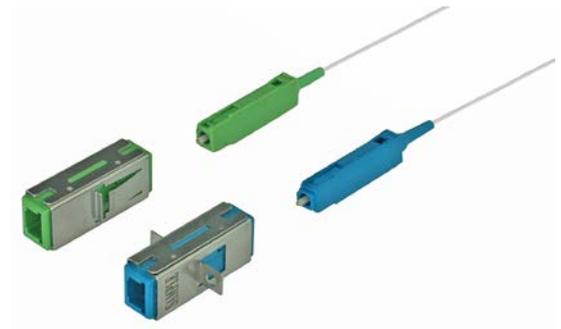


DIAMOND
Test & Calibration Laboratory STS 333 / SCS 101

Product Specification Qualification Test Report



MU PC/APC SM

Index

Measurement / test	Method	Page	Edition ¹⁾	Requalified ²⁾	Similarity ³⁾
Insertion loss (APC / cable)	IEC 61300-3-4	1	07.'03	-	-
Insertion loss (APC / fibre)	IEC 61300-3-4	2	07.'03	-	-
Insertion loss (PC / cable)	IEC 61300-3-4	3	07.'03	-	-
Insertion loss, random mated (APC / cable)	IEC 61300-3-34	4	07.'03	-	-
Insertion loss, random mated (APC / fibre)	IEC 61300-3-34	5	07.'03	-	-
Insertion loss, random mated (PC / cable)	IEC 61300-3-34	6	07.'03	-	-
Return loss (APC / cable)	IEC 61300-3-6	7	07.'03	-	-
Return loss (APC / fibre)	IEC 61300-3-6	8	07.'03	-	-
Return loss (PC / cable)	IEC 61300-3-6	9	07.'03	-	-
Mating durability (APC / cable)	IEC 61300-2-2	10	07.'03	-	-
Mating durability (PC / cable)	IEC 61300-2-2	11	07.'03	-	-
Change of temperature (APC / cable)	IEC 61300-2-22	12	07.'03	-	-
Change of temperature (APC / fibre)	IEC 61300-2-22	13	07.'03	-	-
Change of temperature (PC / cable)	IEC 61300-2-22	14	07.'03	-	-
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Cold (APC / fibre)	IEC 61300-2-17	16	07.'03	-	-
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Dry heat (APC / cable)	IEC 61300-2-18	18	07.'03	-	-
Dry heat (APC / fibre)	IEC 61300-2-18	19	07.'03	-	-
Dry heat (PC / cable)	IEC 61300-2-18	20	07.'03	-	-
Damp heat (APC / cable)	IEC 61300-2-19	21	07.'03	-	-
Damp heat (APC / fibre)	IEC 61300-2-19	22	07.'03	-	-
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Damp heat, cyclic (APC / cable)	IEC 61300-2-46	24	07.'03	-	-
Damp heat, cyclic (APC / fibre)	IEC 61300-2-46	25	07.'03	-	-
Damp heat, cyclic (PC / cable)	IEC 61300-2-46	26	07.'03	-	-
Cable retention (PC)	IEC 61300-2-4	27	07.'03	-	-
Fibre retention (APC)	IEC 61300-2-4	28	07.'03	-	-
Tensile strength of coupling mechanism (APC / cable)	IEC 61300-2-6	29	07.'03	-	-
Impact (APC / cable)	IEC 61300-2-12	30	07.'03	-	-
Impact (APC / fibre)	IEC 61300-2-12	31	07.'03	-	-
Bending moment (APC / cable)	IEC 61300-2-7	32	07.'03	-	-
Bending moment (PC / cable)	IEC 61300-2-7	33	07.'03	-	-

Measurement / test	Method	Page	Edition ¹⁾	Requalified ²⁾	Similarity ³⁾
Vibration, sinusoidal (APC / cable)	IEC 61300-2-1	34	07.'03	-	-
Vibration, sinusoidal (PC / cable)	IEC 61300-2-1	35	07.'03	-	-
Cable torsion (PC)	IEC 61300-2-5	36	07.'03	-	-
Static side load (PC / cable)	IEC 61300-2-42	37	07.'03	-	-

1) Edition: This column states the date of the Qualification;

2) Requalified: This column states the date of the Requalification;

3) Similarity: This column lists the product for which similarity principle has been applied.

The present Qualification Test Report (QTR) summarizes the qualification measurements and tests performed to verify the design and the optical, mechanical and environmental performance of the MU simplex SM PC/APC connector at the accredited test & calibration laboratory STS 333 / SCS 101 at Diamond SA, Losone. This current QTR is a summary of the internal qualification report no. 689 performed at the test & calibration laboratory STS 333 / SCS 101 (www.sas.ch).

The qualification test program of the MU simplex SM PC/APC connector is determined under the guideline of IEC 61753-2-1, which defines the minimum requirements and severities which a single-mode connector must satisfy in order to be considered as meeting category U (uncontrolled environment) of IEC 61753-1.

The qualified product is subject to periodic requalification with the purpose of guaranteeing the product compliance to the specifications measured in the present report over the years.

For requalification purposes the principle of similarity is applied, where the qualification data of similar products can be used if they meet the same technology platform and are manufactured using the same process.

For additional information, please contact Diamond or your Diamond Sales Representative.

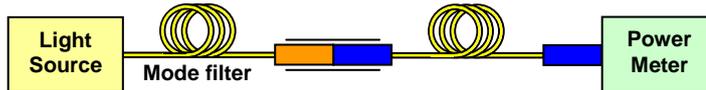
Insertion loss

Methods: Method B according to IEC 61300-3-4

a) Reference measurement:



b) DUT measurement:



Requirements: $IL_{Max} \leq 0.40$ dB

Samples:

- DUT: 20 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Reference connectors: 3 Diamond MU APC SM connectors
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 120

Results:

Statistics	Insertion loss IL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.12	0.13
Standard deviation	0.07	0.07
97% value	0.32	0.28
Maximum value	0.34	0.35
Minimum value	0.01	0.01

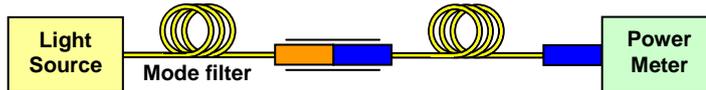
Insertion loss

Methods: Method B according to IEC 61300-3-4

a) Reference measurement:



b) DUT measurement:



Requirements: $IL_{Max} \leq 0.40$ dB

Samples:

- DUT: 20 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μ m, Diamond art. no. 1005155
- Reference connectors: 3 Diamond MU APC SM connectors
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 120

Results:

Statistics	Insertion loss IL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.12	0.14
Standard deviation	0.06	0.06
97% value	0.24	0.26
Maximum value	0.38	0.33
Minimum value	0.01	0.01

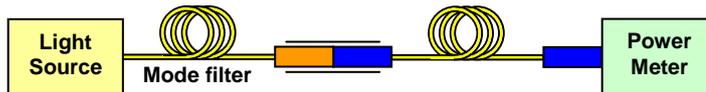
Insertion loss

Methods: Method B according to IEC 61300-3-4

a) Reference measurement:



b) DUT measurement:



Requirements: $IL_{Max} \leq 0.40$ dB

Samples:

- DUT: 20 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Reference connectors: 3 Diamond MU PC SM connectors
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 120

Results:

Statistics	Insertion loss IL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.19	0.15
Standard deviation	0.09	0.07
97% value	0.38	0.31
Maximum value	0.40	0.38
Minimum value	0.02	0.01

Insertion loss, random mated

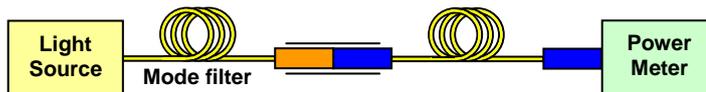
Methods:

- Insertion loss measurement method B according to IEC 61300-3-4
- Random mating method 1 according to IEC 61300-3-34

a) Reference measurement:



b) DUT measurement:



Requirements:

- Grade C
- IL_{Mean} d 0.25 dB
- IL_{97%} d 0.50 dB

Samples:

- DUT: 10 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 90

Results:

Statistics	Insertion loss IL, random mated [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.23	0.20
Standard deviation	0.10	0.10
97% value	0.45	0.38
Maximum value	0.47	0.49
Minimum value	0.01	0.01

Insertion loss, random mated

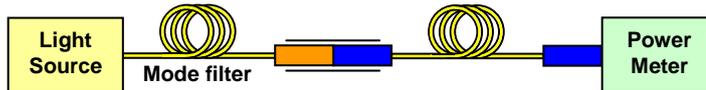
Methods:

- Insertion loss measurement method B according to IEC 61300-3-4
- Random mating method 1 according to IEC 61300-3-34

a) Reference measurement:



b) DUT measurement:



Requirements:

- Grade C
- IL_{Mean} d 0.25 dB
- IL_{97%} d 0.50 dB

Samples:

- DUT: 10 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm, Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 90

Results:

Statistics	Insertion loss IL, random mated [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.17	0.15
Standard deviation	0.11	0.07
97% value	0.42	0.33
Maximum value	0.46	0.34
Minimum value	0.01	0.03

