



Bandwidth Property of GI-POF

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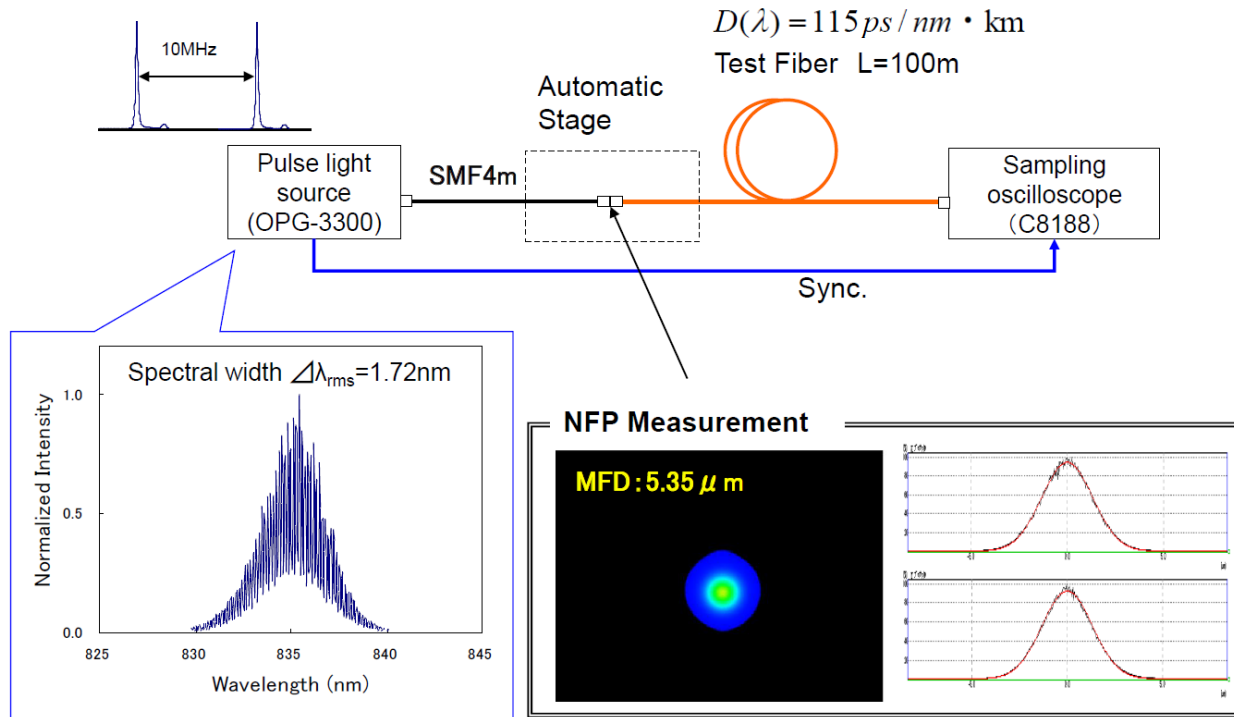
➤ This contribution is intended to provide;

$minEMB_c$ for 40 m and 15m GI-POF link length, and

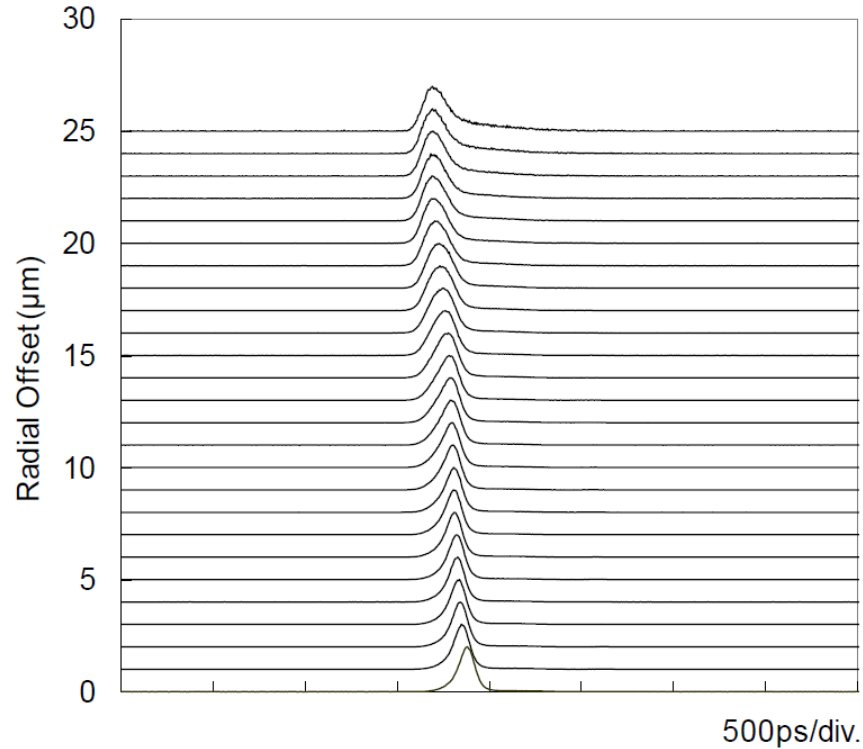
the bandwidth – length relationship for short length of GI-POF

