

**DIAMOND**  
**Test & Calibration Laboratory STS 0333 / SCS 0101**

# Product Specification Qualification Test Report



**DiaLink APC SM**

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### DiaLink V2 APC SM on fibre patch cords

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### DiaLink V2 APC SM on Diamond art. no. 1005154 cable patch cords

Measurement / test	Method	Page	Edition <sup>1)</sup>	Requalified <sup>2)</sup>
Insertion loss	IEC 61300-3-4	11	06.'15	-
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Cable torsion	IEC 61300-2-5	18	06.'15	-
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Mating durability	IEC 61300-2-2	20	06.'15	-

## DiaLink V2 APC SM on Diamond art. no. 1072171 cable patch cords

Measurement / test	Method	Page	Edition <sup>1)</sup>	Requalified <sup>2)</sup>
Insertion loss	IEC 61300-3-4	21	06.'15	-
Return loss	IEC 61300-3-6	22	06.'15	-
Change of temperature	IEC 61300-2-22	23	06.'15	-
Cable retention	IEC 61300-2-4	24	06.'15	-
Cable torsion	IEC 61300-2-5	25	06.'15	-
Vibration, sinusoidal	IEC 61300-2-1	26	06.'15	-
Mating durability	IEC 61300-2-2	27	06.'15	-

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

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

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 DiaLink V2 APC SM connector at the accredited test & calibration laboratory STS 0333 / SCS 0101 at Diamond SA, Losone. This current QTR is a summary of the internal qualification report no. 3051 performed at the test & calibration laboratory STS 0333 / SCS 0101 ([www.sas.ch](http://www.sas.ch)).

The qualification test program of the DiaLink V2 APC SM connector is determined under the guideline of IEC 61753-1, which defines the minimum requirements and severities which a single-mode connector must satisfy in order to be considered as meeting category C (controlled environment) respectively category U (uncontrolled environment).

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.

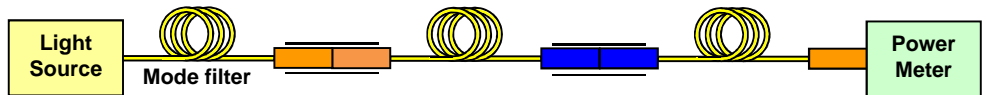
## Insertion loss

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

a) Reference measurement:



b) DUT measurement:



**Requirements:**  $IL_{Max} \leq 0.50$  dB

**Samples:**

- DUT: 10 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276
- Reference connectors: 1 Diamond E-2000<sup>TM</sup> APC SM connector
- Mating adapters: 1 Diamond E-2000<sup>TM</sup> SM mating adapter

**Parameters:**

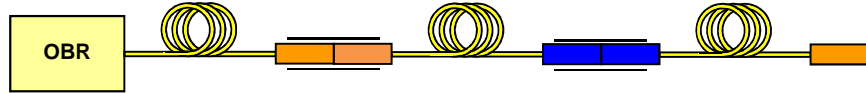
- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 20

**Results:**

Statistics	Insertion loss IL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.23	0.22
Standard deviation	0.10	0.06
Maximum value	0.49	0.35
Minimum value	0.09	0.12

## Return loss

**Methods:** OTDR/OFDR method according to IEC 61300-3-6



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

**Samples:**

- DUT: 10 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

**Parameters:**

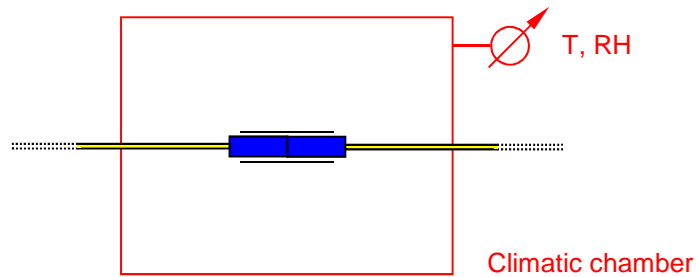
- Wavelengths: 1550 nm
- No. of measurements: 10

**Results:**

Statistics	Return loss RL [dB] at 1550 nm
Mean value	96.7
Standard deviation	1.3
Maximum value	98.1
Minimum value	94.0

## Change of temperature

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

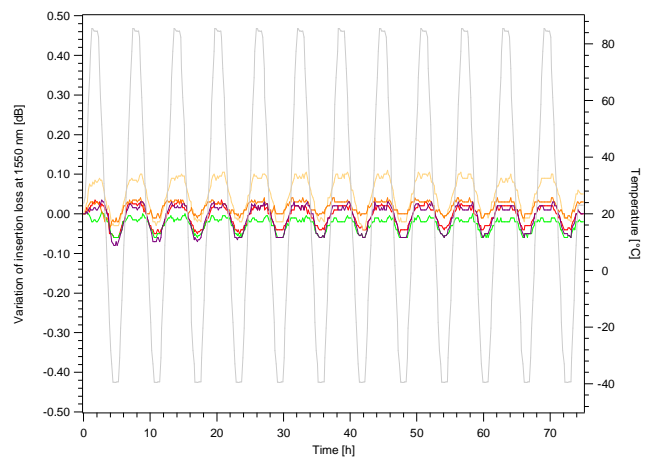
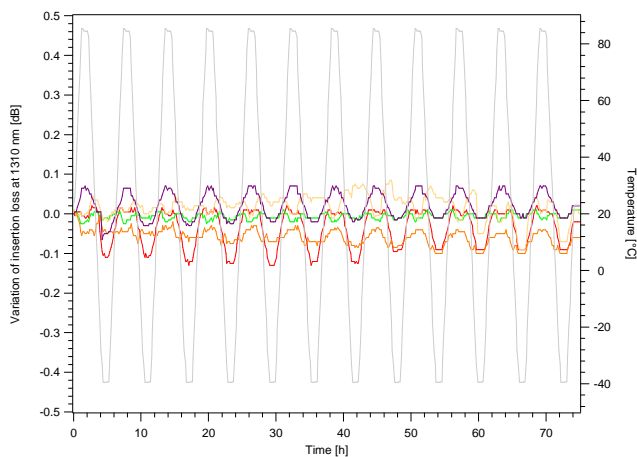
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Upper cycling temperature: +85°C
- Lower cycling temperature: -40°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: 74 h

