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Customer test report on OCM8 modules

This test report details the results of mechanical and environmental tests carried out on OCM8 modules.

Testing is done according to:
RUD 5520 A: Technical Specifications for OCM modules– Dated September 2017.

An overview table gives summarized results. Detailed test results and sample descriptions are described further in this document.

Conclusions
All performed tests were done according to the previously mentioned specifications and were completed with positive results.

Content

1 Test results overview

Detailed results are given further in section 2

Test description	Optical tests	Results
Fiber / cable retention	41 ports	Pass
Torsion	24 ports	Pass
Vibration	5 ports	Pass
Shock 1	5 ports	Pass
Shock 2	108 ports	Pass
Temperature cycling in air	26 ports	Pass

2 Detailed test results

2.1 Fiber/cable retention

General

Product	OCM8 module
Test date	April 2016
Test method followed	RUD 5520 A – IEC 61300-2-4
Requirements	Transient loss after test: ΔIL ≤ 0.2 dB (1550 nm) Transient loss after test: ΔIL ≤ 0.5 dB (1625 nm)

Conditions

Force	70N ± 10N per reinforced cable
Rate	0-full load in 15 sec.
Point of application	250 mm ± 50 mm from device
Duration	1 minute
Wavelength	1550 nm & 1625 nm

Results

Sample	Optical measured ports	Results
Small Butt version 1 x 8	5 output ports & 1 input port	Pass
Medium Butt version 1 x 16	16 output ports & 1 input port	Pass
Medium Butt version 2 x 16	8 output ports & 2 input port	Pass
Large Inline version 1 x 64	8 output ports	Pass

2.2 Torsion

General

Product	OCM8 module
Test date	April 2016
Test method followed	RUD 5520 A - IEC 61300-2-5
Requirements	Transient loss after test: ΔIL ≤ 0.2 dB (1550 nm) Transient loss after test: ΔIL ≤ 0.5 dB (1625 nm)

Conditions

Force	15N ± 1.5N per reinforced cable
Duration	5 seconds in each extreme position
Point of application	250 mm ± 50 mm from device
Torsion	+180° / -180°
Cycles	25
Wavelength	1550 nm & 1625 nm

Results

Sample	Optical measured ports	Results
Small Butt version 1 x 8	4 output ports	Pass
Medium Butt version 1 x 16	4 output ports	Pass
Medium Butt version 2 x 16	7 output ports & 1 input port	Pass
Large Inline version 1 x 64	8 output ports	Pass

2.3 Vibration

General

Product	OCM8 module
Test date	April 2016
Test method followed	RUD 5520 A – IEC 61300-2-1
Requirements	Transient loss during test: ΔIL ≤ 0.5 dB (1550 nm) Transient loss during test: ΔIL ≤ 1.0 dB (1625 nm)

Conditions

Sweep range	10-500 Hz at 1 octave/minute
Crossover frequency	41 Hz
- below 41 Hz	Amplitude 0.75 mm
- above 41 Hz	50 m/s^2 (~ 5 g)
Axes	3 mutually perpendicular
Duration	10 cycles / axis
Wavelength	1550 nm & 1625 nm

Results

Sample	Optical measured ports	Results
Small Butt version 1 x 8	1 output port	Pass
Small Butt version 2 x 4	2 output ports	Pass
Medium Butt version 1 x 32	1 output port	Pass
Large Inline version 1 x 64	1 output port	Pass

2.4 Shock 1

General

Product	OCM8 module
Test date	April 2016
Test method followed	RUD 5520 A – IEC 61300-2-9
Requirements	Transient loss during test: ΔIL ≤ 0.5 dB (1550 nm) Transient loss during test: ΔIL ≤ 1.0 dB (1625 nm)

Conditions

Severity	15 g (150 m/s^2)
Duration	11 milliseconds
Wave form	Half sine
Number of shocks	3 up & 3 down
Axes	3 mutually perpendicular
Wavelength	1550 nm & 1625 nm

Results

Sample	Optical measured ports	Results
Small Butt version 1 x 8	1 output port	Pass
Small Butt version 2 x 4	2 output ports	Pass
Medium Butt version 1 x 32	1 output port	Pass
Large Inline version 1 x 64	1 output port	Pass

2.5 Shock 2

General

Product	OCM8 module
Test date	April 2016
Test method followed	RUD 5520 A – IEC 61300-2-9
Requirements	Change in attenuation after test: ΔIL ≤ 0.5 dB

Conditions

Severity	500 g & 200 g
Duration	1 milliseconds
Wave form	Half sine
Number of shocks	2 per axis per direction
Axes	3 mutually perpendicular in 2 directions
Wavelength	1310 nm, 1550 nm & 1625 nm

Results

Sample	Optical measured ports	Results
Small Butt version 1 x 4	4 ports	Pass
Small Butt version 2 x 4	8 ports	Pass
Medium Butt version 1 x 32	32 ports	Pass
Large Inline version 1 x 64	64 ports	Pass

2.6 Temperature cycling in air

General

Product	OCM8 module
Test date	April 2016
Test method followed	RUD 5520 A – IEC 61300-2-22
Requirements	Change in attenuation during and after test: ΔIL ≤ 0.5 dB

Conditions

Temperature range	(-40 ± 2)°C to (+70 ± 2)°C
Dwell / Transition time	2 hrs / 2 hrs
Number of cycles	12
Wavelength	1310 nm, 1550 nm and 1625 nm

Results

Sample	Optical measured ports	Results
Small Butt version 1 x 4	2 output ports	Pass
Medium Butt version 1 x 16	16 output ports	Pass
Large Butt version 1 x 64	8 output ports	Pass

3 Test Sample description

OCM8 module assembly for PLC splitters – Grade P.

'Butt' versions of Small-Medium-Large (all pigtails at front side)
'Inline' version of Large (input connector at back side)

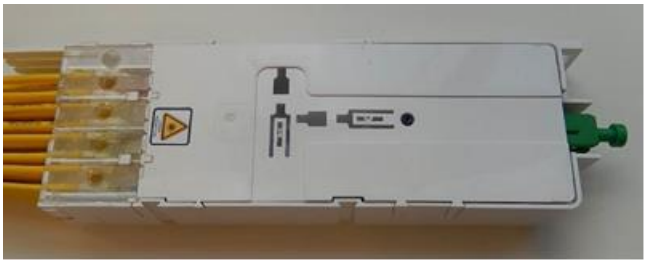
10 samples assembled and connectorized with SC/APC 8° grade C

Cable lengths 1, 2 or 4 m (with furcation cable diameter 1.8mm)

Dimensions: Small 5x45x100mm / Medium 10x45x100mm / Large 20x45x130mm
Large inline 20x45x138mm

SMALL 1x4 BUTT	Cable length1m
SMALL 1x4 BUTT	Cable length 4m
SMALL 1x8 BUTT	Cable length 4m
SMALL 2x4 BUTT	Cable length 2m
MEDIUM 1x16 BUTT	Cable length 1m
MEDIUM 1x16 BUTT	Cable length 4m
MEDIUM 1x32 BUTT	Cable length 4m
MEDIUM 2x16 BUTT	Cable length 2m
LARGE 1x64 BUTT	Cable length 4m
LARGE 1x64 INLINE	Cable length 1m

Example of Small Butt 1 x 4



Example Large Inline 1 x 64

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