Insertion loss, random mated

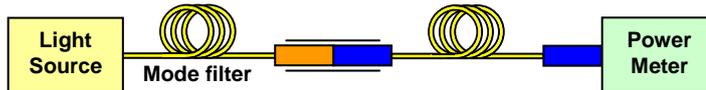
Methods:

- Insertion loss measurement method B according to IEC 61300-3-4
- Random mating method 1 according to IEC 61300-3-34

a) Reference measurement:



b) DUT measurement:



Requirements:

- Grade C
- IL_{Mean} d 0.25 dB
- IL_{97%} d 0.50 dB

Samples:

- DUT: 10 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μm, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

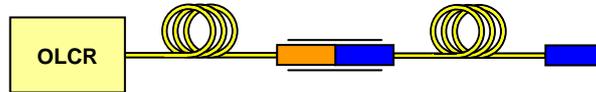
- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 90

Results:

Statistics	Insertion loss IL, random mated [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.19	0.16
Standard deviation	0.10	0.09
97% value	0.51	0.45
Maximum value	0.56	0.53
Minimum value	0.04	0.01

Return loss

Methods: OLCR method according to IEC 61300-3-6



Requirements: $RL_{Min} \geq 70$ dB

Samples:

- DUT: 20 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Reference connectors: 1 Diamond MU APC SM connector
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 40

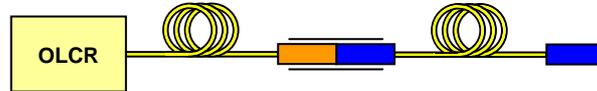
Results:

Statistics	Return loss RL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	-	-
Standard deviation	-	-
Maximum value	-	-
Minimum value	> 80 ¹⁾	> 80 ¹⁾

1) All measured values are beyond the dynamic range of the used instrument.

Return loss

Methods: OLCR method according to IEC 61300-3-6



Requirements: $RL_{Min} \geq 70$ dB

Samples:

- DUT: 20 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μ m, Diamond art. no. 1005155
- Reference connectors: 1 Diamond MU APC SM connector
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 40

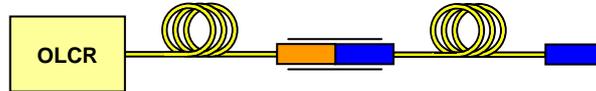
Results:

Statistics	Return loss RL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	-	-
Standard deviation	-	-
Maximum value	-	-
Minimum value	> 80 ¹⁾	> 80 ¹⁾

1) All measured values are beyond the dynamic range of the used instrument.

Return loss

Methods: OLCR method according to IEC 61300-3-6



Requirements: $RL_{Min} \geq 45$ dB

Samples:

- DUT: 20 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Reference connectors: 1 Diamond MU PC SM connectors
- Mating adapters: Diamond MU SM

Parameters:

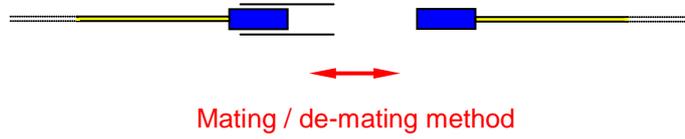
- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 40

Results:

Statistics	Return loss RL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	54.1	51.2
Standard deviation	3.6	3.2
Maximum value	62.0	60.1
Minimum value	46.1	48.7

Mating durability

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Mating durability test according to IEC 61300-2-2



Requirements: ΔIL_{Max} d 0.20 dB during test

- Samples:**
- DUT: 2 SM cable patch cords terminated with Diamond MU APC SM connectors
 - Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
 - Mating adapters: Diamond MU SM

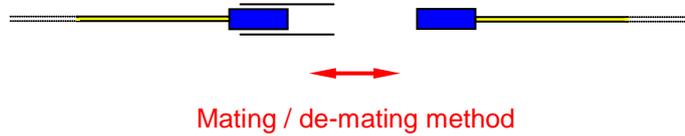
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
 - Monitored channels: 1
 - Mating / de-mating cycles: 500

Results:

Sample no.	Insertion loss IL [dB]				Variation of insertion loss ΔIL [dB]	
	maximum value		minimum value		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.28	0.27	0.15	0.16	0.13	0.11

Mating durability

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Mating durability test according to IEC 61300-2-2



Requirements: ΔIL_{Max} d 0.20 dB during test

- Samples:**
- DUT: 2 SM cable patch cords terminated with Diamond MU PC SM connectors
 - Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
 - Mating adapters: Diamond MU SM

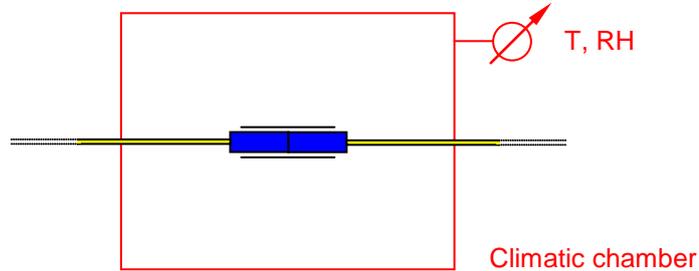
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
 - Monitored channels: 1
 - Mating / de-mating cycles: 500

Results:

Sample no.	Insertion loss IL [dB]				Variation of insertion loss ΔIL [dB]	
	maximum value		minimum value		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.12	0.14	0.06	0.07	0.06	0.07

Change of temperature

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Change of temperature test according to IEC 61300-2-22



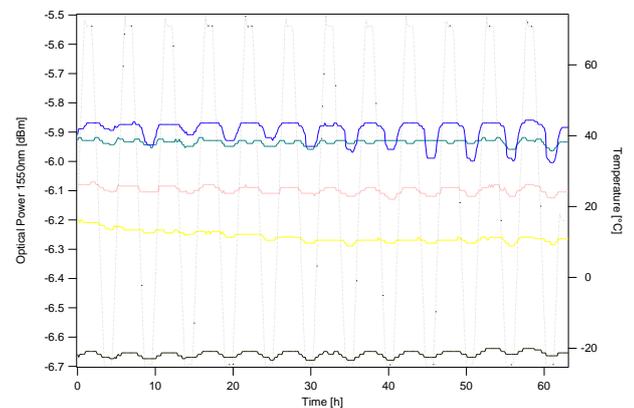
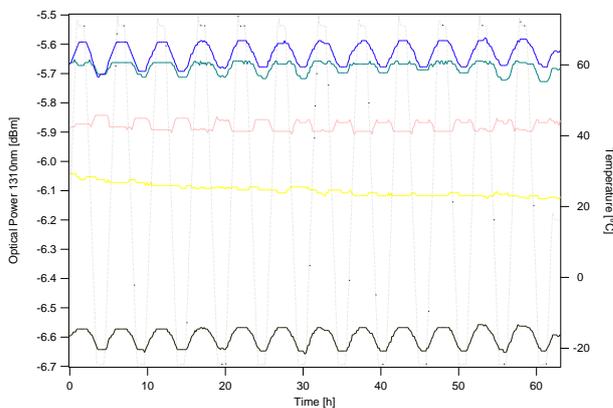
Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

- Samples:**
- DUT: 10 SM cable patch cords terminated with Diamond MU APC SM connectors
 - Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
 - Mating adapters: Diamond MU SM

- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
 - Monitored channels: 5
 - Upper cycling temperature: +70°C
 - Lower cycling temperature: -25°C
 - Relative humidity: Not controlled
 - Dwell time at extreme temperatures: 1 h
 - Variation of temperature at slopes: 1°C/min
 - Number of cycles: 12
 - Duration: 62 h

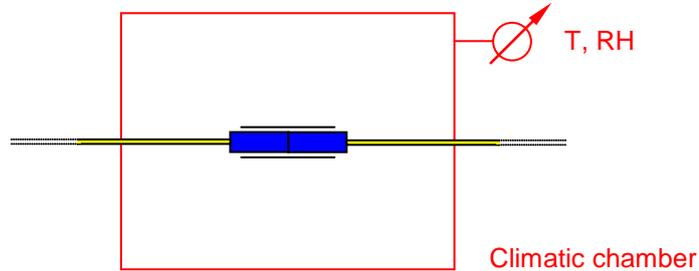
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.13	0.14
Minimum value	0.07	0.06



Change of temperature

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Change of temperature test according to IEC 61300-2-22



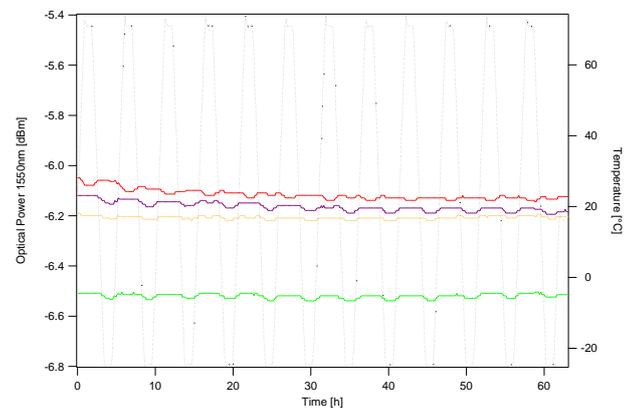
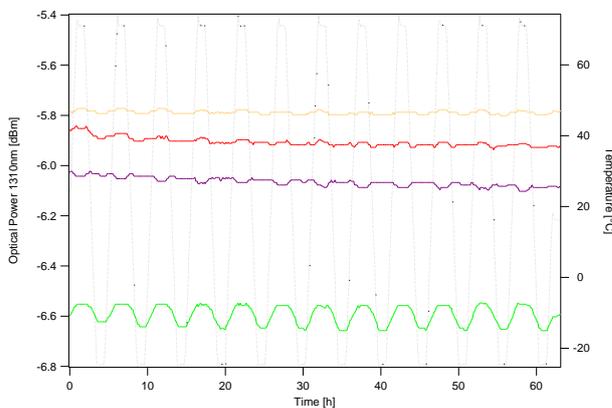
Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