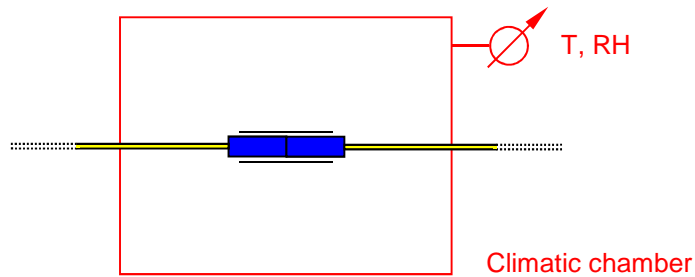
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.18	0.15
Minimum value	0.04	0.07



## Cold

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

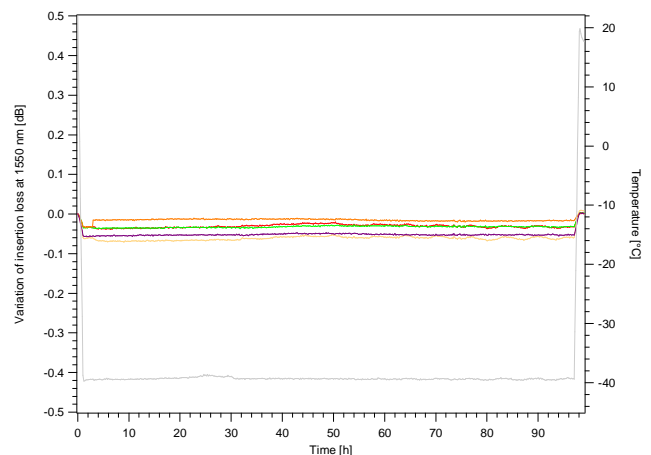
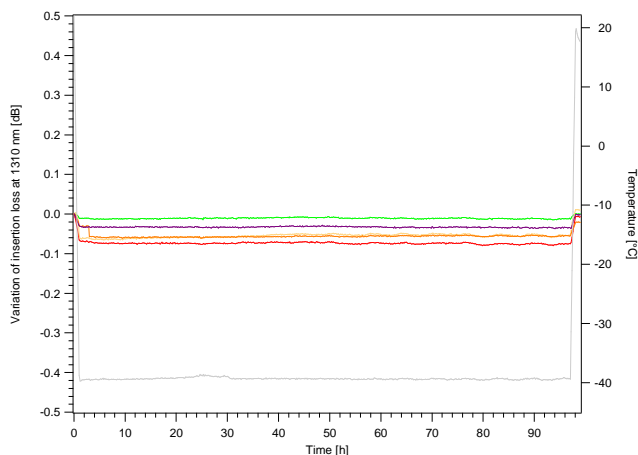
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: -40°C
- Relative humidity: Not controlled
- Duration: 96 h

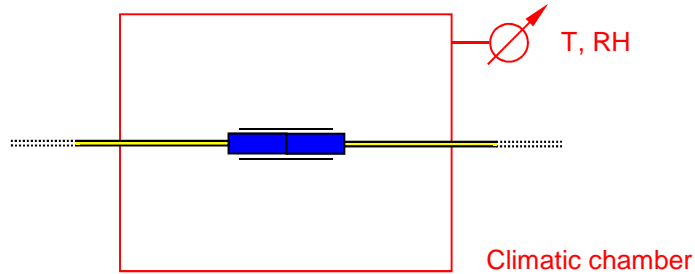
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.08	0.08
Minimum value	0.02	0.04



## Dry heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

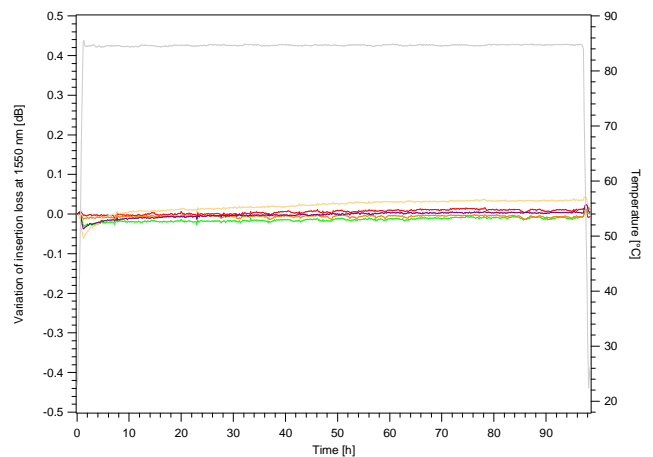
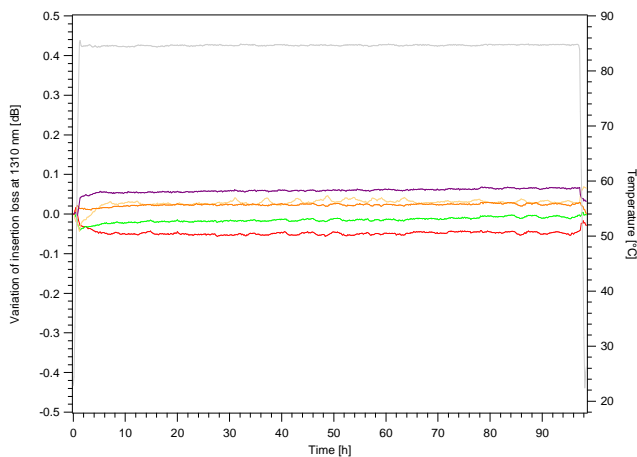
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: +85°C
- Relative humidity: Not controlled
- Duration: 96 h

### Results:

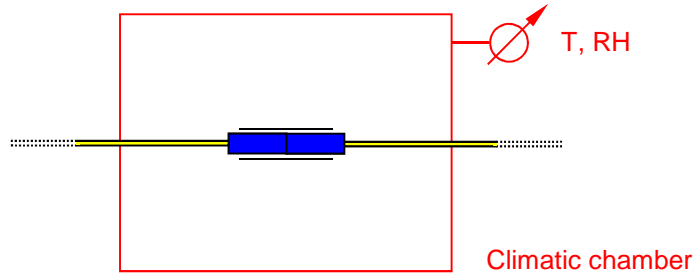
Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.11	0.10
Minimum value	0.03	0.03





