High Bandwidth GI-POF

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Web Site

https://www.nitto.com/jp/en/products/pof/

Active Optical Cable Compatible with USB Type-C® Connector

Introducing our AOC with USB Type-C® connector that utilizes Nitto's POF, and is increasingly being adopted in a variety of devices.

Compatible with USB Type-C® Connector Active Optical Cable

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Active Optical Cable

Specification

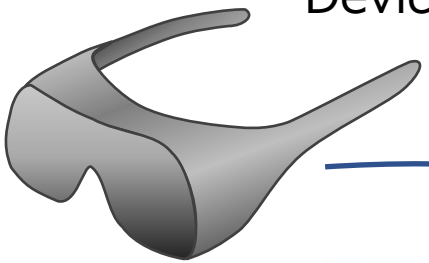
Connector	Width	11.0mm
	Length	31.5mm
	Thickness	(1) 4.6mm (2) 8.0mm
	Terminal	USB Type-C® male - USB Type-C® male
Cable Diameter		4.8mm
Optical Fiber		Graded Index (GI) Type High Speed Transmission Multimode Plastic Optical Fiber
Weight/length		Approx. 200g / 5m
Transmission Standards	Display Port 1.4 Transmission	Compatible
	USB Power Delivery	3A / 20V
	USB 2.0	Compatible

32.4 Gb/s (4 lanes)

https://www.nitto.com/jp/en/products/pof/aoc/usb_c/

Market Adoption – VR application –

Device with Display Port(USB-C DP-alt mode)
e.g. VR Device



USB-C type AOC

Source

Already launched
for B-to-B use.

Bandwidth

Bandwidth of A4i (2)

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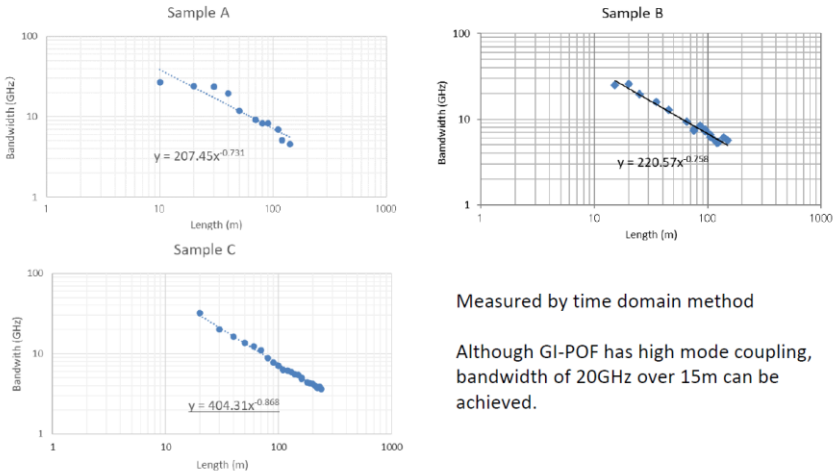

Measured by time domain method

Although GI-POF has high mode coupling, bandwidth of 20GHz over 15m can be achieved.

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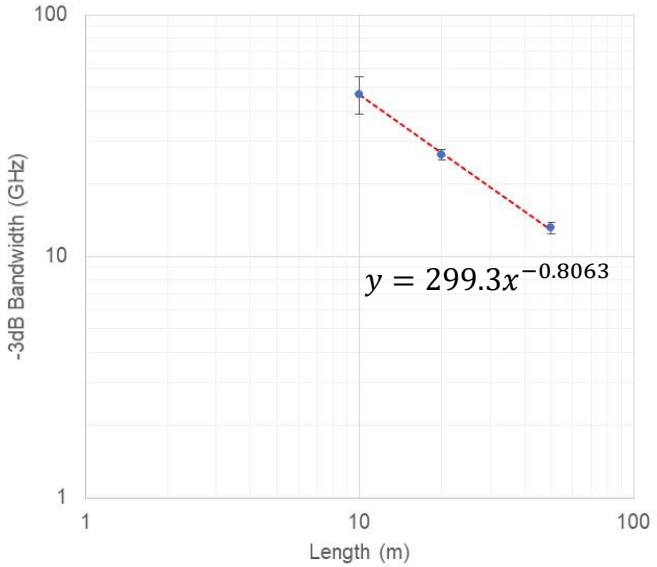
https://www.ieee802.org/3/dh/public/July_2022/Watanabe_3dh_02_2207.pdf



Measured by time domain method.
Bandwidth of 25GHz over 15m can be achieved.