- Samples:**
- DUT: 8 SM fibre patch cords terminated with Diamond MU APC SM connectors
 - Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
 - Mating adapters: Diamond MU SM

- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
 - Monitored channels: 4
 - Upper cycling temperature: +70°C
 - Lower cycling temperature: -25°C
 - Relative humidity: Not controlled
 - Dwell time at extreme temperatures: 1 h
 - Variation of temperature at slopes: 1°C/min
 - Number of cycles: 12
 - Duration: 62 h

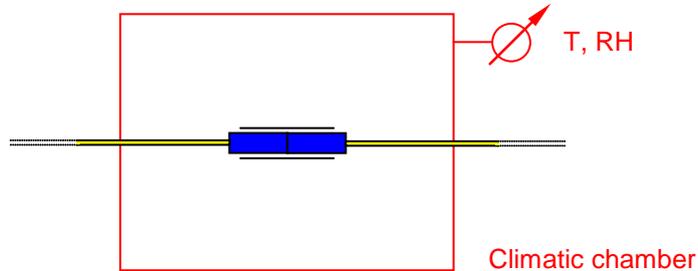
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.11	0.10
Minimum value	0.03	0.03



Change of temperature

- Methods:**
- Insertion loss measurement method C according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Change of temperature test according to IEC 61300-2-22



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

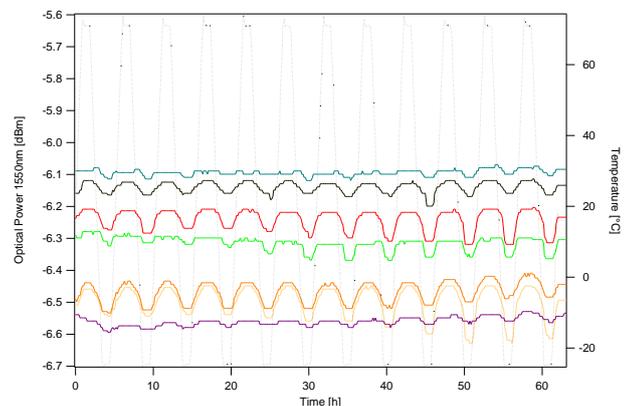
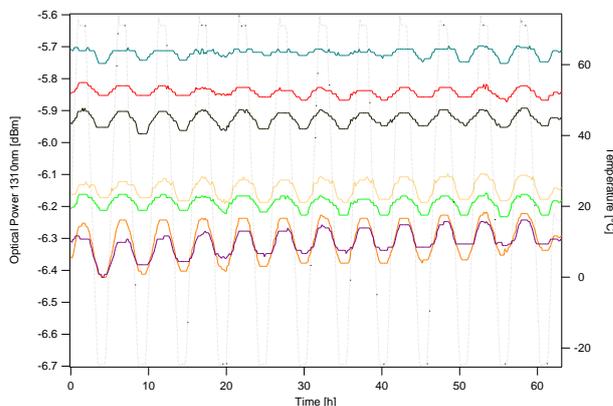
- DUT: 14 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 7
- Upper cycling temperature: +70°C
- Lower cycling temperature: -25°C
- Relative humidity: Not controlled
- Dwell time at extreme temperatures: 1 h
- Variation of temperature at slopes: 1°C/min
- Number of cycles: 12
- Duration: 62 h

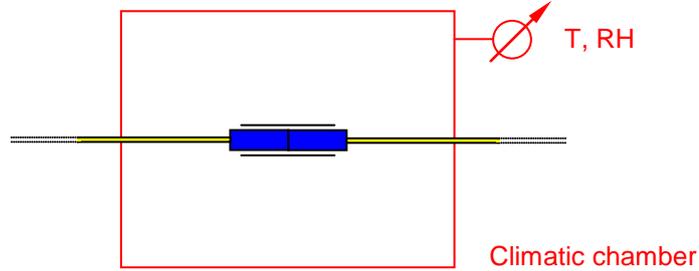
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.21	0.18
Minimum value	0.06	0.05



Cold

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Cold test according to IEC 61300-2-17



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

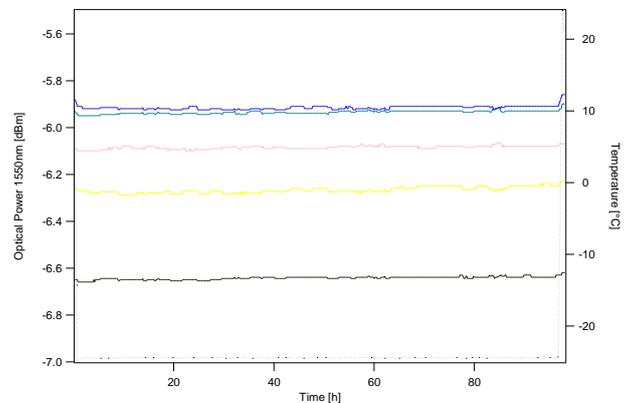
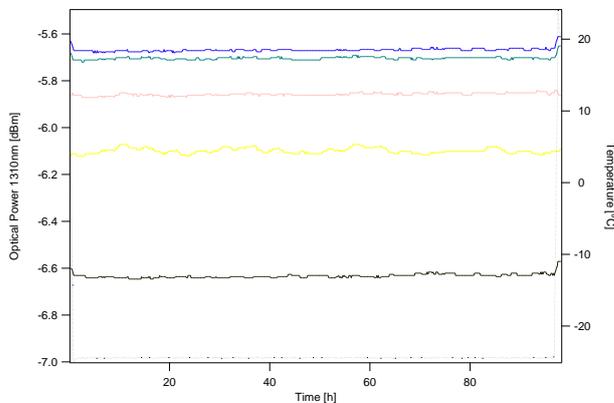
- DUT: 10 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: -25°C
- Relative humidity: Not controlled
- Duration: 96 h

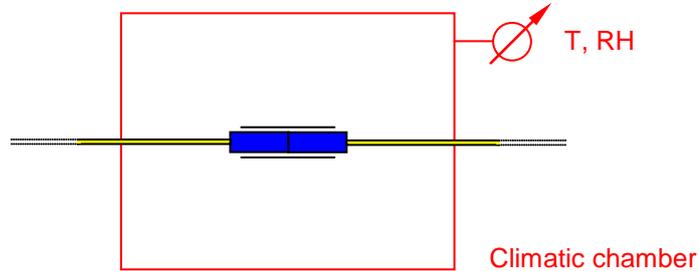
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.08	0.07
Minimum value	0.03	0.04



Cold

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Cold test according to IEC 61300-2-17



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

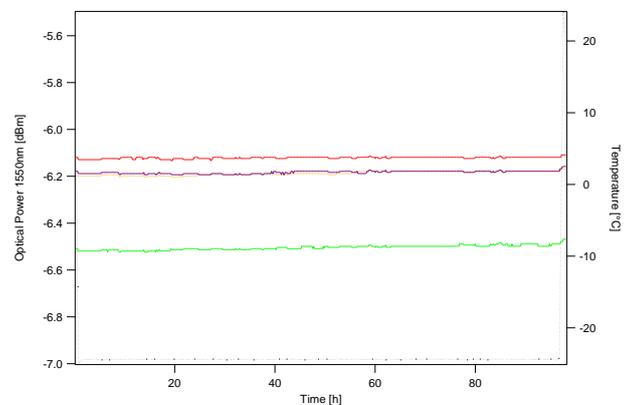
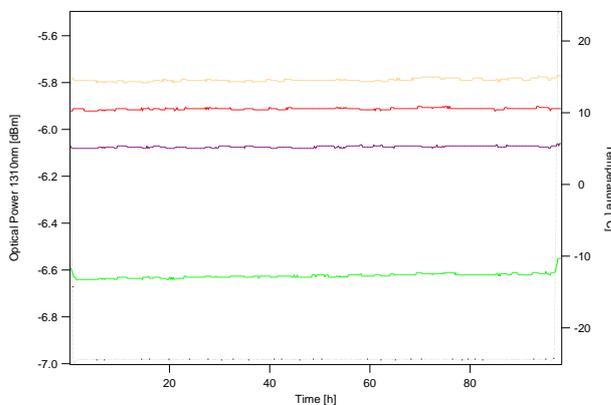
- DUT: 8 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Constant temperature: -25°C
- Relative humidity: Not controlled
- Duration: 96 h