## Damp heat, cyclic

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

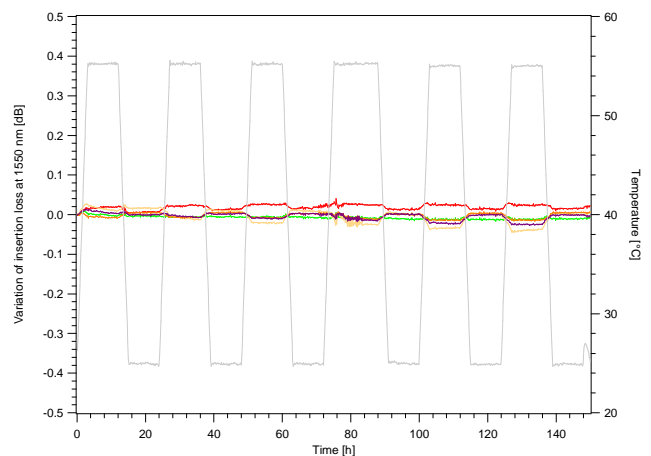
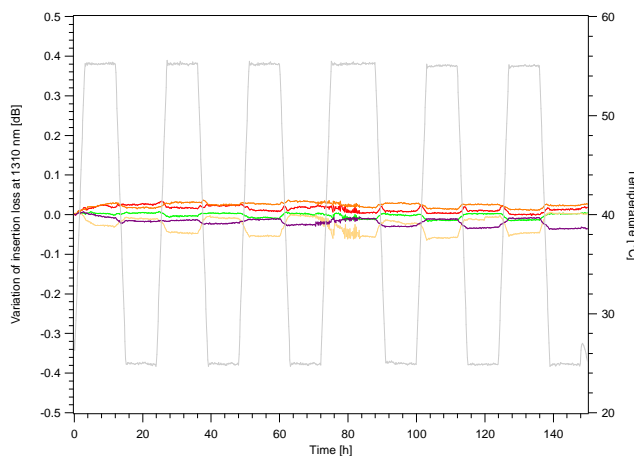
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

**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: 6
- Duration: 144 h

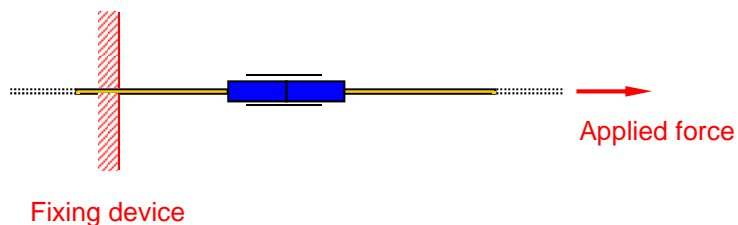
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.07	0.07
Minimum value	0.03	0.03



## Fibre retention

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



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

- Samples:**
- DUT: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

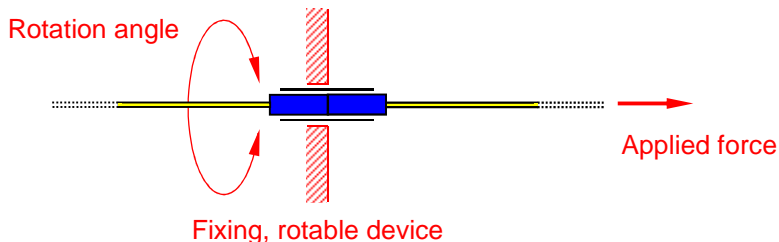
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
  - Monitored channels: 4
  - Applied force: 5 N
  - Force direction: Longitudinal component axis
  - Duration of applied force: 1 min
  - Force application distance: 30 cm

### Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss $\Delta IL$ [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	0.19	0.16	0.16	0.15	0.15	0.15	0.04	0.01
2	0.10	0.10	0.11	0.11	0.10	0.10	0.01	0.01
3	0.22	0.25	0.22	0.25	0.23	0.25	0.01	0.00
4	0.24	0.27	0.23	0.30	0.23	0.29	0.01	0.03
<b>Maximum value</b>							<b>0.04</b>	<b>0.03</b>
<b>Minimum value</b>							<b>0.01</b>	<b>0.00</b>

## Fibre torsion

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



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

**Samples:**

- DUT: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

**Parameters:**

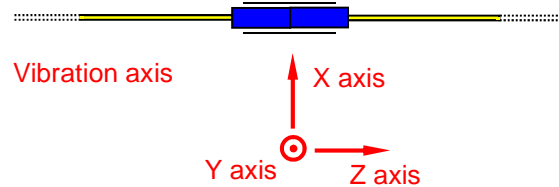
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 2 N
- Force direction: Longitudinal connector axis
- Rotation angle: +180° to -180° and back
- Number of cycles: 25
- Force application distance: 40 cm

### Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss $\Delta IL$ [dB]	
	before test		maximum, 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	0.15	0.18	0.15	0.19	0.15	0.18	0.02	0.02
2	0.24	0.26	0.25	0.26	0.23	0.25	0.02	0.01
3	0.14	0.15	0.14	0.15	0.14	0.15	0.01	0.01
4	0.18	0.16	0.19	0.17	0.18	0.16	0.01	0.02
<b>Maximum value</b>							<b>0.02</b>	<b>0.02</b>
<b>Minimum value</b>							<b>0.01</b>	<b>0.01</b>

## Vibration, sinusoidal

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

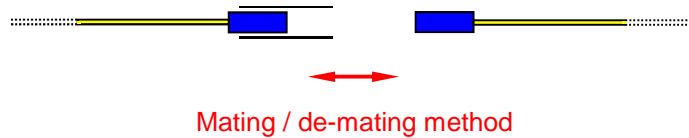
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
  - Monitored channels: 4
  - Upper vibration frequency: 55 Hz
  - Lower vibration frequency: 10 Hz
  - Vibration amplitude: 0.75 mm (peak-to-peak)
  - Sweep rate: 1 Oct/min
  - Sweep cycles: 15
  - Duration per axis: 90 min
  - Vibration axis: transversal (X) / longitudinal (Z)