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Bend Loss Data

Mechanical test results as Φ2 cable

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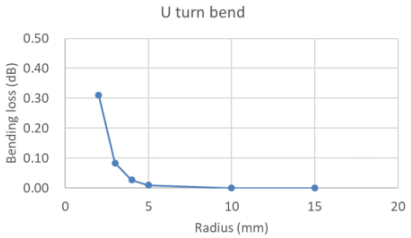

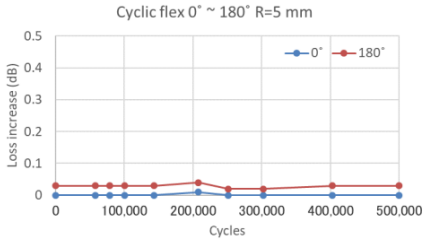

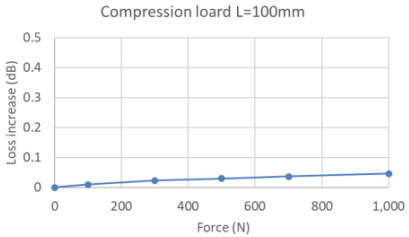

- Low bending loss: <0.1dB R=5 mm
- No degradation after 500K flex cycles with R=5mm and 1000N loading with 100 mm width (assuming stepping on cable by a person who has 100 kg weight).

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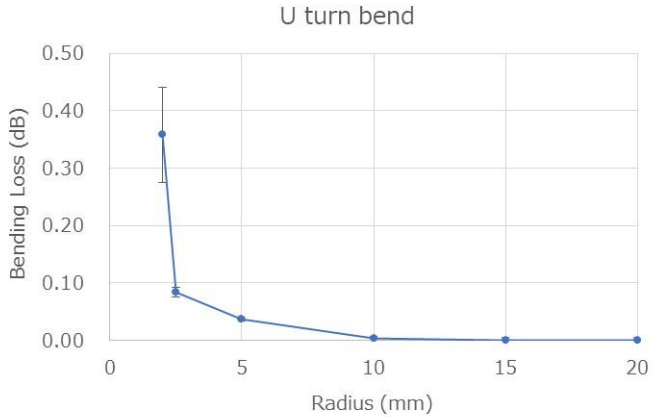
https://www.ieee802.org/3/cz/public/9_feb_2021/watanabe_3cz_01_090221_gipof.pdf



Low bending loss: less than 0.1 dB R=5mm

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Spectral Attenuation

Spectral attenuation of GI-POF(A4i)

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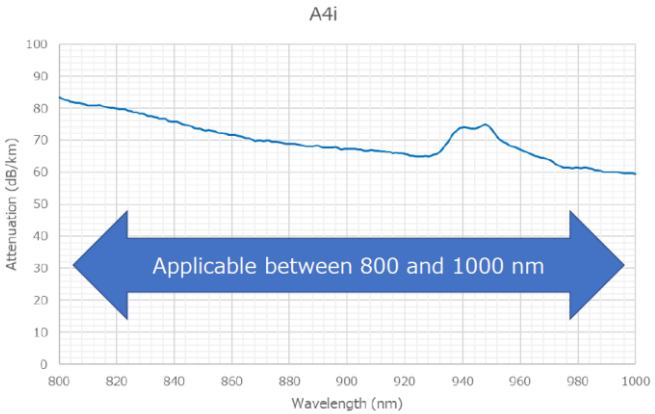

Because perfluorinated polymer has no C-H bond, GI-POF (A4i fiber) has low attenuation between 800 and 1000 nm comparing to conventional SI-POF.
802.3cz PHY (980nm) and 850nm PHY is applicable with GI-POF.

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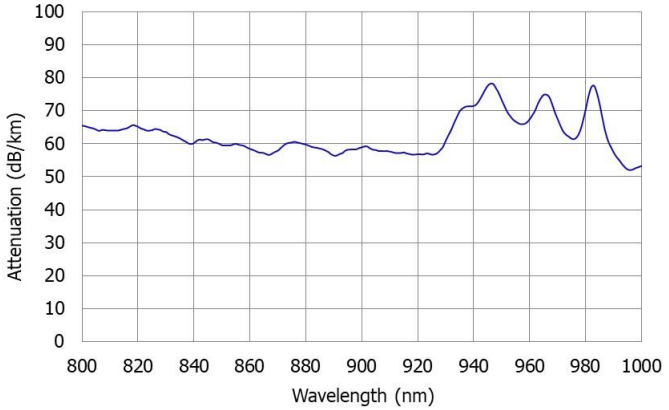
https://www.ieee802.org/3/dh/public/July_2022/Watanabe_3dh_02_2207.pdf



59 dB/km @ 850nm
70 dB/km @ 980nm

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Summary

- High bandwidth GI-POF is introduced.
- Bending loss, attenuation, and bandwidth properties are similar to existing GI-POF.


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