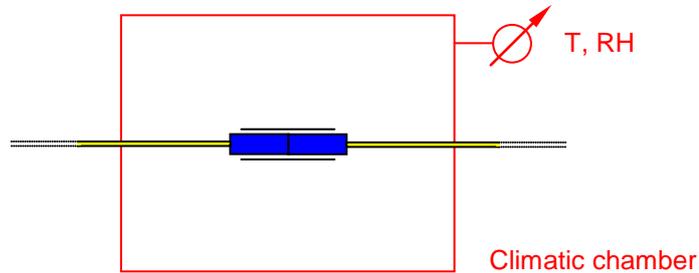
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.09	0.06
Minimum value	0.02	0.03



Cold

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Cold test according to IEC 61300-2-17



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

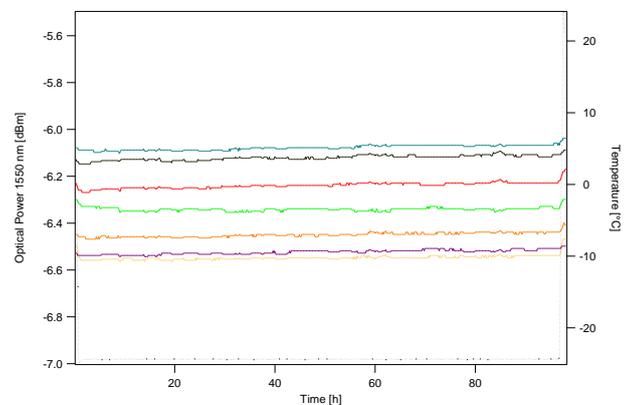
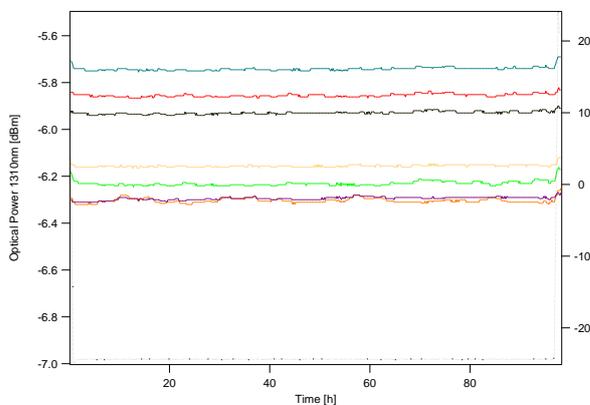
- DUT: 14 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 7
- Constant temperature: -25°C
- Relative humidity: Not controlled
- Duration: 96 h

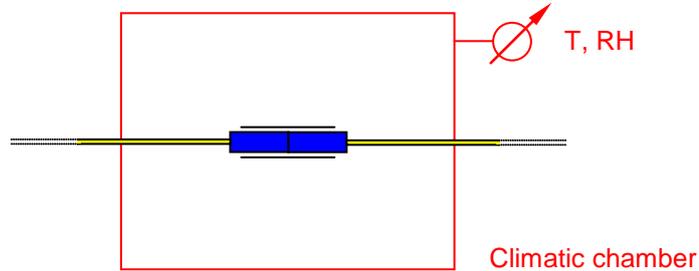
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.09	0.10
Minimum value	0.04	0.05



Dry heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Dry heat test according to IEC 61300-2-18



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

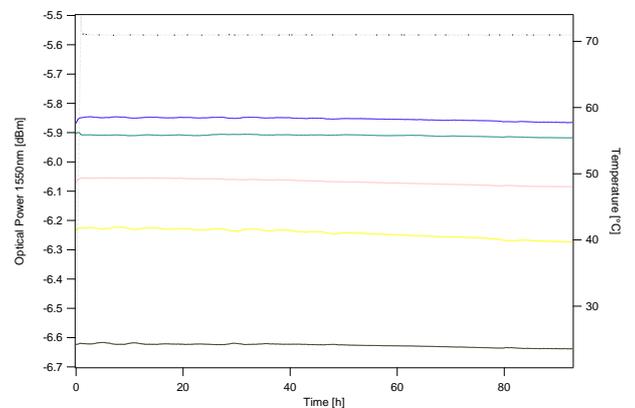
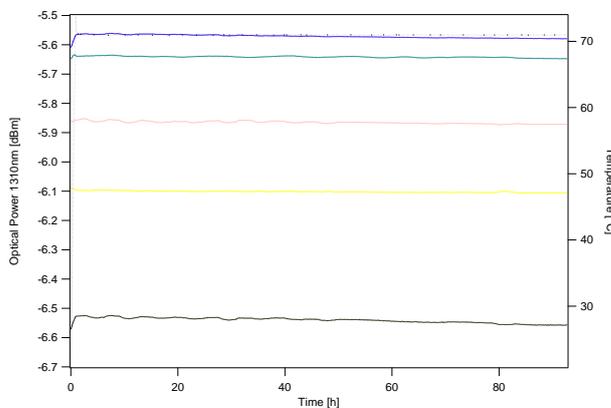
- DUT: 10 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: +70°C
- Relative humidity: Not controlled
- Duration: 96 h

Results:

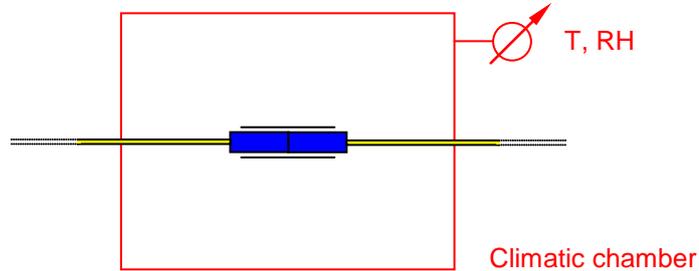
Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.05	0.05
Minimum value	0.01	0.02



Dry heat

Methods:

- Insertion loss measurement method B according to IEC 61300-3-4
- Active monitoring of attenuation and return loss according to IEC 61300-3-3
- Dry heat test according to IEC 61300-2-18



Requirements:

ΔIL_{Max} d 0.20 dB during test

Samples:

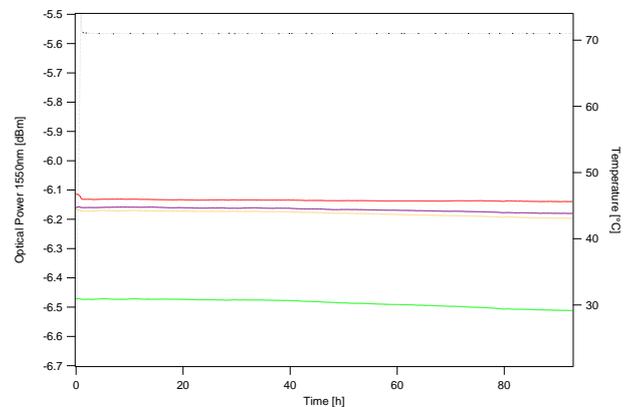
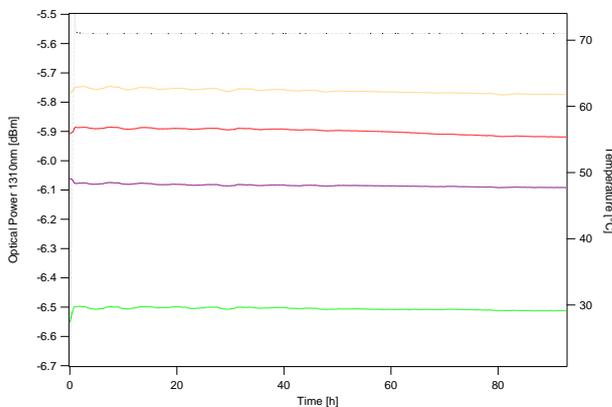
- DUT: 8 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Constant temperature: +70°C
- Relative humidity: Not controlled
- Duration: 96 h

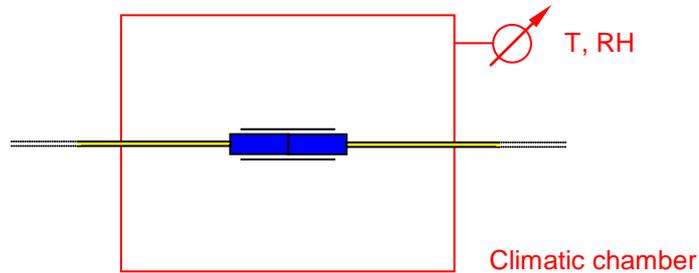
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.05	0.04
Minimum value	0.03	0.02



Dry heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Dry heat test according to IEC 61300-2-18



