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## **LABORATORY REPORT**

**Date:** May 16, 2011

### **Purpose:**

To evaluate AquaKleen™ Fiber Optic Cleaner Type AQ based on the requirements of Telcordia GR-2923-CORE, "Generic Requirements for Fiber Optic Connector Cleaning Products."

### **Background:**

AquaKleen™ Fiber Optic Cleaner was tested using SC-UPC jumpers and alignment adapter manufactured by Multilink Broadband. A one meter jumper part # ML-S3YYS1 and Alignment Adapter MSCB-03-C were used. A Multifunction Loss Tester model FOT-930 Maxtester II manufactured by EXFO was used to obtain test data.

### **Procedure:**

Each test connector is tested before use. For each soil, four mated connector specimens with short jumpers and alignment adapters are used. The reflectance and transmitted power are measured through the power meter. Readings are taken at wavelengths of 1310, 1550, and 1625. An electronic image of each unsoiled fiber/ferrule endface is recorded.

Soiled samples are created according to method described in GR-2923, using ¼ teaspoon dry soil or a drop of wet soil applied to a dry wiping pad. Near-end connector plugs are soiled, viewed in the scope and plugged back together with the original adapter, far-end connector plug still in place. The near-end connector will transfer the soil to the far-end connector. This process is repeated on six other connectors (four jumpers total) for each soil.

Each set of mated connectors are then cleaned according to procedure described in GR-2923 section 2.3 method 3. The cleaned near-end connector is examined with the fiberscope and an image is recorded. The adapter housing is cleaned as well as the far-end connector. Once the connectors pass visual inspection, loss and reflectance are measured and compared to reference.

All work is done under standard ambient conditions. Each cleaning test is performed five times on four jumper sets for each soil. Contaminant soils used are:

- Gypsum, finely ground drywall dust (Dry Soil)
- Carbon black, Monarch 280 (Dry Soil)
- Olive oil (Wet Soil)
- Gypsum and non-water-soluble buffer gel (Combination Soil)
- Gypsum and 10W30 Motor Oil (Combination Soil)

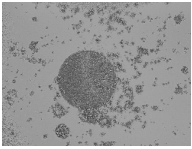
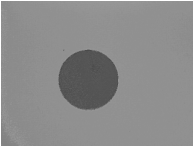
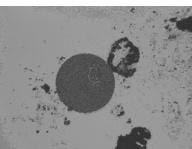
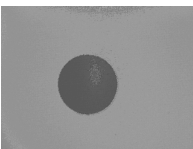
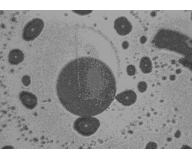
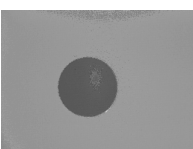
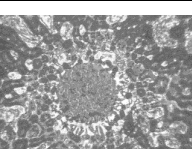
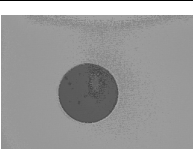
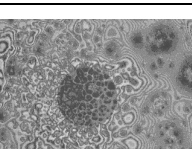
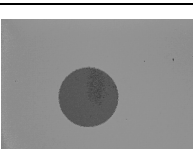
Telcordia GR-2923 defines an acceptable (pass) result:

Insertion loss should not be more than 0.05 dB greater than the reference reading.

Reflectance should not be more than 2 dB worse than the reference reading.

According to R4-5, "The cleaning product shall meet criteria at least 90% of the time with one cleaning, and at least 95% of the time with two cleanings for any contaminant type."

### **Results:**

Soil	Image – Soiled	Image – 1 <sup>st</sup> Cleaning	Insertion Loss	Reflectance
Gypsum			Pass	Pass
Carbon Black			Pass	Pass
Olive Oil			Pass	Pass
Gypsum/Buffer Gel			Pass	Pass
Gypsum/10W30 Oil			Pass	Pass

**Discussion:**

AquaKleen™ Fiber Optic Cleaner passes Telcordia Fiber Optic Cleaning Standards as described in GR-2923.

Prepared By:

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