



**Technical Paper |**  
**opticalCON® POWERSPLIT 2.5 mm<sup>2</sup>**

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**Technical Paper – opticalCON POWERSPLIT 2.5 mm<sup>2</sup>**

Title: NTP12 V1

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Subject:

Mechanical and optical tests applied to the opticalCON® transmission system for Pro Audio / Video industry purposes with main focus on changes in attenuation.

Optical performance is being examined with regard to attenuation and its variation vs. environmental and mechanical conditions.

This documentation describes the results of the test series conducted at Neutrik.

Please check technical paper powerCON and opticalCON connectors for mating durability and impact test results.

The tests were carried out in accordance with the IEC-Standard main groups IEC 61753-1 and IEC 61300 as well as to Neutrik internal specifications.

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## 1 Change of Temperature

### Object:

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Variations in attenuation due to temperature changes.

The test was arranged with one NKOYPM-44-A-0-50 cable connected to a NAC3FPX- TOP / NAC3MPX-TOP and a NO4FDW-A receptacle.

### Test Set-Up:

Test procedure according to IEC 61300-2-22. The test was realized in a temperature testing chamber type WEISS WK11-180/40.

Test cycles:	76 h
Profile of temperature:	-40 °C to +85 °C, 93% humidity
Light source:	Kingfisher KI2824
Power meter:	Kingfisher KI2600GE
Measuring wave lengths:	1310 nm

Table 1.a: Change of temperature



Picture 1.a: Test set-up

Temperature Profile and Results:

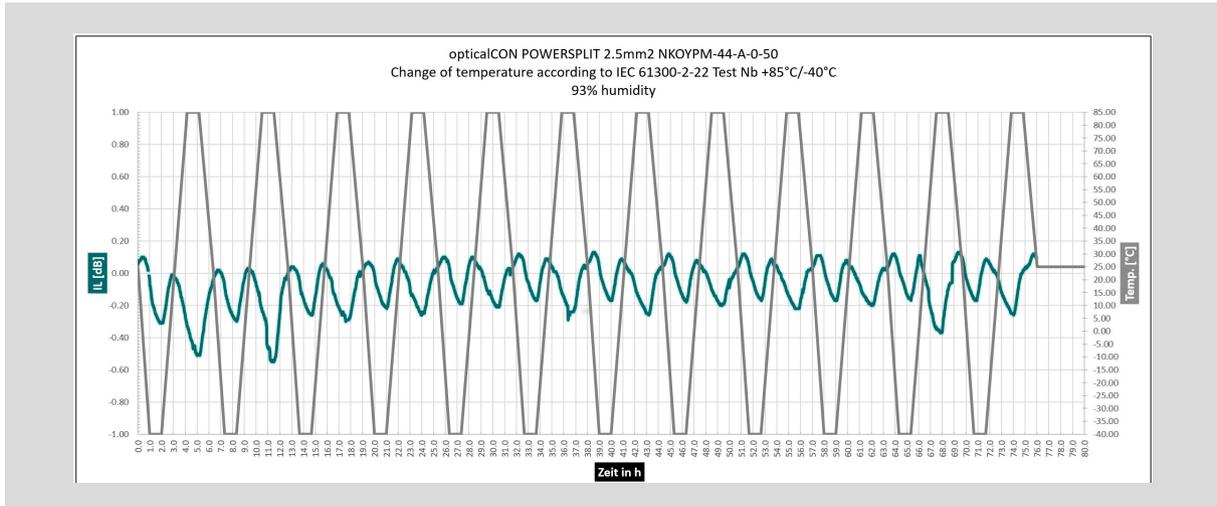


Figure 1.a: Change of temperature

The attenuation varied on 0.7 dB within the temperature cycles. Attenuation was measured on 8 connection i.e. around 0.1 dB range of attenuation per connection.

The values are in the Neutrik’s attenuation and return loss limits for field application with temperature variations.

## 2 Cable Retention

### Object:

Test of the cable retention efficiency. The opticalCON POWERSPLIT cable NKOYPM-48-A-0-4 was exposed to tractive forces of 400 N for 60 s.