### Results:

Sample no.	Vibration axis	Insertion loss IL [dB]						Variation of insertion loss $\Delta IL$ [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	X	0.16	0.22	0.15	0.23	0.16	0.22	0.01	0.01
	Z	0.17	0.23	0.17	0.23	0.16	0.23	0.01	0.00
2	X	0.22	0.25	0.23	0.26	0.23	0.26	0.01	0.01
	Z	0.24	0.26	0.26	0.26	0.22	0.25	0.04	0.01
3	X	0.14	0.15	0.14	0.16	0.14	0.16	0.00	0.01
	Z	0.14	0.16	0.13	0.16	0.13	0.16	0.01	0.00
4	X	0.22	0.20	0.23	0.21	0.21	0.20	0.02	0.01
	Z	0.24	0.21	0.23	0.21	0.23	0.21	0.01	0.00
<b>Maximum value</b>								<b>0.04</b>	<b>0.01</b>
<b>Minimum value</b>								<b>0.00</b>	<b>0.00</b>

## Mating durability

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



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

- Samples:**
- DUT: 1 SM cable patch cord provided with a Diamond DiaLink V2 APC SM connector
  - Fibre type: 8.2/125/900  $\mu$ m, Diamond art. no. 1027276

- 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 $\Delta IL$ [dB]	
	maximum value		minimum value		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.20	0.17	0.12	0.11	0.08	0.06

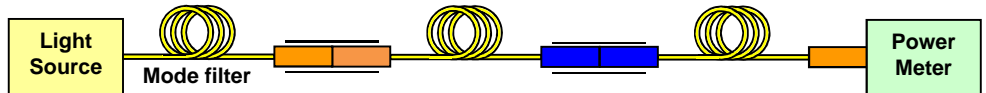
## Insertion loss

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

a) Reference measurement:



b) DUT measurement:



**Requirements:**  $IL_{Max} \leq 0.50$  dB

**Samples:**

- DUT: 9 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154
- Reference connectors: 1 Diamond E-2000<sup>TM</sup> APC SM connector
- Mating adapters: 1 Diamond E-2000<sup>IM</sup> SM mating adapter

**Parameters:**

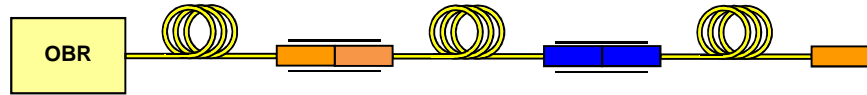
- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 18

**Results:**

Statistics	Insertion loss IL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.16	0.14
Standard deviation	0.07	0.05
Maximum value	0.30	0.27
Minimum value	0.06	0.06

## Return loss

**Methods:** OTDR/OFDR method according to IEC 61300-3-6



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

**Samples:**

- DUT: 9 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

**Parameters:**

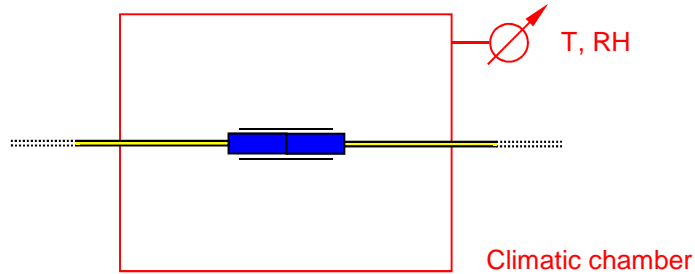
- Wavelengths: 1550 nm
- No. of measurements: 9

### Results:

Statistics	Return loss RL [dB] at 1550 nm
Mean value	97.3
Standard deviation	0.7
Maximum value	98.1
Minimum value	95.7

## Change of temperature

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

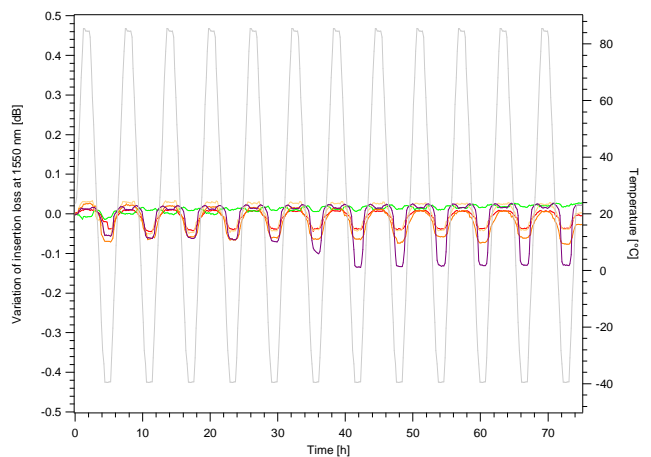
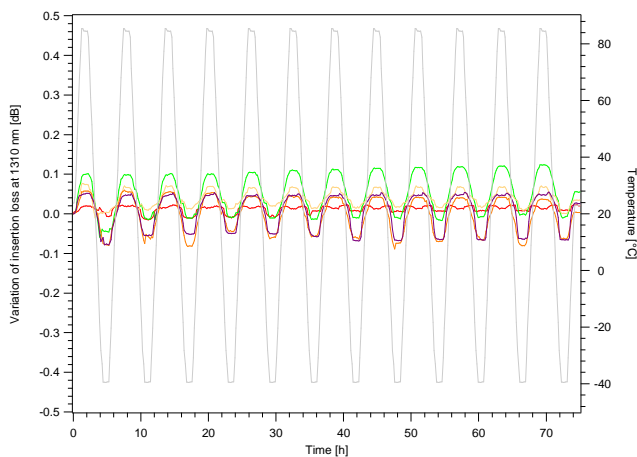
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Upper cycling temperature: +85°C
- Lower cycling temperature: -40°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: 74 h

