Mil-OScreen®
TECHNICAL AND ENVIRONMENTAL SPECIFICATION
Rev 4.0, May 29 2019

1- Purpose

The purpose of this specification is to define the various environmental tests to be applied to Mil-OScreen® interconnection products developed by Agilink Ivry in order to validate their technical performance.

2- Product description

Mil-OScreen® is a concept ensuring the interconnection of a shielded cable to a MIL-STD connector by providing both a mechanical link and a 360° shielding recovery. Mil-OScreen® offers a specific assembly with an overmolded finish to achieve a cable + connector link that is dimensionally repeatable, mechanically reinforced and waterproof (Patent FR N° 1751798, PAT2524577).

3- Requirements

3.1 Applicable documents

Testing are carried out according to the tests that are described in this document with reference to standards whose index of revision is also specified.

3.2 List of applicable tests and verifications

- Visuel aspect (Paragraph 3-3-1)
- Thermal shocks (Paragraph 3-3-2)
- Aging (Paragraph 3-3-3)
- Vibrations (Paragraph 3-3-4)
- Mechanical shocks (Paragraph 3-3-5)
- DC resistance (Paragraph 3-3-6)
- Shielding effectiveness (Paragraph 3-3-7)
- Sealing (Paragraph 3-3-8 & 3-3-9)
- Salt spray (Paragraph 3-3-10)
- Insulation resistance (Paragraph 3-3-11)

AGILINK IVRY - 1 place Costes et Bellonte – 92 270 Bois-Colombes
www.agilink-group.com
S.A. au capital de 37000 Euro – R.C. - Nanterre – SIREN 481 316 586 – TVA FR 10 481 316 586

3-3 Tests and vérifications

3.3.1 Visual aspect
The finished product must comply with Mil-OScreen® Agilink Ivry drawings. No visible deformations or cracks on the overmolding.

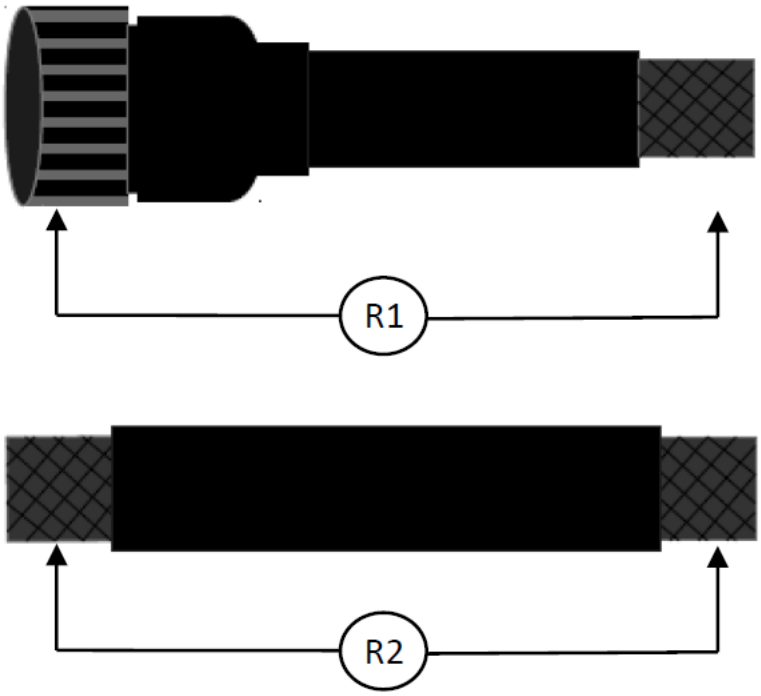
3.3.2 Thermal shocks
Test according to MIL-STD-810G, Method 503.5
3 cycles done as following :
Place the parts in an oven at -40°C for 3 hours and then at +105°C for 3 hours. The transfer time between both is 15s max.
After testing the products must comply with requirements 3.3.1 and 3.3.6.

3.3.3 Aging
Test according to EN60068-2-2
Place the parts in an oven at +105°C for 1000 hours.
After testing the products must comply with requirements 3.3.1 and 3.3.6.

3.3.4 Vibrations
Test according to EN 60068-2-6
Test comprising for each axis, 3 hours of endurance in sinusoidal vibrations with the following levels :
Constant displacement : 9.3mm peak from 5 to 20Hz
Constant acceleration: 15g from 20 to 80Hz
Constant acceleration: 5g from 80 to 2000Hz
After testing the products must comply with requirements 3.3.1 and 3.3.6.

