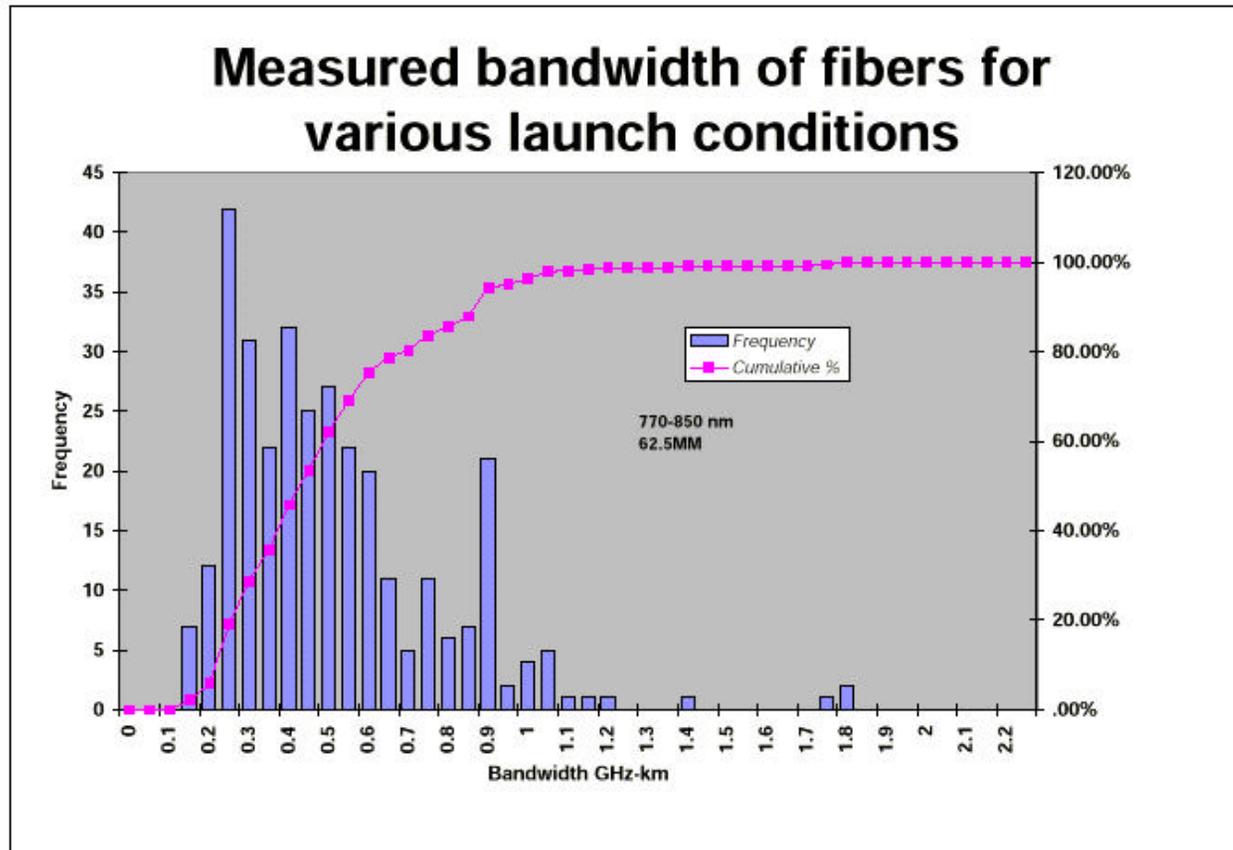


Statistics of bandwidth

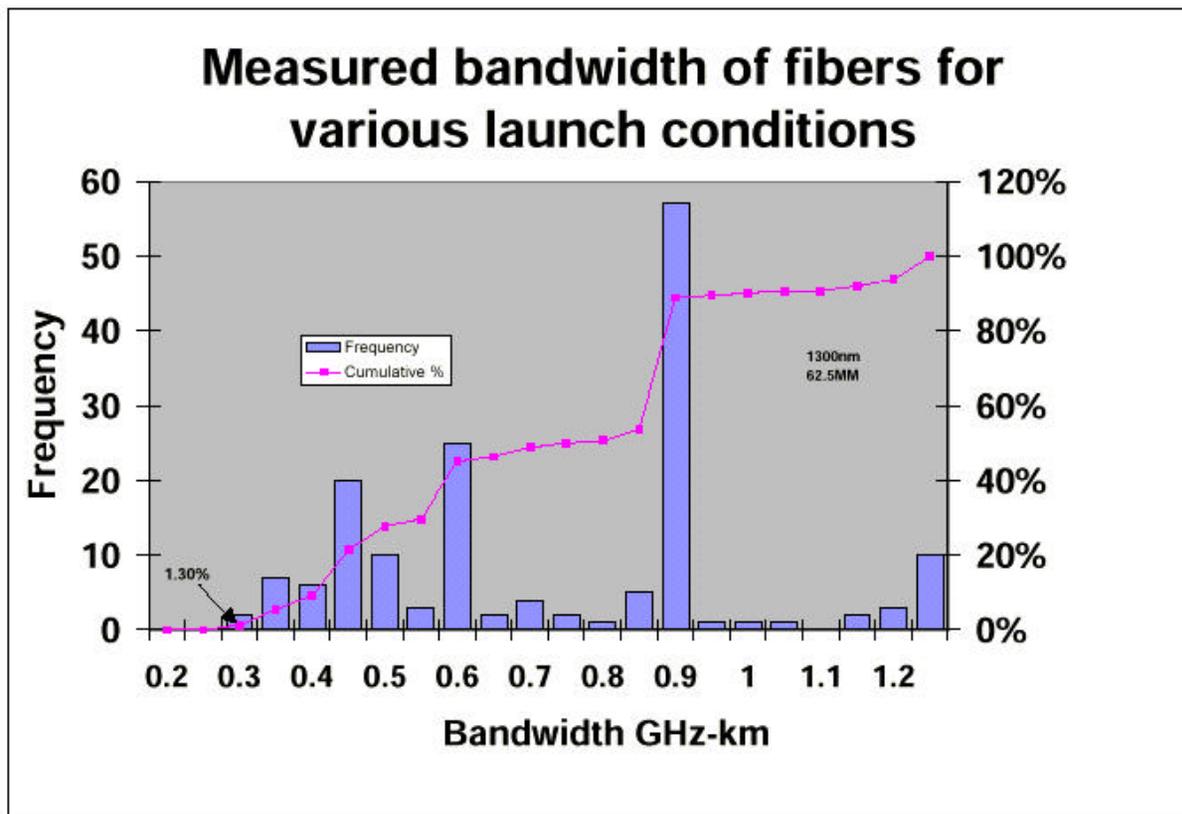
850 nm / 62.5 MM



<i>Bin</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	0	.00%
0.05	0	.00%
0.1	0	.00%
0.15	7	2.19%
0.2	12	5.96%
0.25	42	19.12%
0.3	31	28.84%
0.35	22	35.74%
0.4	32	45.77%
0.45	25	53.61%
0.5	27	62.07%

Statistics of bandwidth

1300 nm / 62.5 MM



Bin	Frequency	Cumulative %
0.2	0	.00%
0.25	0	.00%
0.3	2	1.30%
0.35	7	5.56%
0.4	6	9.26%
0.45	20	21.60%
0.5	10	27.78%
0.55	3	29.63%
0.6	25	45.06%
0.65	2	46.30%
0.7	4	48.77%
0.75	2	50.00%

Conclusions of Fiber Bandwidth Task Group

- Overfilled Launch (OFL) bandwidth is not a good indicator of bandwidth when an unconditioned launch is employed.
 - Most sources in commercial transceivers have an unconditioned launch.
 - Lasers cannot replicate an overfilled launch.

Conclusions of Fiber Bandwidth Task Group

- Restriction of the launch NA or radius has unpredictable effects on bandwidth.
 - The most likely result is an increase in bandwidth above the OFL value.
 - Some fibers exhibit a decrease below the OFL value.
 - On rare occasions this may result in fibers having a bandwidth less than the minimum specified value (160/500 or 500/500).

Conclusions of Fiber Bandwidth Task Group

- Specifying control of the launch condition is not feasible.
 - Laser cannot replicate OFL.
 - The same launch may have different effects in different fibers.
 - It is not obvious what launch to specify.
 - May not be manufacturable

Conclusions of Fiber Bandwidth Task Group