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

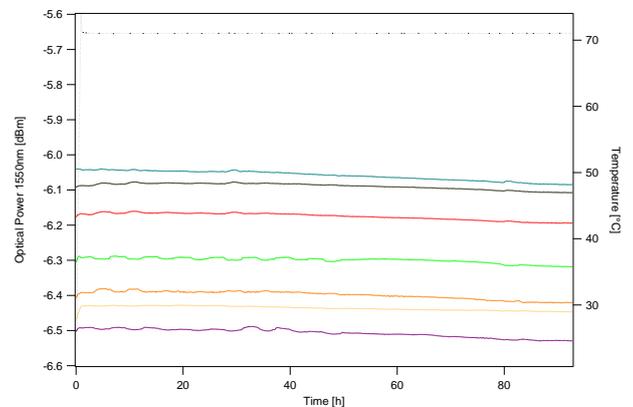
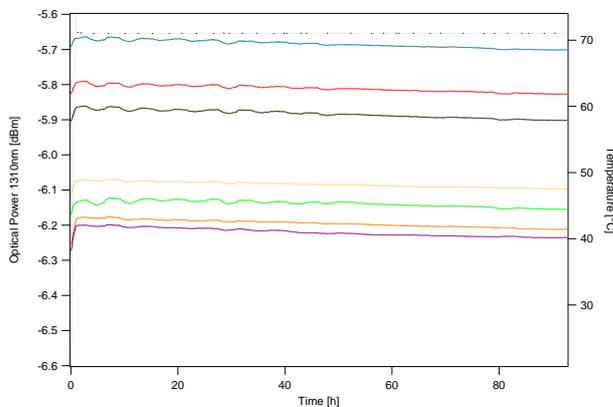
- DUT: 14 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 7
- Constant temperature: +70°C
- Relative humidity: Not controlled
- Duration: 96 h

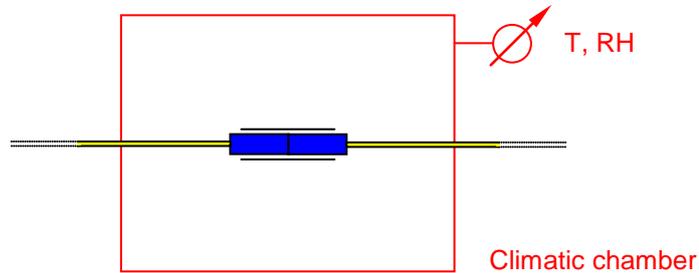
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.08	0.05
Minimum value	0.04	0.03



Damp heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Damp heat test according to IEC 61300-2-19



Requirements: ΔIL_{Max} d 0.20 dB during test

Samples:

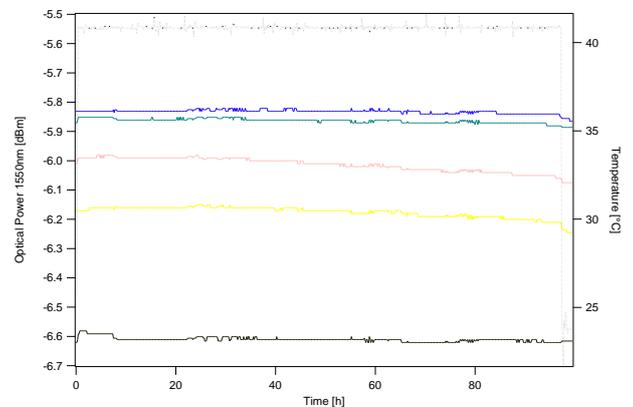
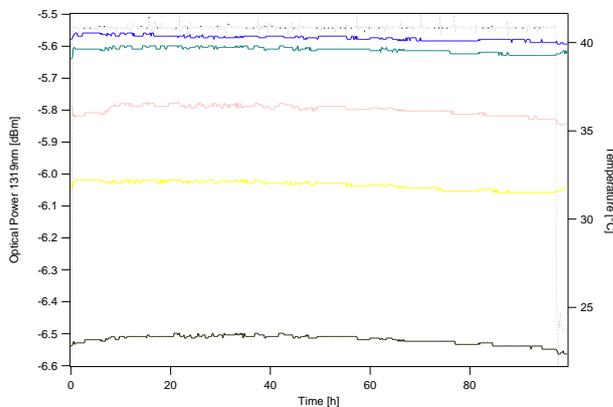
- DUT: 10 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: +40°C
- Relative humidity: 93% r.h.
- Duration: 96 h

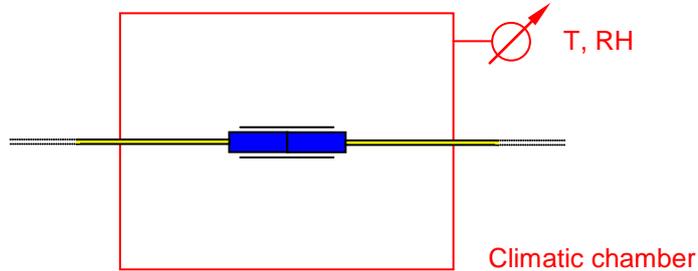
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.08	0.10
Minimum value	0.04	0.04



Damp heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Damp heat test according to IEC 61300-2-19



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

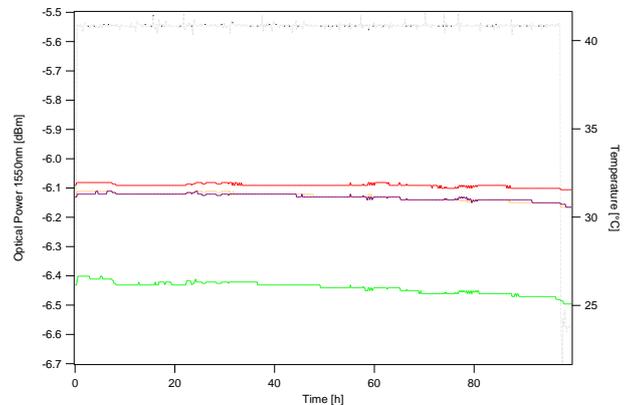
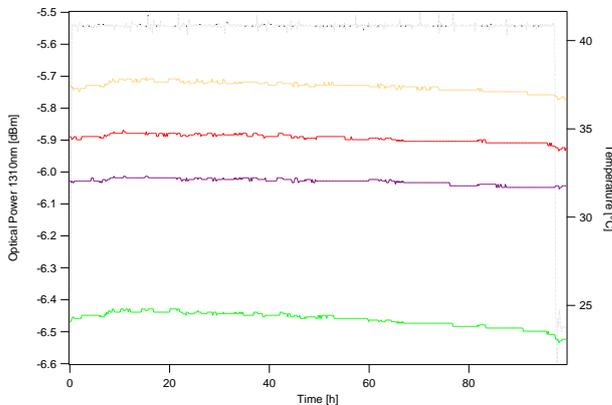
- DUT: 8 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Constant temperature: +40°C
- Relative humidity: 93% r.h.
- Duration: 96 h

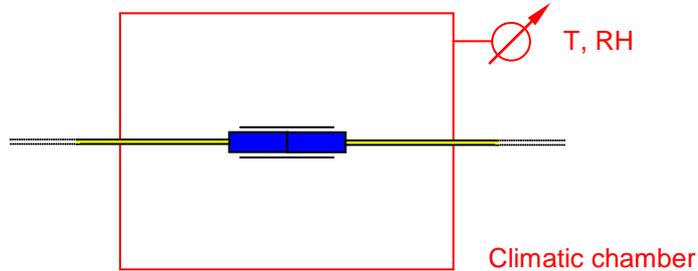
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.11	0.10
Minimum value	0.04	0.03



Damp heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Damp heat test according to IEC 61300-2-19



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

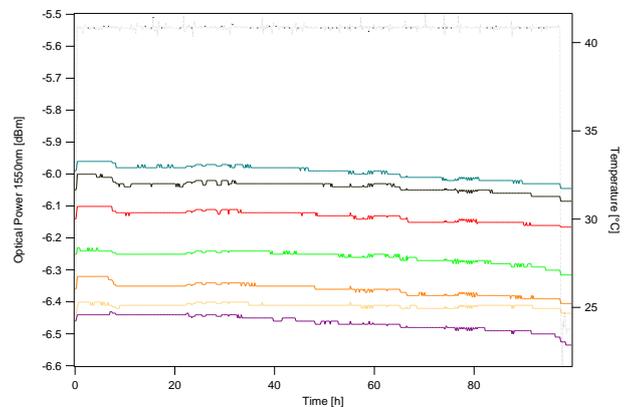
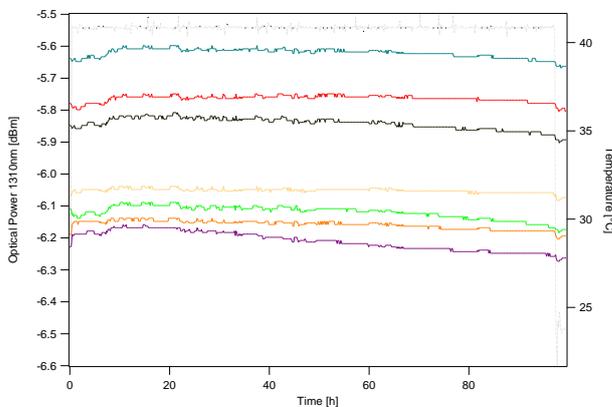
- DUT: 14 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 7
- Constant temperature: +40°C
- Relative humidity: 93% r.h.
- Duration: 96 h