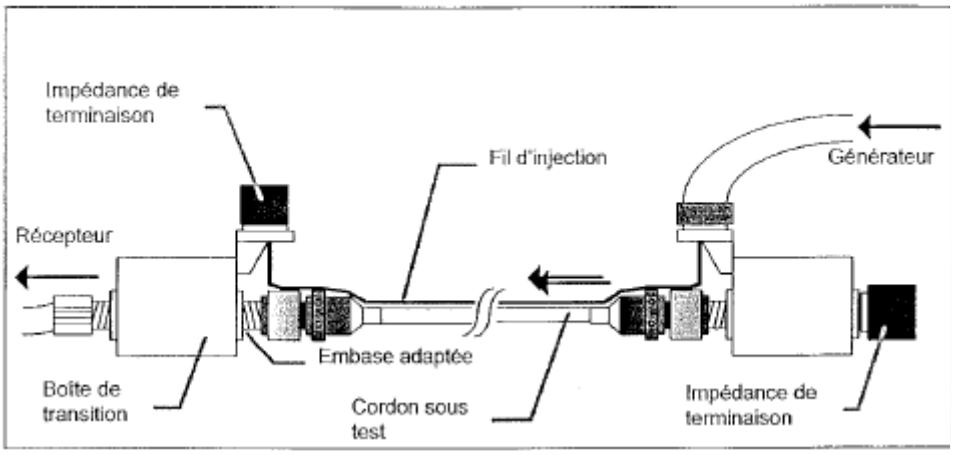
3.3.5 Mechanical shocks
Test according to MIL-STD-810G, Method 516.6 Procedure I
Test comprising for each direction, 10 half-sinus shocks of amplitude 40g and duration 11ms
After testing the products must comply with requirements 3.3.1 and 3.3.6.

3.3.6 DC resistance
Test according to MIL-STD-3004-1 or equivalent (4 wires) :
Voltage test : 5V
Current test : 1A
R1 = Cable + backshell + connector
R2 = Cable
RC = R1 – R2
Requirements :
RC = 2.5 mΩ maxi before test
RC = 5 mΩ maxi after test



3.3.7 Shielding effectiveness

Triaxial method according to VG95373-Part 41 or IEC 60512-23-3
Use of a single braid Agilink cable part number SH 8313.
Requirement : Zt > 60dB at 100MHz



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3.3.8 Runoff sealing

Test : Water runoff under 0.5 Bar pressure, flow rate of 10 liters per minute, exposure time 20mn
After testing the products must comply with requirements 3.3.1 and 3.3.11.

3.3.9 Immersion sealing (IP67)

Test according to IEC60529
Test : Dip the samples under 1 meter of water, exposure time 30 minutes
After testing the products must comply with requirements 3.3.1 and 3.3.11.

3.3.10 Salt spray

Test according to MIL-STD-810G, Method 509.5
Test consisting of 2 cycles as described below:

- 24 hours @+35°C in saline solution with mass concentration of 5% NaCl, Ph between 6.5 & 7.2.
- 24 hours at room temperature

Total exposure time 48 hours.
After testing the products must comply with requirements 3.3.1 and 3.3.6.

3.3.11 Insulation resistance

Test according to IEC-364-21
Voltage = 500 Volts DC
hysteresis time = 500ms
After testing, insulation resustance must be at 200 MΩ mini between conductors and between conductors and braid.

3.3.12 Sampling

The batches of products to be tested must be representative of the complete family, for this we have established the following list of sizes to be tested :

- D38999 Series III and IV (most used).
- Size 15 (intermediate).
- Three samples (two straight versions and one right angle version) will be tested in each of the Groups for a total of 21 samples.

The samples are made with a Halogen-free Agilink cable reference SH8313 (4 pairs shielded AWG24 + general braid with covering rate of 90% + Halogen-free sheath with outer diameter of 10mm).
The cords have a total length of one meter.

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4- Tests sequences

The products are tested and qualified according to the set of technical performances described in this document through the following seven test groups:

Group 1
DC resistance 3.3.6
Vibrations 3.3.4
Visual aspect 3.3.1
DC resistance 3.3.6

Group 2
DC resistance 3.3.6
Mechanical shocks 3.3.5
Visual aspect 3.3.1
DC resistance 3.3.6

Group 3
DC resistance 3.3.6
Aging 3.3.3
Visual aspect 3.3.1
DC resistance 3.3.6

Group 4
DC resistance 3.3.6
Thermal shocks 3.3.2
Visual aspect 3.3.1
DC resistance 3.3.6

Group 5
Shielding effectiveness 3.3.7

Group 6
Insulation resistance 3.3.11
Runoff sealing 3.3.8
Insulation resistance 3.3.11
Immersion sealing 3.3.9
Visual aspect 3.3.1
Insulation resistance 3.3.11

Group 7
DC resistance 3.3.6
Salt spray 3.3.10
Visual aspect 3.3.1
DC resistance 3.3.6