### Results:

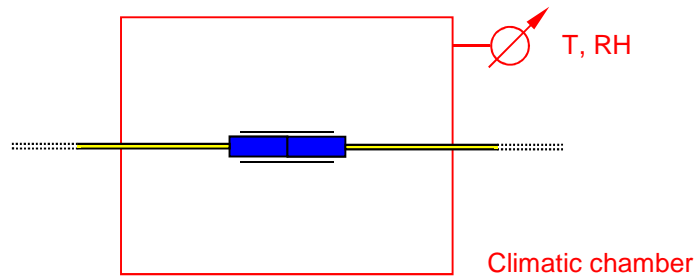
Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.18	0.16
Minimum value	0.04	0.04





## Cold

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

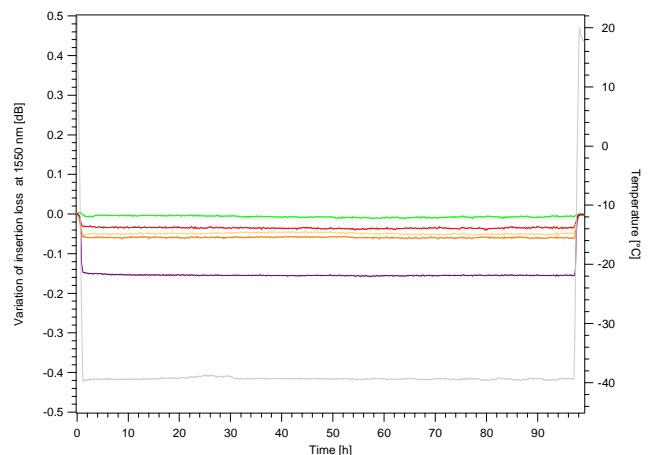
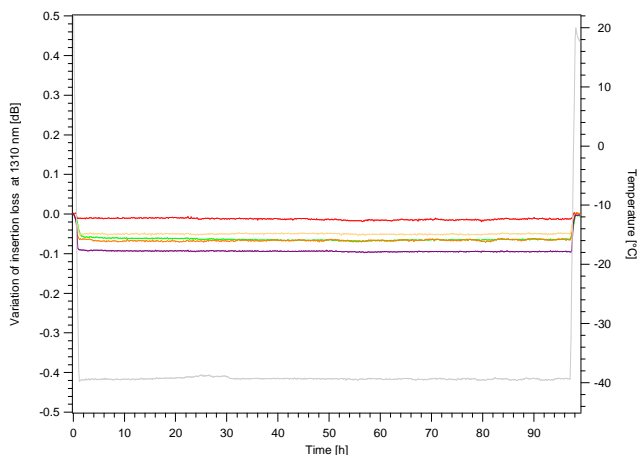
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: -40°C
- Relative humidity: Not controlled
- Duration: 96 h

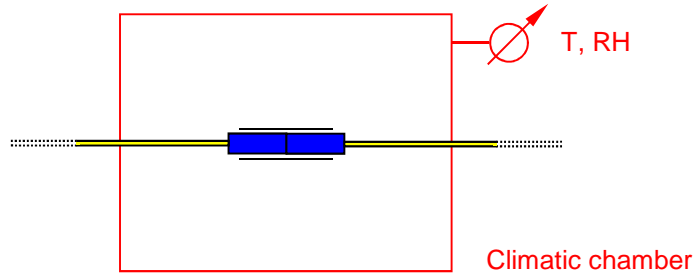
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.10	0.16
Minimum value	0.02	0.02



## Dry heat

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

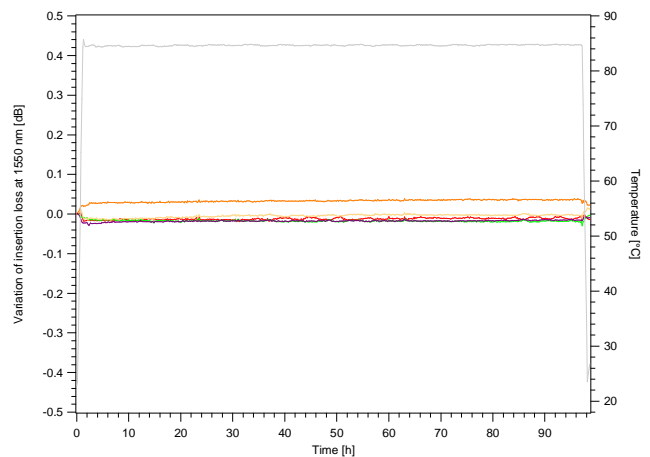
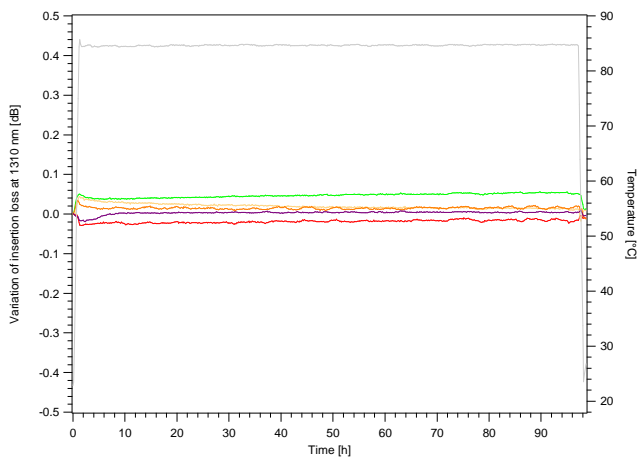
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Constant temperature: +85°C
- Relative humidity: Not controlled
- Duration: 96 h

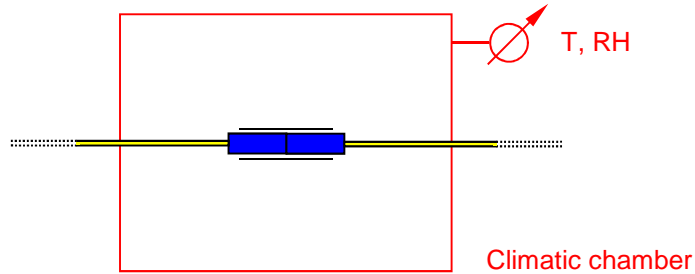
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.06	0.04
Minimum value	0.03	0.02