to improve the validity of link budget calculation. (Ref.[1] p.3)

Experimental Setup for DMD Measurement

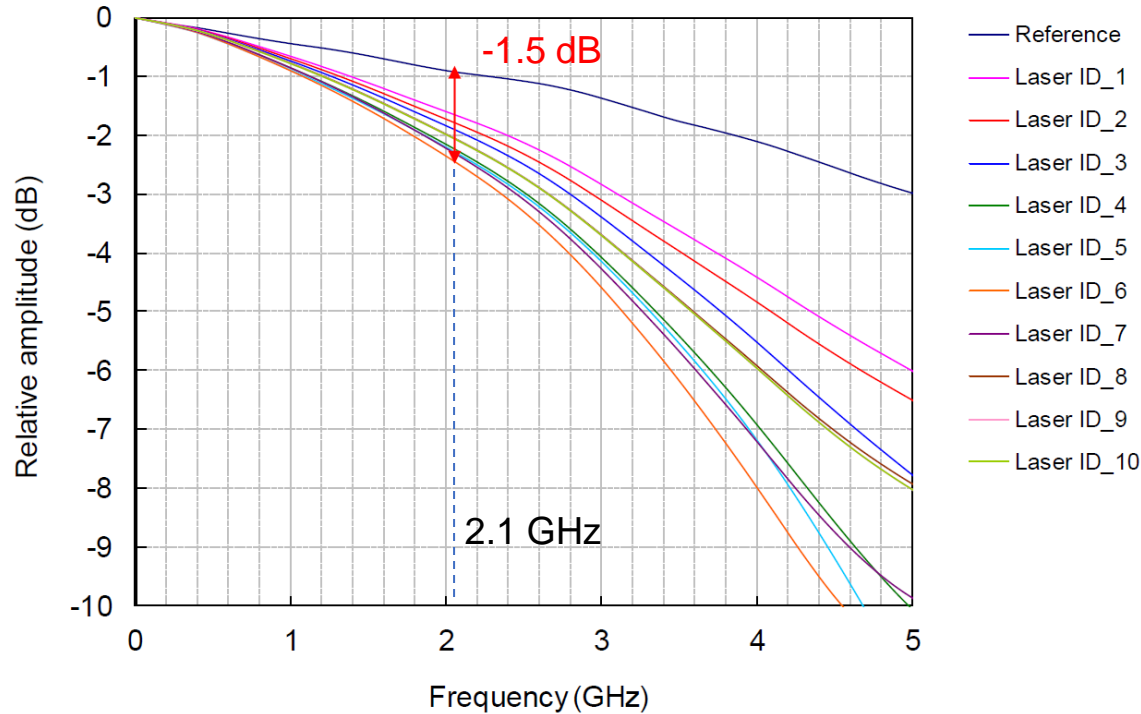


DMD Measurement Results of 100 m long GI-POF



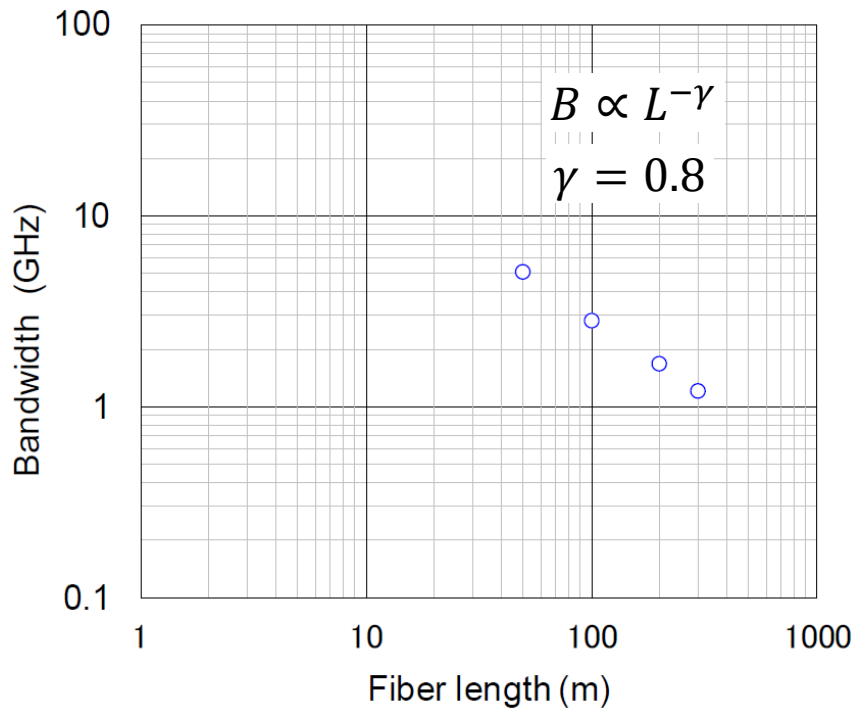
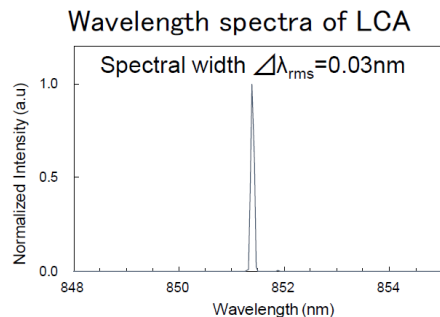
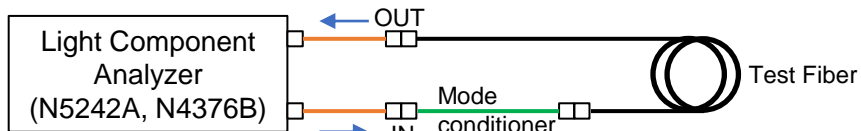
$$\begin{aligned} DMD &= (T_{slow} - T_{fast}) - \Delta T_{REF} \\ &= 221 \text{ psec. @ } L = 100 \text{ m} \\ &(0 \leq r \leq 25 \mu\text{m}) \end{aligned}$$

Calculated EMB Results of 100 m long GI-POF



$$\min EMB_c = 2.97 \text{ GHz}$$

Transmission Bandwidth of GI-POF as a Function of Fiber Length with Mode Conditioner



*min*EMB_c for 40m and 15m of GI-POF

Based on the length bandwidth product relationship, $B \propto L^{-\gamma}$

and *min*EMB_c at 100 m length result (2.97 GHz),

*min*EMB_c for 40 m and 15 m of GI-POF is calculated as follows;

	$\gamma = 0.8$
40 m	6.13 GHz
15 m	13.3 GHz

- From the DMD measurement results for 100 m GI-POF, the *min*EMBc of 2.97 GHz is obtained.
- The *min*EMBc of short length GI-POF is calculated based on the bandwidth (B) – length (L) relationship, $B \propto L^{-\gamma}$, below 100 m and the *min*EMBc of 2.97 GHz at 100 m .

- [1] R. Pérez-Aranda, "Link budget proposal 25, 10, 5 and 2.5 Gb/s for GIPOF @850nm" August 2021, [Online], Available:
https://www.ieee802.org/3/cz/public/31_aug_2021/perezaranda_3cz_01a_310821_gipof_link_budget.pdf



Thank you for your kind attention!

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