

# End Face Termination Process for Butt Coupling

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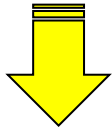
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1<sup>st</sup> Sept. 2020

IEEE P802.3cz Multi-Gigabit Optical  
Automotive Ethernet Task Force

- Regarding the end face termination of butt coupling connection, I would like to show that is practical even with than polishing process for automotive applications.
- Also, those termination processing time is shorter than polishing process and there is relatively advantage.

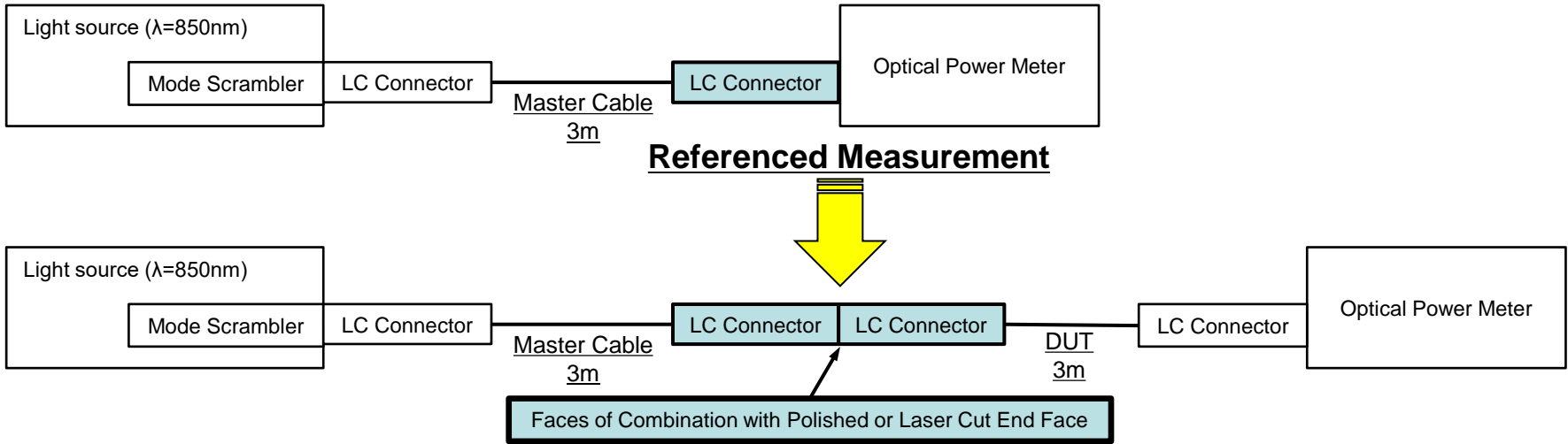
- Polishing Process
  - The machine with several polishing sheet and liquid.



- Non-Polishing Process
  - Cleaving Cut
    - Cleaving tool
  - Blade Cut
    - Blade tool
  - Laser Cut
    - Laser machine with Non-expendable items and No-liquid

- MMF-GI50(OM3)
  - In this presentation, I evaluated with glass fiber.
    - Prepared End Faces Combination of Optical Cables with LC Connector (3m)
      - #1 Polished and Polished
      - #2 Polished and **Laser Cut**
      - #3 **Laser Cut** and **Laser Cut**
- GI-POF
  - I prepared same end face combination and still continuing under evaluation with GI-POF.