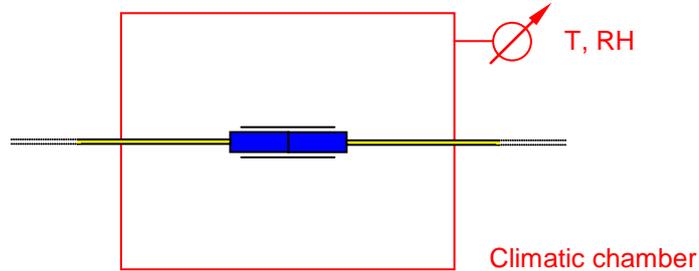
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.12	0.11
Minimum value	0.05	0.04



Damp heat, cyclic

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Damp heat, cyclic, test according to IEC 61300-2-46



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

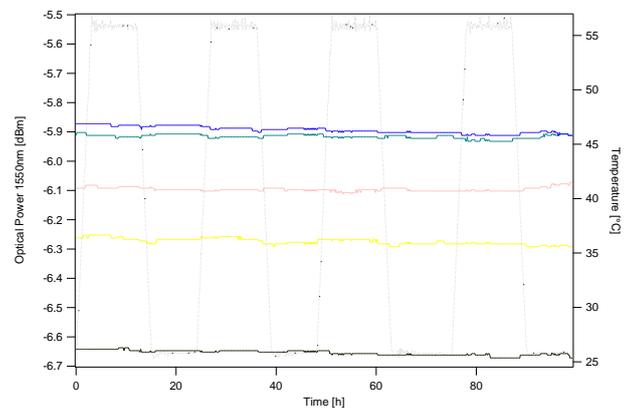
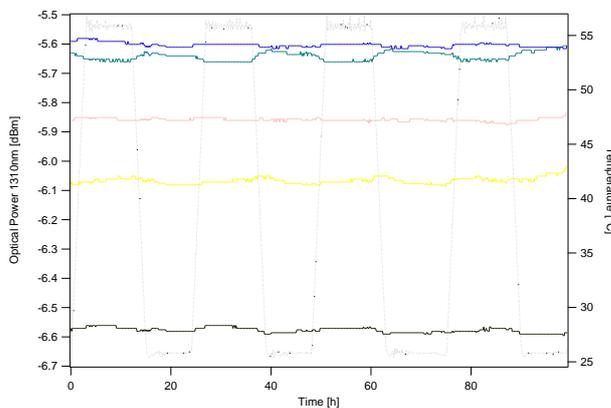
- DUT: 10 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Upper cycling temperature: +55°C
- Lower cycling temperature: +25°C
- Relative humidity: 95% r.h.
- Dwell time at extreme temperatures: 9 h
- Variation of temperature at slopes: 10°C/h
- Number of cycles: 4
- Duration: 99 h

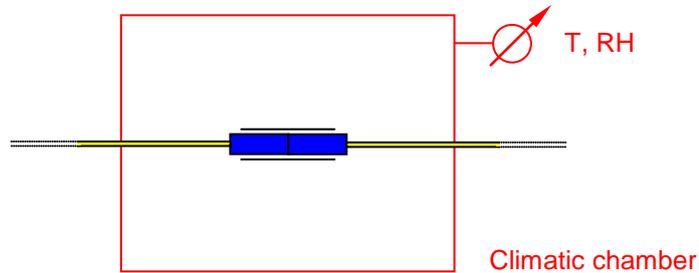
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.07	0.04
Minimum value	0.04	0.03



Damp heat, cyclic

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Damp heat, cyclic, test according to IEC 61300-2-46



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

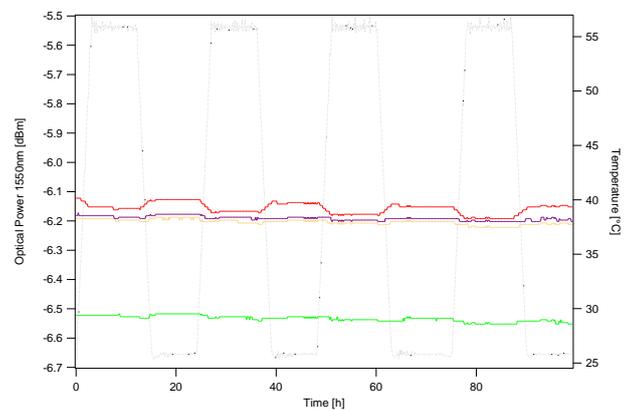
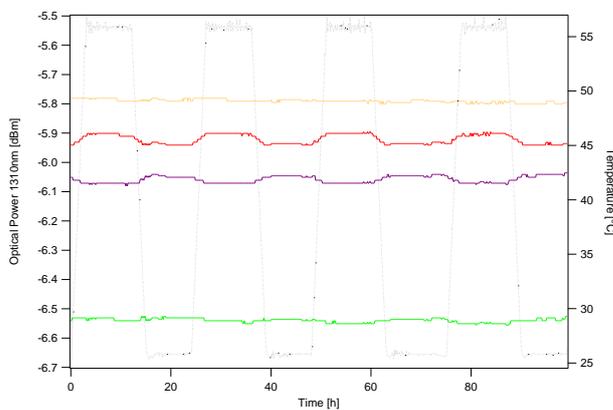
- DUT: 8 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Upper cycling temperature: +55°C
- Lower cycling temperature: +25°C
- Relative humidity: 95% r.h.
- Dwell time at extreme temperatures: 9 h
- Variation of temperature at slopes: 10°C/h
- Number of cycles: 4
- Duration: 99 h

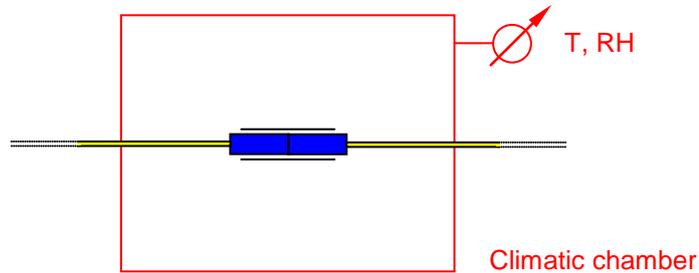
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.05	0.07
Minimum value	0.02	0.03



Damp heat, cyclic

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Damp heat, cyclic, test according to IEC 61300-2-46



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

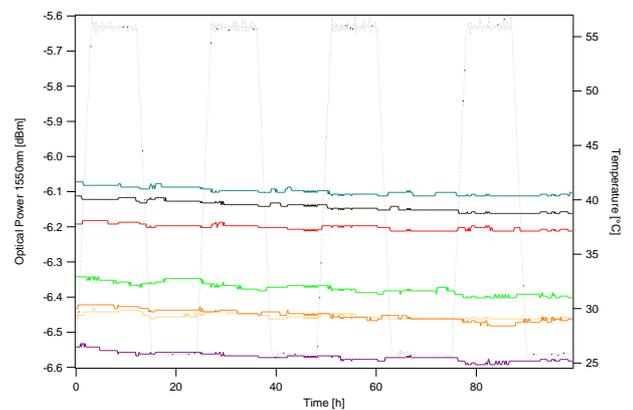
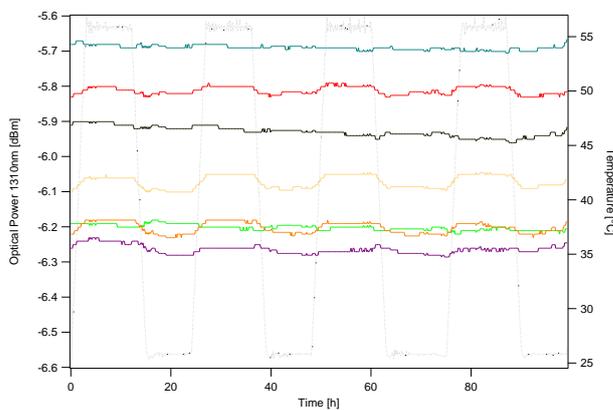
- DUT: 14 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 7
- Upper cycling temperature: +55°C
- Lower cycling temperature: +25°C
- Relative humidity: 95% r.h.
- Dwell time at extreme temperatures: 9 h
- Variation of temperature at slopes: 10°C/h
- Number of cycles: 4
- Duration: 99 h

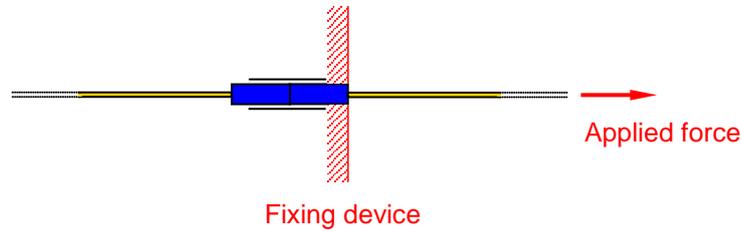
Results:

Statistics	Variation of insertion loss ΔIL during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.06	0.06
Minimum value	0.04	0.03



Cable retention

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Cable retention test according to IEC 61300-2-4



Requirements: ΔIL_{Max} d 0.20 dB during test

Samples:

- DUT: 3 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

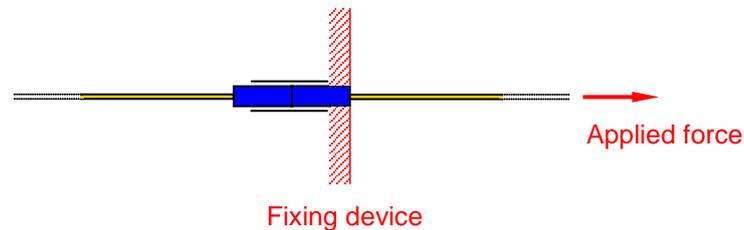
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Applied force: 100 N
- Force direction: Longitudinal connector axis
- Duration of applied force: 2 min
- Force application distance: 30 cm

Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss ΔIL [dB]	
	before test		during test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.22	0.12	0.19	0.10	0.19	0.10	0.03	0.02
2	0.06	0.09	0.08	0.13	0.09	0.13	0.03	0.04
3	0.11	0.11	0.12	0.12	0.11	0.11	0.01	0.01
4	0.01	0.02	0.02	0.04	0.02	0.02	0.01	0.02
5	0.14	0.22	0.10	0.11	0.10	0.10	0.04	0.11
Maximum value							0.04	0.11
Minimum value							0.01	0.01

Fibre retention

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Fibre retention test according to IEC 61300-2-4



Requirements: ΔIL_{Max} d 0.20 dB during test

Samples:

- DUT: 2 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

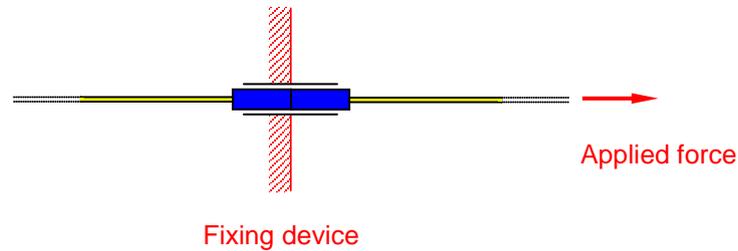
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 5 N
- Force direction: Longitudinal connector axis
- Duration of applied force: 1 min
- Force application distance: 30 cm

Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss ΔIL [dB]	
	before test		during test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.09	0.01	0.09	0.01	0.09	0.01	0.00	0.00
2	0.18	0.06	0.15	0.08	0.17	0.05	0.03	0.03
3	0.11	0.02	0.12	0.03	0.12	0.02	0.01	0.01
4	0.34	0.11	0.33	0.13	0.34	0.13	0.01	0.02
Maximum value							0.03	0.03
Minimum value							0.00	0.00

Tensile strength of coupling mechanism

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Tensile strength of coupling mechanism test according to IEC 61300-2-6



Requirements: ΔIL_{Max} d 0.20 dB during test

Samples:

- DUT: 2 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

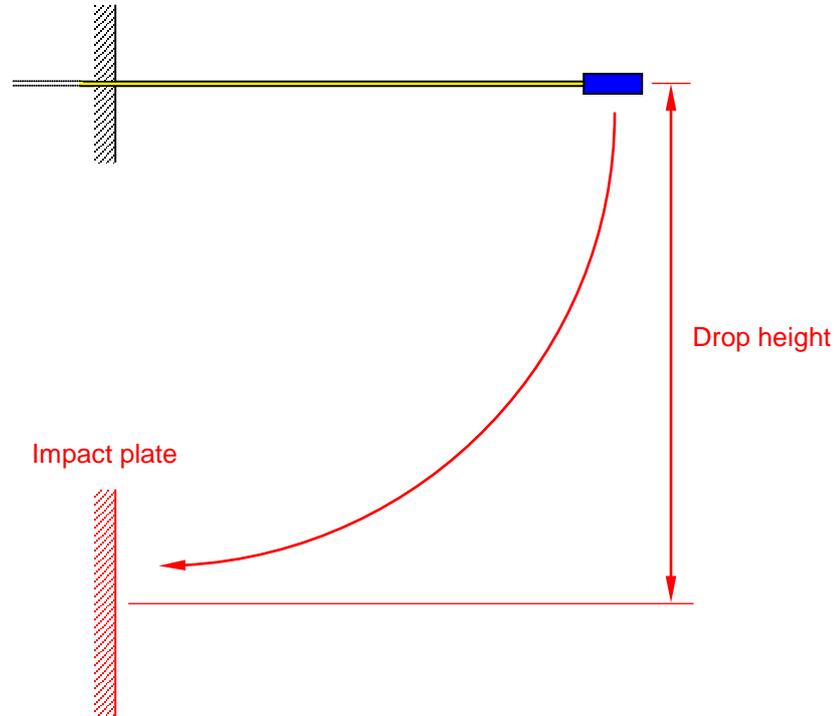
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 40 N
- Force direction: Longitudinal connector axis
- Duration of applied force: 2 min
- Force application distance: 20 cm

Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss ΔIL [dB]	
	before test		during test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.12	0.02	0.12	0.02	0.12	0.03	0.00	0.01
2	0.17	0.02	0.17	0.01	0.17	0.01	0.00	0.01
3	0.08	0.10	0.02	0.03	0.02	0.04	0.06	0.07
4	0.25	0.17	0.16	0.10	0.16	0.10	0.09	0.07
Maximum value							0.09	0.07
Minimum value							0.00	0.01

Impact

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Impact test method A according to IEC 61300-2-12



Requirements: $\Delta IL_{Max} \leq 0.20$ dB before/after test

Samples:

- DUT: 2 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

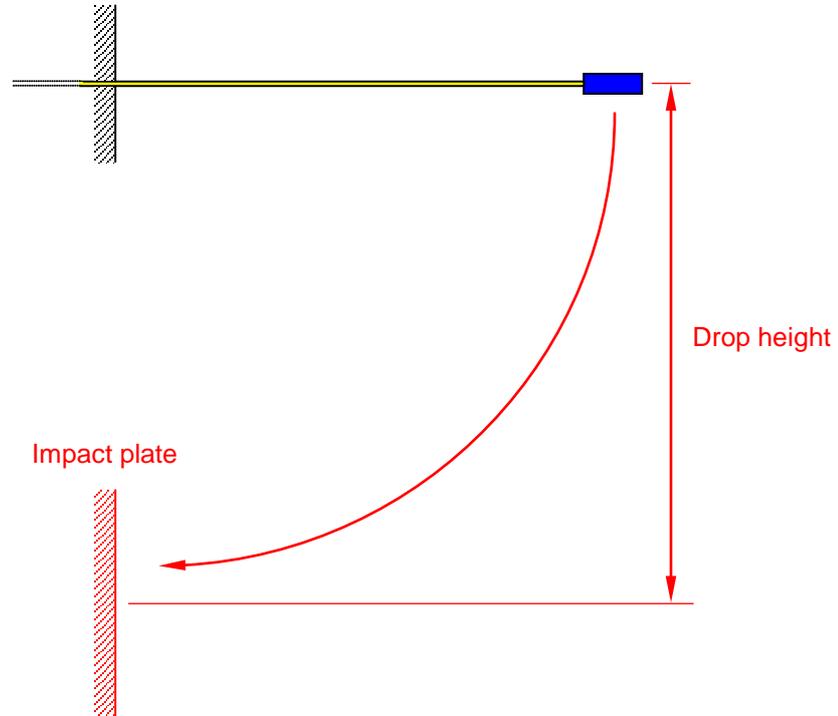
- Wavelengths: 1310 nm / 1550 nm
- Drop height: 1.5 m
- Number of drops: 5

Results:

Sample no.	Insertion loss IL [dB]				Variation of insertion loss ΔIL [dB]	
	before test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.13	0.13	0.07	0.08	0.06	0.05
2	0.01	0.04	0.04	0.01	0.03	0.03
3	0.05	0.01	0.03	0.01	0.02	0.00
4	0.10	0.11	0.12	0.13	0.02	0.02
Maximum value					0.06	0.05
Minimum value					0.02	0.00

Impact

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Impact test method A according to IEC 61300-2-12



Requirements: $\Delta IL_{Max} \leq 0.20$ dB before/after test

Samples:

- DUT: 2 SM fibre patch cords terminated with Diamond MU APC SM connectors
- Fibre type: 8.2/125/245/900 μm , Diamond art. no. 1005155
- Mating adapters: Diamond MU SM

Parameters:

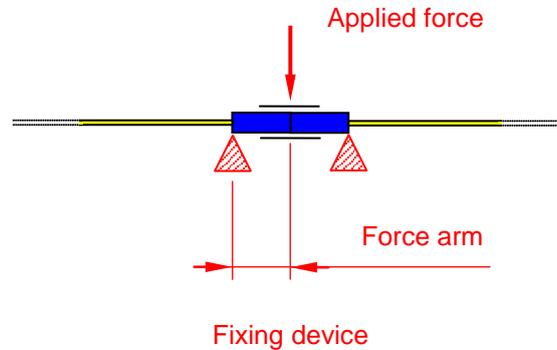
- Wavelengths: 1310 nm / 1550 nm
- Drop height: 1.5 m
- Number of drops: 5

Results:

Sample no.	Insertion loss IL [dB]				Variation of insertion loss ΔIL [dB]	
	before test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.03	0.04	0.01	0.03	0.02	0.01
2	0.20	0.17	0.15	0.16	0.05	0.01
3	0.03	0.06	0.08	0.06	0.05	0.00
4	0.02	0.01	0.04	0.02	0.02	0.01
Maximum value					0.05	0.01
Minimum value					0.02	0.00

