

# MMF reach proposals for OM4 and OM3

Jonathan King, Paul Kolesar,  
and John Petrilla

IEEE P802.3bm  
Victoria, May 2013

# Summary

- Discussion in the MMF ad hoc (2<sup>nd</sup> May 2013) concluded that round number reaches are more user friendly
- John Petrilla's link modeling has shown the PMD specifications for 100 m reach on OM4 accommodates 70 m on OM3 (petrilla\_04\_0513\_optx)
  - independently verified in [king\\_01\\_0513\\_mmf](#), reviewed in the May 2<sup>nd</sup> MMF ad hoc
- We propose amending the 100 m PMD baseline proposal to include a maximum reach over:
  - OM4 of 100 m (from 106 m), and
  - OM3 of 70 m (from TBD)

# Round-number reach: Situation and advice

- Currently, the 100 m MMF PMD baseline proposal states a reach of 106 m on OM4
  - King\_01\_0513\_mmf presented a reach of 71 m on OM3
- Both of these reach numbers are not easily remembered
  - May impede comprehension in market
- While 802.3 has previously specified quirky reaches, these were not on main MMF media
  - Examples: 10GBASE-S to 33 m on OM1, 82 m on OM2
  - These were the result of supporting 300 m on OM3, the main media
- Both OM3 and OM4 are main media for Next Gen 100GE
  - Both should have easily remembered reaches
- Two options within consideration:
  - 70 m on OM3 and 100 m on OM4 with current baseline PHY parameters, or
  - 75 m on OM3 and 110 m on OM4 with slightly improved PHY parameters

Most expedient

Slightly greater utility

# Proposal

(Opting for expediency)

Amend the 100 m reach PMD baseline proposal as follows:

- Change the **OM4** operating range to **0.5 to 100 m**  
(from 0.5 to 106 m)
- Add **OM3** operating range **0.5 to 70 m**  
(previously noted as 'for further study')

# Proposal in detail

Change the content of slide 10 in [king\\_02\\_0113](#) (100 m MMF reach objective baseline proposal) from:

Parameter	Type	Unit	Value
Supported fiber types			50µm OM4, (OM3 <sup>2</sup> )
Effective Modal Bandwidth		MHz*km	4700 <sup>1</sup> , (2000 <sup>1,2</sup> )
Power Budget	min	dB	8.2
Operating Range		m	0.5 to 106 <sup>2</sup>
Channel insertion loss	max	dB	1.9

*Note 1: With EMB as specified in clause 86*  
*Note 2: Reach on OM4; equivalent reach on OM3 is for further study in the task force*

to:

Parameter	Type	Unit	Value	
Supported fiber types			50µm OM4	50µm OM3
Effective Modal Bandwidth		MHz*km	4700 <sup>1</sup>	2000 <sup>1</sup>
Power Budget	min	dB	8.2	
Operating Range		m	0.5 to 100	0.5 to 70
Channel insertion loss	max	dB	1.9	1.8
Unallocated Margin		dB	0	0.1

*Note 1: With EMB as specified in clause 86*