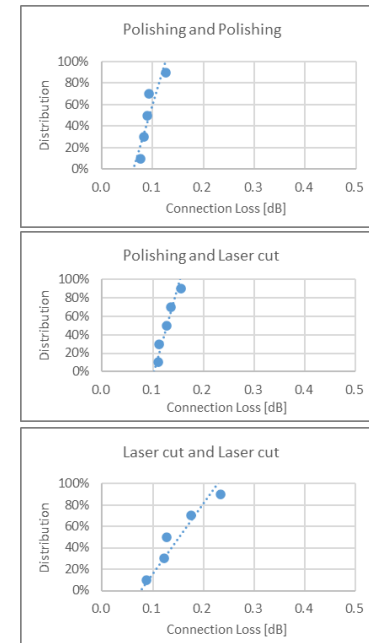
# Actual Connection Measurement



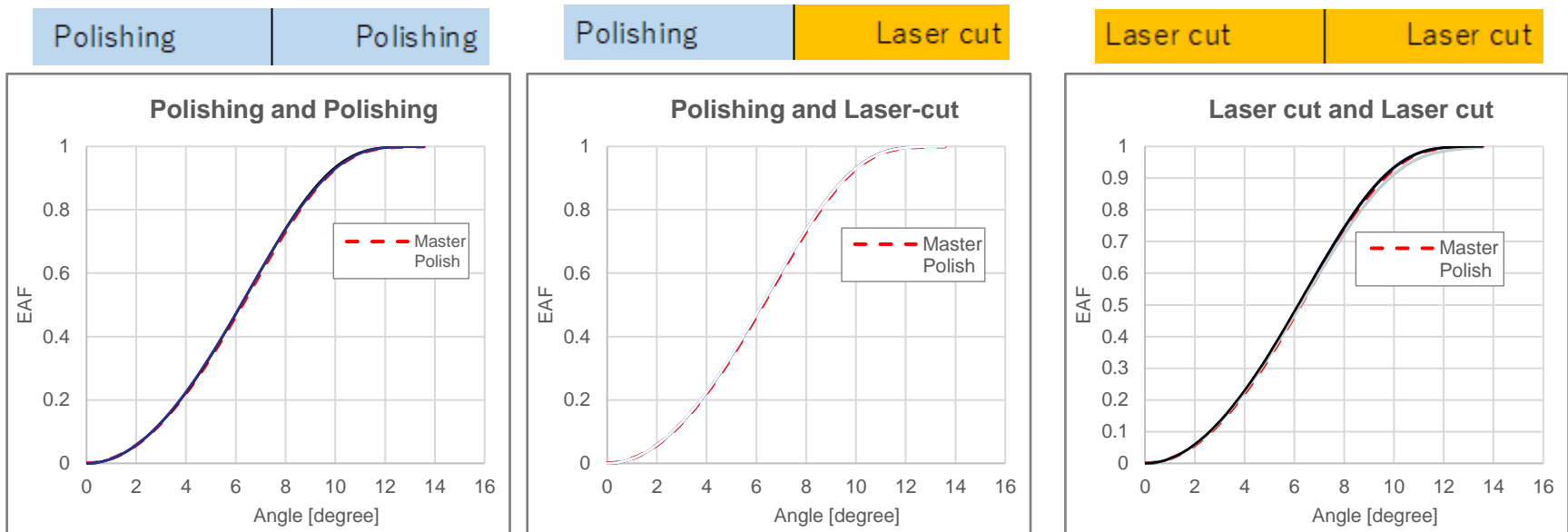
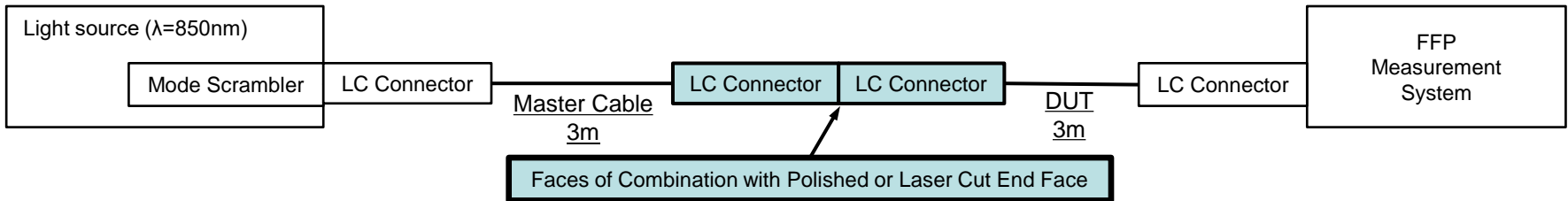
## Actual Connection Measurement

Fiber Type	Side of Master	Side of DUT	Connection Loss [dB]	Max. [dB]	Min. [dB]	Ave. [dB]
	End face processing	End face processing				
MMF-GI50 (OM3)	Polishing	Polishing	0.076	0.126	0.076	0.093
			0.082			
			0.090			
			0.092			
			0.126			
	Polishing	Laser cut	0.127	0.155	0.110	0.128
			0.135			
			0.113			
			0.155			
			0.110			
Laser cut	Laser cut	0.128	0.233	0.087	0.149	
		0.087				
		0.123				
		0.233				
		0.175				

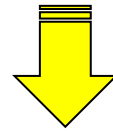
## Statistical Distribution



# FFP: Far Field Pattern, Measurement (EAF: Encircled Angular Flux, Results)



- Polishing Process
  - Five to Ten minute
- Non-Polishing Cut Process
  - Few second



**Non-Polishing Cut Process achieve at least 1/10 even more 1/20 or less time.**

- Possibility of practical connection by termination process with other than polishing.
  - The Laser cut termination end-face connection loss and the Modal distributions are similar as usual polishing specifications.
  - Non-Polishing Cut Process (Laser Cut) achieve at least 1/10 even more 1/20 or less process time.
    - Relative lower cost than polishing process
    - Non-expendable items and No-liquid (No-water)



Thank you!