### Test Set-Up:

The applied test procedure is referred to IEC 61300-2-4.

	measured average value
Tension test device:	Mecmesin MultiTest 2.5i (0 - 1'000 N)
Light Source:	Kingfisher KI2824
Power Meter:	Kingfisher KI2600-GE
Cable type:	NKOYPM-48-A-0-4

Table 2.a: Cable retention

### Test Results:



figure 2.a: Test set-up

The opticalCON POWERSPLIT 2.5 mm<sup>2</sup> cable is tested and approved for 400 N and 60 sec. readjustment without any quality and function adverse effects.

## 3 Flexing

### Object:

Attenuation and mechanical damage were examined before and after defined flexing procedure. Transmission via copper conductor was measure during the whole test.

### Test Set-Up Cold:

Measurement of attenuation before and after flexing cycles.

Test procedure according to IEC 61300-2-44 in combination with IEC 61300-3-4.

Test cycles:	10'000
Mass of added weight:	10 N
Flexing angle:	$\pm 90$ °C
Flexing speed:	ca. 37 cycles/min
Light source:	Kingfisher KI2824
Power meter:	Kingfisher KI2600-GE
Wavelength:	1310 nm
Test cable	NKOYPM-48-A-0-4

Table 3.a: Flexing

### Test Results:

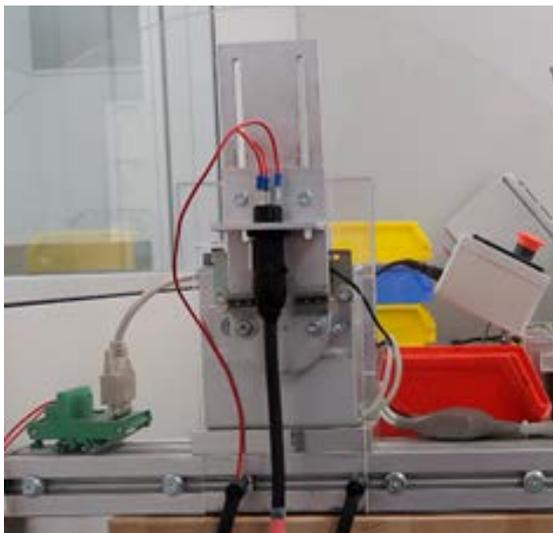


figure 3.a: Test set-up

Change in attenuation overall < 0.30 dB. No mechanical cable damage at 10.000 cycles visible

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## 4 Dielectric Strength

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### Object:

The dielectric strength was checked in unmated condition. The combination of contact to contact and contact to shell was judged.

### Test Set-Up:

Test procedure according to IEC 60512-2 test 4.a

Measuring Instrument: Sefelec DMG 50

### Test Results:

	measured average value	conditional value
Power contact – Housing	2.3 kVAC	1,5kVAC

Table 4.a: Dielectric strength

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## 5 Insulation Resistance

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### Object:

The insulation resistance along the opticalCON POWERSPLIT cable was checked.

### Test Set-Up:

Test procedure according to IEC 60512-2 Test 3.a

Measuring Instrument:	Sefelec DMG 50
Maximum measurable isolation resistance	10 GΩ
Test parameter	Test voltage 500 V DC

Table 5.a: Insulation resistance

### Test Results:

The measuring results are compliant with the requirements of IEC 60512-2.

## 6 Current Capacity

### Object:

Temperature rise of the power contacts as a result of electrical current.

### Test Set-Up:

Test procedure according to IEC 60512-5-1.

Measuring Instrument: VAREG, 3 V 0-50 A rms, Fluke 365

Temperature measuring Instrument: SVMtec TSC-12

The maximum temperature rise was defined generally with < 40 K.

### Test Results:

The measurements were realized with following combinations:

**NAC3FX-W-TOP** (female connector) connected with **NAC3MX-W-TOP** (male connector)

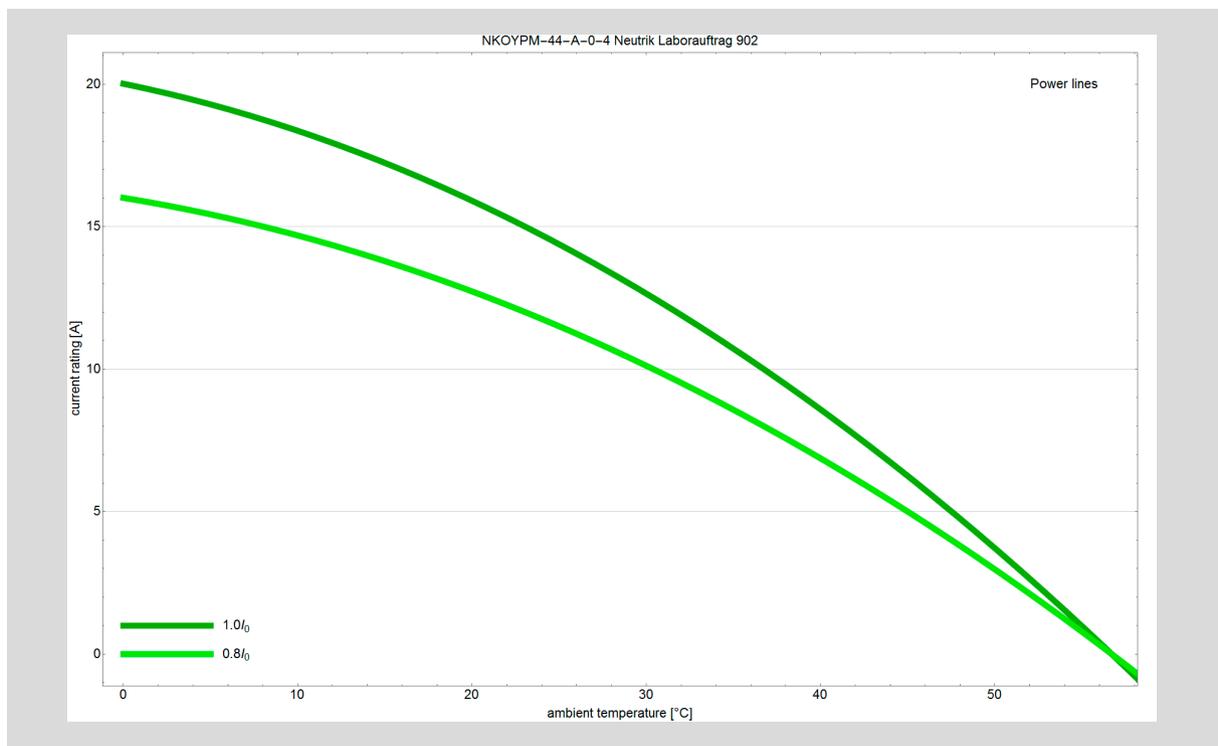


Figure 2.a: NAC3FX-W-TOP with NAC3MX-W-TOP – Power lines

## 7 Ingress Protection IP x5 Liquids Protection

### Object:

Protection against ingress of water according to IP x5.

### Test Set-Up:

Test procedure according to IEC 60529.

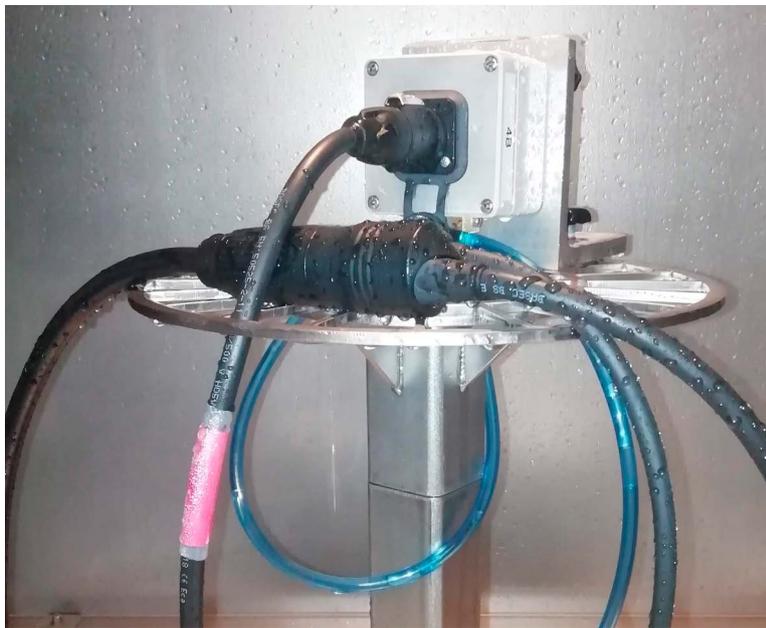


Figure 7 a: Test set-up

### Results:

The opticalCON POWERSPLIT 2.5mm<sup>2</sup> successfully passed the IP x5 test.



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