## Damp heat, cyclic

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

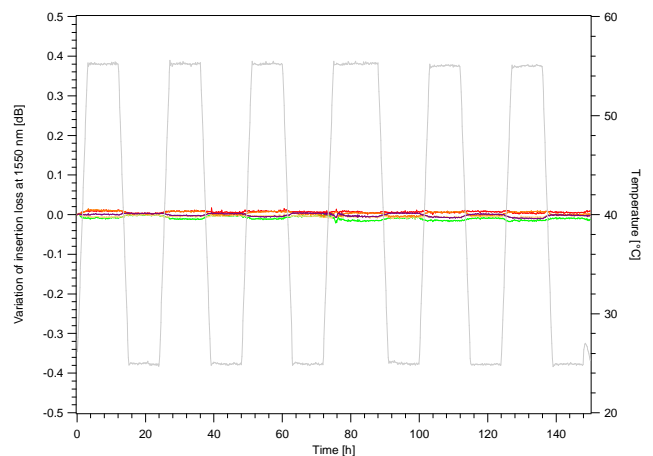
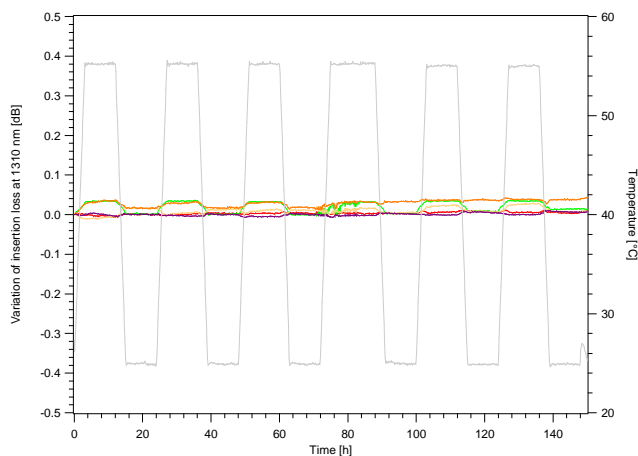
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

**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: 6
- Duration: 144 h

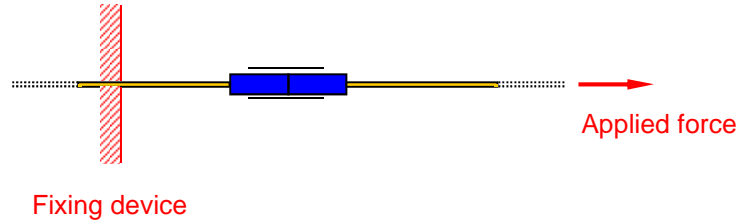
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.05	0.03
Minimum value	0.02	0.01



## Cable retention

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



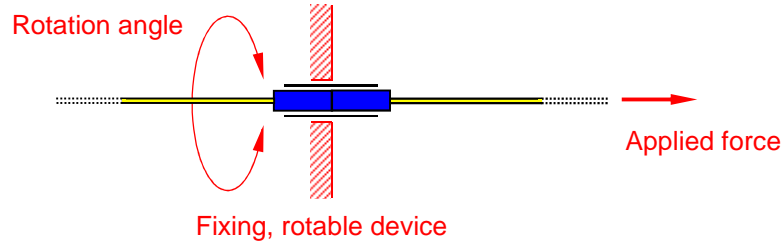
- Requirements:** Typical force at release: 20-25 N
- Samples:**
- DUT: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre / cable type: 8.2/125/900/2900  $\mu\text{m}$ , Diamond art. no. 1005154
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
  - Monitored channels: 4
  - Applied force: Until connector release
  - Force direction: Longitudinal connector axis
  - Force application distance: 30 cm

**Results:**

Sample no.	Insertion loss IL before test [dB]		Tensile force at release [N]
	at 1310 nm	at 1550 nm	
1	0.11	0.12	21.9
2	0.13	0.10	19.8
3	0.09	0.14	33.8
4	0.07	0.10	29.1
<b>Maximum value</b>			<b>33.8</b>
<b>Minimum value</b>			<b>19.8</b>

## Cable torsion

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



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

**Samples:**

- DUT: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 8.2/125/900/2900  $\mu\text{m}$ , Diamond art. no. 1005154

**Parameters:**

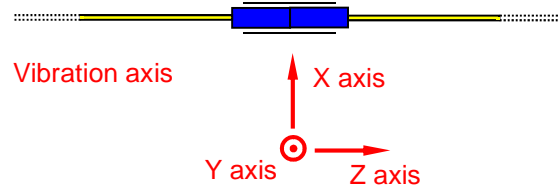
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 2 N
- Force direction: Longitudinal connector axis
- Rotation angle:  $+180^\circ$  to  $-180^\circ$  and back
- Number of cycles: 25
- Force application distance: 40 cm

### Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss $\Delta IL$ [dB]	
	before test		maximum, 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	0.10	0.11	0.10	0.10	0.09	0.03	0.02
2	0.27	0.25	0.33	0.30	0.28	0.26	0.09	0.09
3	0.09	0.06	0.09	0.07	0.08	0.04	0.02	0.03
4	0.15	0.12	0.14	0.12	0.11	0.12	0.04	0.02
<b>Maximum value</b>							<b>0.09</b>	<b>0.09</b>
<b>Minimum value</b>							<b>0.02</b>	<b>0.02</b>

## Vibration, sinusoidal

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

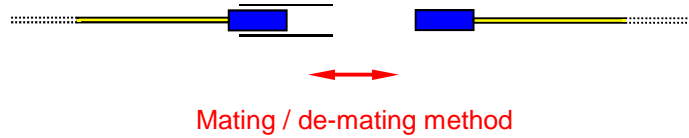
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
  - Monitored channels: 4
  - Upper vibration frequency: 55 Hz
  - Lower vibration frequency: 10 Hz
  - Vibration amplitude: 0.75 mm (peak-to-peak)
  - Sweep rate: 1 Oct/min
  - Sweep cycles: 15
  - Duration per axis: 90 min
  - Vibration axis: transversal (X) / longitudinal (Z)