Bending moment

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Bending moment test according to IEC 61300-2-7



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

- DUT: 8 SM cable patch cords terminated with Diamond MU APC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

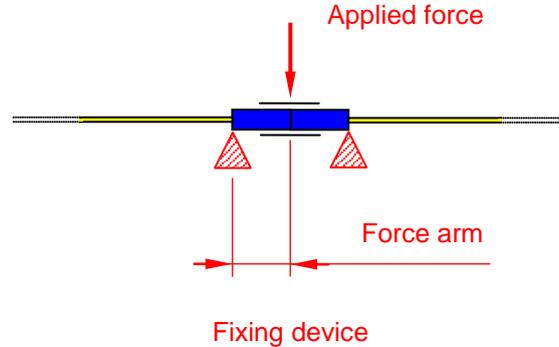
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 10 N
- Force direction: Transversal connector axis
- Duration of applied force: 2 min
- Force application arm: 25 mm

Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss ΔIL [dB]	
	before test		during test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.07	0.02	0.09	0.03	0.07	0.02	0.02	0.01
2	0.05	0.01	0.05	0.01	0.05	0.01	0.00	0.00
3	0.19	0.13	0.20	0.13	0.20	0.13	0.01	0.00
4	0.11	0.11	0.11	0.11	0.10	0.10	0.01	0.01
Maximum value							0.02	0.01
Minimum value							0.00	0.00

Bending moment

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Bending moment test according to IEC 61300-2-7



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

Samples:

- DUT: 8 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

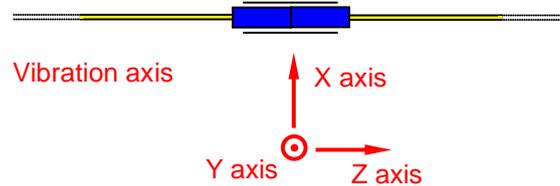
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 10 N
- Force direction: Transversal connector axis
- Duration of applied force: 2 min
- Force application arm: 25 mm

Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss ΔIL [dB]	
	before test		during test		after test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.26	0.20	0.28	0.23	0.27	0.22	0.02	0.03
2	0.11	0.09	0.11	0.08	0.11	0.08	0.00	0.01
3	0.27	0.21	0.27	0.21	0.27	0.22	0.00	0.01
4	0.18	0.20	0.20	0.22	0.20	0.21	0.02	0.02
Maximum value							0.02	0.03
Minimum value							0.00	0.01

Vibration, sinusoidal

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Sinusoidal vibration test according to IEC 61300-2-1



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

- Samples:**
- DUT: 8 SM cable patch cords terminated with Diamond MU APC SM connectors
 - Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
 - Mating adapters: Diamond MU SM

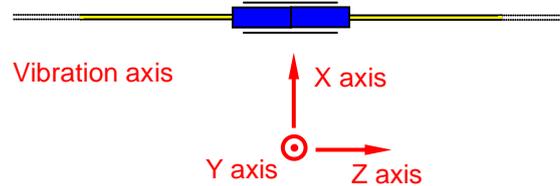
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
 - Monitored channels: 4
 - Upper vibration frequency: 55 Hz
 - Lower vibration frequency: 10 Hz
 - Vibration amplitude: 0.75 mm (peak-to-peak)
 - Sweep rate: 1 Oct/min
 - Sweep cycles: 15
 - Duration per axis: 30 min

Results:

Sample no.	Vibration axis	Insertion loss IL [dB]				Variation of insertion loss ΔIL during test [dB]	
		maximum during test		minimum during test		at 1310 nm	at 1550 nm
		at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	longitudinal, Z axis	0.05	0.08	0.05	0.07	0.00	0.01
2		0.03	0.03	0.03	0.02	0.00	0.01
3		0.05	0.06	0.05	0.05	0.00	0.01
4		0.11	0.11	0.10	0.11	0.01	0.00
1	transversal, X(Y) axis	0.05	0.04	0.05	0.02	0.00	0.02
2		0.08	0.04	0.07	0.03	0.01	0.01
3		0.06	0.02	0.06	0.02	0.00	0.00
4		0.10	0.04	0.10	0.04	0.00	0.00
Maximum value						0.01	0.02
Minimum value						0.00	0.00

Vibration, sinusoidal

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Sinusoidal vibration test according to IEC 61300-2-1



Requirements: $\Delta IL_{Max} \leq 0.20$ dB during test

- Samples:**
- DUT: 8 SM cable patch cords terminated with Diamond MU PC SM connectors
 - Cable type: 8.2/125/245/900/2000 μm , Diamond art. no. 1005174
 - Mating adapters: Diamond MU SM

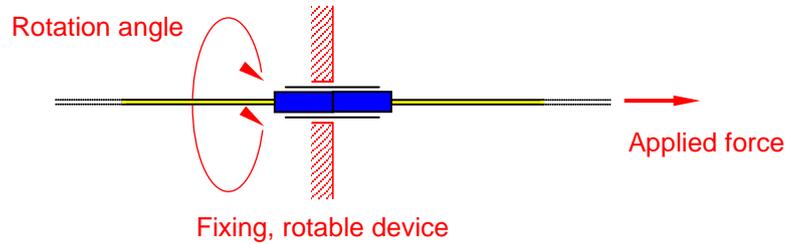
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
 - Monitored channels: 4
 - Upper vibration frequency: 55 Hz
 - Lower vibration frequency: 10 Hz
 - Vibration amplitude: 0.75 mm (peak-to-peak)
 - Sweep rate: 1 Oct/min
 - Sweep cycles: 15
 - Duration per axis: 30 min

Results:

Sample no.	Vibration axis	Insertion loss IL [dB]				Variation of insertion loss ΔIL during test [dB]	
		maximum during test		minimum during test		at 1310 nm	at 1550 nm
		at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	longitudinal, Z axis	0.13	0.11	0.13	0.11	0.00	0.00
2		0.29	0.18	0.29	0.18	0.00	0.00
3		0.03	0.07	0.02	0.06	0.01	0.01
4		0.32	0.34	0.31	0.33	0.01	0.01
1	transversal, X(Y) axis	0.17	0.14	0.15	0.14	0.02	0.00
2		0.38	0.23	0.38	0.23	0.00	0.00
3		0.11	0.10	0.10	0.10	0.01	0.00
4		0.27	0.25	0.27	0.25	0.00	0.00
Maximum value						0.02	0.01
Minimum value						0.00	0.00

Cable torsion

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Cable torsion test according to IEC 61300-2-5



Requirements: ΔIL_{Max} d 0.20 dB during test

Samples:

- DUT: 4 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

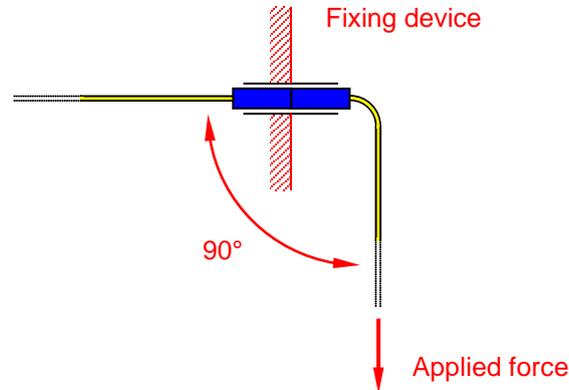
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 15 N
- Force direction: Longitudinal connector axis
- Rotation angle: +180° to -180° and back
- Number of cycles: 25
- Force application distance: 20 cm

Results:

Sample no.	Insertion loss IL [dB]				Variation of insertion loss ΔIL [dB]	
	maximum during test		minimum during test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550m	at 1310 nm	at 1550m		
1	0.22	0.19	0.21	0.11	0.01	0.08
2	0.04	0.04	0.03	0.04	0.01	0.00
3	0.14	0.16	0.11	0.14	0.03	0.02
4	0.07	0.03	0.05	0.01	0.02	0.02
Maximum value					0.03	0.08
Minimum value					0.01	0.00

Static side load

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
 - Active monitoring of attenuation and return loss according to IEC 61300-3-3
 - Static side load test according to IEC 61300-2-42



Requirements: ΔIL_{Max} d 0.20 dB during test

Samples:

- DUT: 4 SM cable patch cords terminated with Diamond MU PC SM connectors
- Cable type: 8.2/125/245/900/2000 μ m, Diamond art. no. 1005174
- Mating adapters: Diamond MU SM

Parameters:

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 1 N
- Force direction: 90° respect to the longitudinal connector axis
- Duration of applied force: 60 min
- Force application distance: 30 cm

Results:

Sample no.	Insertion loss IL [dB]				Variation of insertion loss ΔIL [dB]	
	maximum during test		minimum during test		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550m	at 1310 nm	at 1550m		
1	0.24	0.18	0.15	0.13	0.09	0.05
2	0.12	0.13	0.09	0.08	0.03	0.05
3	0.14	0.13	0.12	0.09	0.02	0.04
4	0.07	0.05	0.02	0.01	0.05	0.04
Maximum value					0.09	0.05
Minimum value					0.02	0.04