- Modifying the index profile of the fiber may not be feasible.
 - The magnitude of perturbations of the index profile that cause these effects may be less than can be measured.
 - The level of control required may exceed manufacturing capabilities.

Conclusions of Fiber Bandwidth Task Group

- Two solutions
 - Use a conservative value of bandwidth (Worst case modal bandwidth WCMB) based on TIA 2.2 results and other measurements.
 - Reduce the link lengths in accordance with WCMB.
 - Develop a test method that accurately measures the WCMB of any particular fiber.
 - Only proposal for this so far is the Radial Overfilled Launch(ROFL)

Conclusions of Fiber Bandwidth Task Group

- Radial Overfilled Launch
 - Excites predominantly radial fiber modes (zero order azimuthal modes).
 - OFL weights modes uniformly
 - ROFL weights mode groups uniformly.
 - Smaller number of modes in ROFL tends to enhance multipath ‘fading’ effects.
 - ROFL Modal distribution is more sensitive to index perturbations than OFL.

Conclusions of Fiber Bandwidth Task Group

- Installed base.
 - Conservative use of WCMB and shorter link lengths should greatly increase the confidence level.
 - May result in over pessimistic link lengths.
 - Taking a “better safe than sorry” approach.

Conclusions of Fiber Bandwidth Task Group

- Future installations
 - New installations should initially use conservative values.
 - ROFL may allow screening for higher bandwidth and longer link lengths.
 - ROFL needs to be standardized by TIA and IEC.
 - Fiber manufacturers will develop fiber better optimized for this type of application.