup





7.2 VIGON A200 and N600 test setup





8 Measurements results

8.1 VIGON A200 and N600 Measurements results

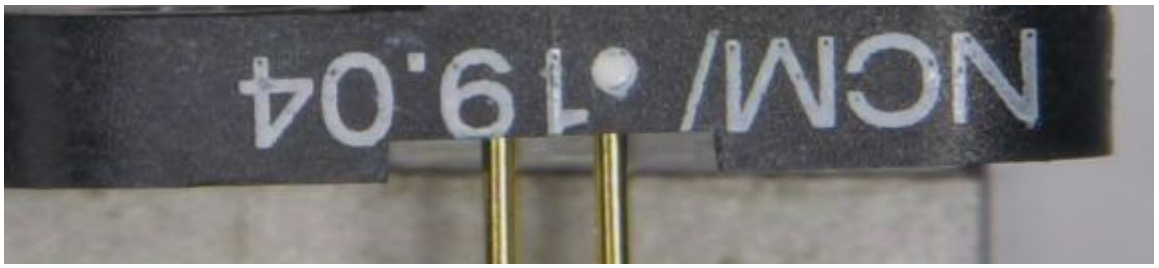
Marking **OK** after exposure

After Being exposed to VIGON A200





Initial



After exposure

After Being exposed to VIGON N600





Initial

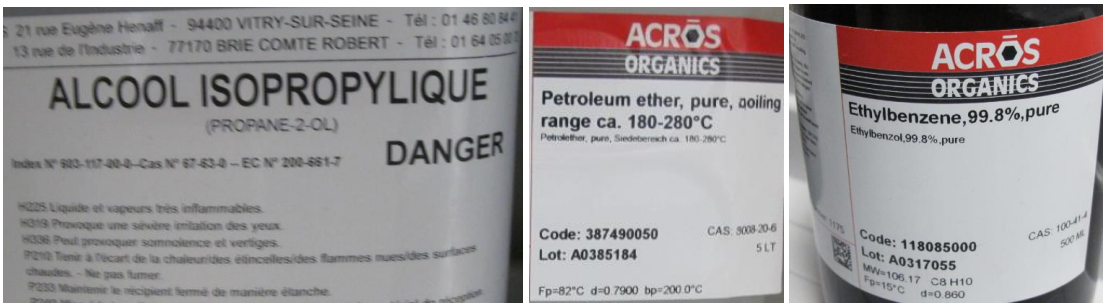


After exposure

8.2 MIL-STD-202g method 215K Measurements results

8.2.1 Solvent 1

- Fluids used
- Isopropyl alcohol : 12.5 mL of Isopropyl
- Kerosene : 30 mL of Petroleum ether
- Ethylbenzene : 7.5 mL of Ethylbenzene





Initial

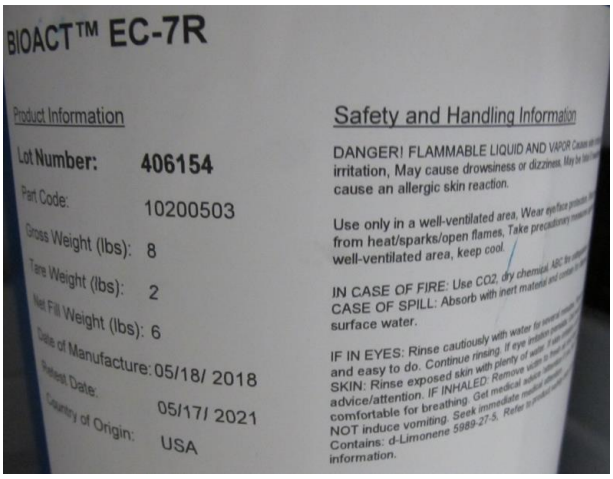


After exposure

8.2.2 Solvent 3

- Fluids used

- BIOACT EC-7R





Initial



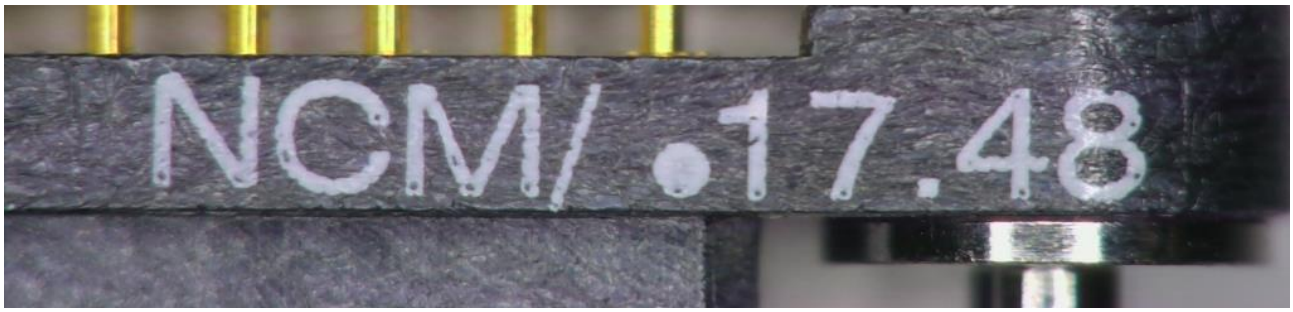
After Exposure

8.2.3 Solvent 4

- Fluids used

- Water : 47.6 mL of Water
- 1-methoxy-2-propanol : 1.2 mL of 1-methoxy-2-propanol
- Ethanolamine : 1.2 mL of Ethanolamine





Initial



After Exposure

9 Visual Inspection

Required by the applicable standard ?			
YES		NO	☐

**********END OF REPORT**********

10 APPENDIX

Internal use only ?			
YES	☒	NO	☐

10.1 The Laboratory Advice

10.2 Pictures

**********END OF APPENDIX**********