R
Specialty
Optical Fibers

Innovative Fiber Optic Devices & Assemblies

Technical Note

Terminology for Randomizing Bundles

RSOF commonly fabricates multiple legged cable assemblies. These assemblies can have multiple fibers in each leg as well. When these legs are combined into a "common" end fitting, there is often the request the fibers from the legs be "randomized" in the common end.

"Randomized" is typically NOT what is desired. What is typically meant by randomized, is really the exact opposite of what "random" actually means, and what is desired is a highly ordered common end distribution where the fibers from each leg are distributed uniformly or evenly.

Perfect uniformity in the distribution of fibers from multi-legged bundles throughout a single common end is virtually impossible in a bundle of any size whatsoever, and is only achievable to the extent possible for any fiber count, by "mapping" (or purposefully ordering) the fibers.

RSOF, in an effort to define terms and meet our assembly standards and our customer's needs uses the following terminology and practices:

Mapping – Picking out specific fibers in specific locations that meets some predetermined and agreed upon pattern.

Randomize – An effort to limit the clumping or grouping of fibers from any individual leg, in a common end, to no more than 25% of the fibers from that leg. If for example a 3 legged bundle is made and each leg has 20 fibers in it then when the common end is "randomized" we would not want to see any grouping of more than 5 fibers from any leg contained in an aperture suitable for that fiber count. A way to verify this is to make an aperture that will fit 25% of the fibers from one leg and scan that across the common end bundle. If at any position on the common end one can observe that aperture fully filled by the fibers from any one leg, to the exclusion of any fiber from any other leg, then that bundle end is NOT sufficiently randomized.

Salt and Pepper – Randomized as above but where the standard is 15% as the grouping value.

No Specification – If there is no specification on a common end for a multi legged bundle then that bundle end has no requirement for fiber distribution and can be truly random. That is, whatever is achieved when the fibers are assembled.

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