### Results:

Sample no.	Vibration axis	Insertion loss IL [dB]						Variation of insertion loss $\Delta$ IL [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	X	0.14	0.11	0.15	0.10	0.15	0.11	0.01	0.01
	Z	0.14	0.11	0.13	0.10	0.14	0.10	0.01	0.01
2	X	0.28	0.28	0.27	0.28	0.30	0.28	0.03	0.00
	Z	0.24	0.23	0.24	0.22	0.24	0.23	0.00	0.01
3	X	0.14	0.10	0.11	0.09	0.11	0.09	0.03	0.01
	Z	0.11	0.09	0.12	0.09	0.12	0.09	0.01	0.00
4	X	0.18	0.20	0.19	0.21	0.19	0.21	0.01	0.01
	Z	0.20	0.22	0.22	0.23	0.18	0.22	0.04	0.01
<b>Maximum value</b>								<b>0.04</b>	<b>0.01</b>
<b>Minimum value</b>								<b>0.00</b>	<b>0.00</b>

## Mating durability

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



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

- Samples:**
- DUT: 1 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre / cable type: 8.2/125/900/2900  $\mu$ m, Diamond art. no. 1005154

- 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 $\Delta IL$ [dB]	
	maximum value		minimum value		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.16	0.18	0.02	0.09	0.14	0.09

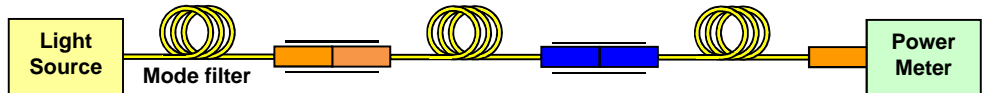
## Insertion loss

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

a) Reference measurement:



b) DUT measurement:



**Requirements:**  $IL_{Max} \leq 0.50$  dB

**Samples:**

- DUT: 7 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 9/125/900/2800  $\mu$ m, Diamond art. no. 1072171
- Reference connectors: 1 Diamond E-2000<sup>TM</sup> APC SM connector
- Mating adapters: 1 Diamond E-2000<sup>IM</sup> SM mating adapter

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- No. of measurements: 14

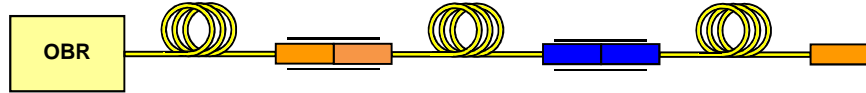
**Results:**

Statistics	Insertion loss IL against reference connector [dB]	
	at 1310 nm	at 1550 nm
Mean value	0.15	0.20
Standard deviation	0.09	0.09
Maximum value	0.37	0.38
Minimum value	0.06	0.09



## Return loss

**Methods:** OTDR/OFDR method according to IEC 61300-3-6



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

**Samples:**

- DUT: 7 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 9/125/900/2800  $\mu$ m, Diamond art. no. 1072171

**Parameters:**

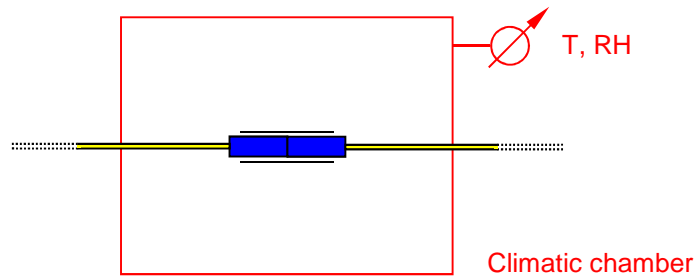
- Wavelengths: 1550 nm
- No. of measurements: 7

**Results:**

Statistics	Return loss RL [dB] at 1550 nm
Mean value	90.0
Standard deviation	4.7
Maximum value	95.4
Minimum value	82.2

## Change of temperature

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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:**

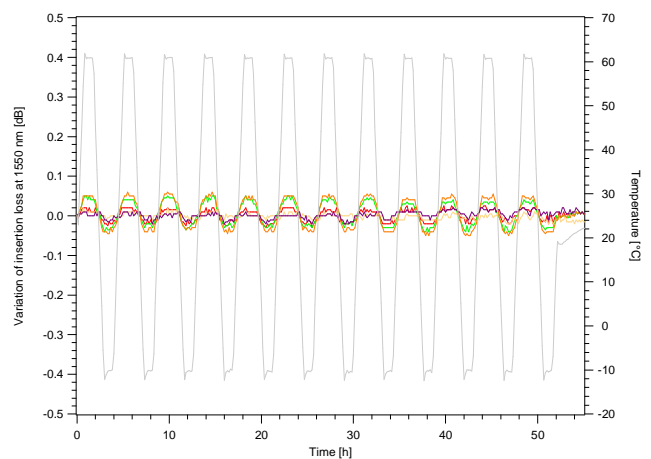
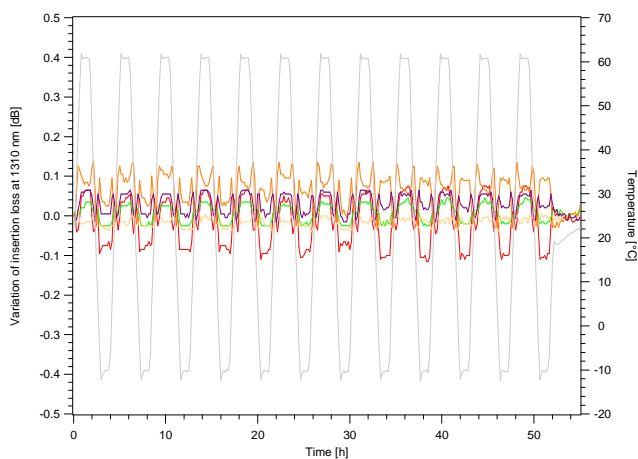
- DUT: 5 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 9/125/900/2800  $\mu$ m, Diamond art. no. 1072171

**Parameters:**

- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 5
- Upper cycling temperature: +60°C
- Lower cycling temperature: -10°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: 52 h

