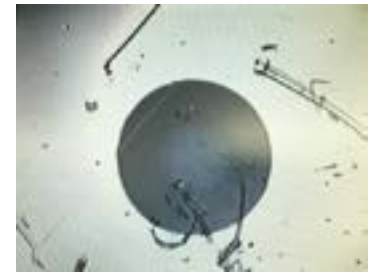


# AN137

## Preventing Damage to Optical Connectors

### Effects of Damaged Front Panels

Maintaining your equipment's interface & connectors is absolutely critical to achieving quality results. Damaged instrumentation interfaces and reference cables can add loss and reflections as well as reduce stability, making it difficult to take accurate measurements. In addition to adhering to strict policies regarding cleaning and inspection, one way to maintain instrumentation interfaces and reference cords is to use SAVER cables and extension leads. Rather than needing to repolish or reconnectorize the interfaces of test equipment or expensive reference cables, those repairs can be performed on the SAVER cables and extension leads to significantly reduce downtime and cost.



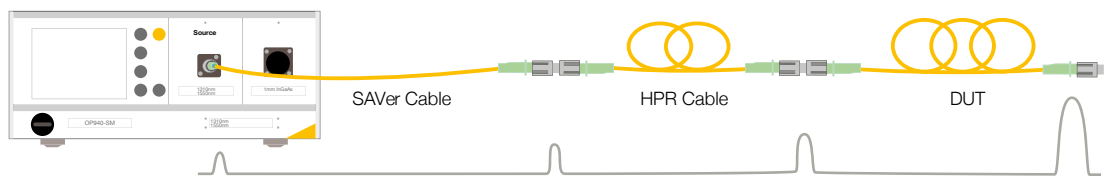
1313nm	0.166	dB
1553nm	0.168	dB
1313nm	56.58	dB
1550nm	57.03	dB

1313nm	0.240	dB
1553nm	0.269	dB
1313nm	50.20	dB
1550nm	50.93	dB

Dirt and damage can greatly affect not only the visual qualification of a cable, but also its insertion loss and return loss.

### Using SAVER Cables

Units that do not have removable front panels do not allow for damaged connectors to be easily repaired. Fortunately, SAVER cables are designed to 'save' the instrument front panel from dirt, scratches and potentially expensive repairs and downtime. If the SAVER cable gets dirty or damaged, it is much easier to clean, repolish, or even replace than it is to clean or repair the front panel of the unit. SAVER cables should be attached to the instrument permanently until the interface becomes damaged, at which point, it should be repolished or replaced with another SAVER cable.



By leaving a SAVER cable attached to the front panel of a unit, interface damage can be avoided, preventing downtime and minimizing repairs costs.

# AN137

## Preventing Damage to Optical Connectors

### Damaged MPO/MTP Reference Cables

While SAVER cables are used to protect the front panel connector of instruments, extension leads are cables used to protect the endfaces of reference cables as well as for gender changing purposes. The inclusion of extension leads in an MPO testing line can make testing much easier and extend the life of expensive reference grade fanout cables. If proper care isn't taken, though, clogged guide pin holes or dirty guide pins can prevent MTP connectors from mating properly, yielding large reflections. Regular cleaning of these guide pins and guide pin holes can prevent such interference.



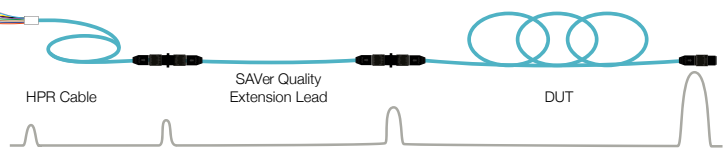
Similar to simplex cables, MTP reference cables must be free of dirt and damage to avoid creating excess insertion loss and return loss. Extension leads can prevent such damage from occurring to expensive MTP reference cables.

It is important to make sure that any extension lead that will be introduced to a test setup is of a high quality, having reference grade return loss and insertion loss, as well as interferometry results. For example, OptoTest's High Performance Reference Cable (HPR) meet these requirements of low insertion and return loss. Another consideration that needs to be made is for the length of the extension leads. It is necessary that the leads be long enough (approximately 3m for APC and 5m or longer for PC (MM) MPOs) to make sure the return loss of the intermediate connection does not interfere with the connection to be tested.

Each time an extension lead is connected to a launch lead, it is suggested that the IL and RL at that position be tested to ensure its quality. For MM cables the return loss should be >40dB and for SM cables it should be >72dB across all fibers and the insertion loss should be below 0.25dB.



Extension leads can prevent damage from occurring to expensive MTP reference cables. Inserting a SAVER quality extension lead between the launch lead and the DUT will maintain highly accurate results and protect the reference cable interfaces.



When using SAVER cables, extension leads, or any additional connections between the front panel and the connection under test, consider the launch condition of the source. Each additional connection in the test setup can slightly modify the existing launch condition. To maintain EF compliance through connectors it is recommended that low loss connections be used due to their tighter alignment. Additionally, misalignments on the connectors/fibers increase the chance that the launch condition is out of specification.