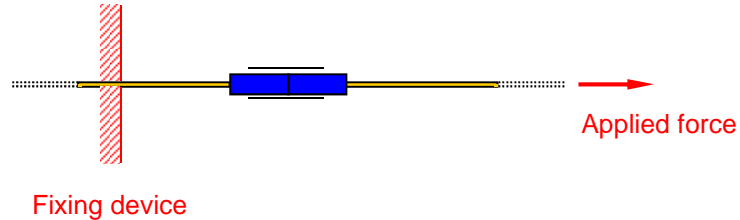
### Results:

Statistics	Variation of insertion loss $\Delta IL$ during test [dB]	
	at 1310 nm	at 1550 nm
Maximum value	0.19	0.11
Minimum value	0.07	0.04



## Cable retention

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



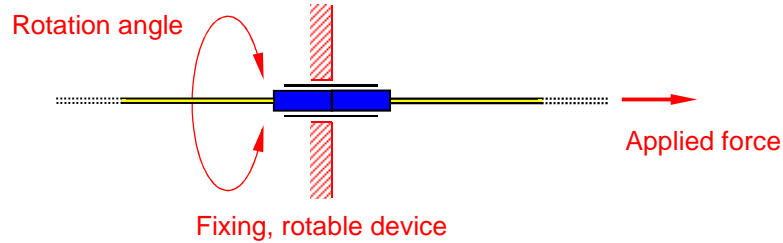
- Requirements:** Typical force at release: 20-25 N
- Samples:**
- DUT: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre / cable type: 9/125/900/2800  $\mu\text{m}$ , Diamond art. no. 1072171
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
  - Monitored channels: 4
  - Applied force: Until connector release
  - Force direction: Longitudinal connector axis
  - Force application distance: 30 cm

**Results:**

Sample no.	Insertion loss IL before test [dB]		Tensile force at release [N]
	at 1310 nm	at 1550 nm	
1	0.32	0.31	19.8
2	0.22	0.32	26.3
3	0.21	0.27	18.8
4	0.28	0.27	28.6
<b>Maximum value</b>			<b>28.6</b>
<b>Minimum value</b>			<b>18.8</b>

## Cable torsion

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



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

**Samples:**

- DUT: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
- Fibre / cable type: 9/125/900/2800  $\mu$ m, Diamond art. no. 1072171

**Parameters:**

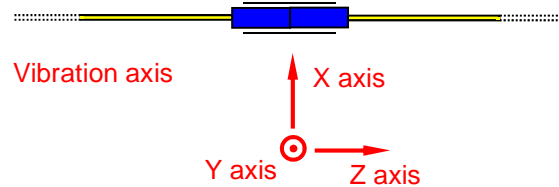
- Wavelengths: 1310 nm / 1550 nm
- Monitored channels: 4
- Applied force: 2 N
- Force direction: Longitudinal connector axis
- Rotation angle:  $+180^\circ$  to  $-180^\circ$  and back
- Number of cycles: 25
- Force application distance: 40 cm

### Results:

Sample no.	Insertion loss IL [dB]						Variation of insertion loss $\Delta IL$ [dB]	
	before test		maximum, 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	0.20	0.21	0.34	0.25	0.21	0.22	0.17	0.04
2	0.27	0.29	0.34	0.34	0.28	0.29	0.14	0.08
3	0.28	0.31	0.34	0.31	0.31	0.30	0.08	0.02
4	0.17	0.13	0.17	0.14	0.15	0.12	0.05	0.03
<b>Maximum value</b>							<b>0.17</b>	<b>0.08</b>
<b>Minimum value</b>							<b>0.05</b>	<b>0.02</b>

## Vibration, sinusoidal

- Methods:**
- Insertion loss measurement method B according to IEC 61300-3-4
  - Active monitoring of attenuation 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: 4 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre / cable type: 9/125/900/2800  $\mu$ m, Diamond art. no. 1072171

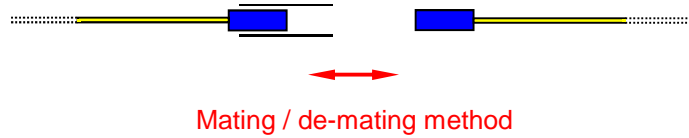
- Parameters:**
- Wavelengths: 1310 nm / 1550 nm
  - Monitored channels: 4
  - Upper vibration frequency: 55 Hz
  - Lower vibration frequency: 10 Hz
  - Vibration amplitude: 0.75 mm (peak-to-peak)
  - Sweep rate: 1 Oct/min
  - Sweep cycles: 15
  - Duration per axis: 90 min
  - Vibration axis: transversal (X) / longitudinal (Z)

### Results:

Sample no.	Vibration axis	Insertion loss IL [dB]						Variation of insertion loss $\Delta$ IL [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	X	0.18	0.15	0.16	0.14	0.19	0.15	0.03	0.01
	Z	0.18	0.17	0.16	0.16	0.16	0.16	0.02	0.01
2	X	0.24	0.31	0.26	0.31	0.26	0.31	0.02	0.00
	Z	0.20	0.28	0.18	0.26	0.18	0.26	0.02	0.02
3	X	0.16	0.16	0.19	0.17	0.19	0.17	0.03	0.01
	Z	0.17	0.18	0.15	0.19	0.15	0.19	0.02	0.01
4	X	0.17	0.17	0.15	0.16	0.15	0.16	0.02	0.01
	Z	0.15	0.16	0.20	0.15	0.20	0.17	0.05	0.02
<b>Maximum value</b>								<b>0.05</b>	<b>0.02</b>
<b>Minimum value</b>								<b>0.02</b>	<b>0.00</b>

## Mating durability

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



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

- Samples:**
- DUT: 1 SM cable patch cords provided each with a Diamond DiaLink V2 APC SM connector
  - Fibre / cable type: 9/125/900/2800  $\mu$ m, Diamond art. no. 1072171

- 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 $\Delta IL$ [dB]	
	maximum value		minimum value		at 1310 nm	at 1550 nm
	at 1310 nm	at 1550 nm	at 1310 nm	at 1550 nm		
1	0.17	0.21	0.12	0.16	0.05	0.05