

IS SOMEONE LISTENING TO YOUR COMMUNICATION?

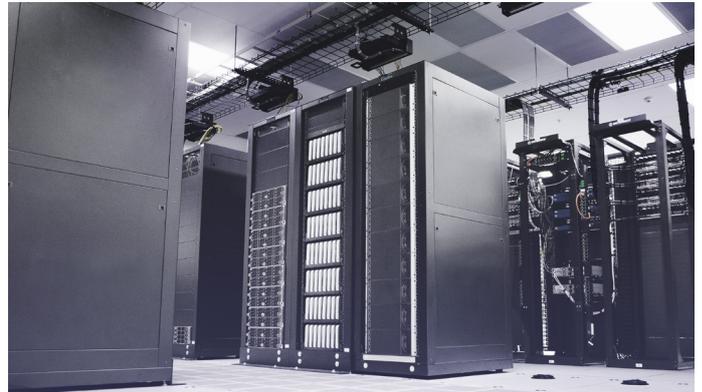
White paper 2023/01
Abnormal activities on SM or MM
Fiber

Today's modern society are more dependent than ever on fiber optical network. Almost all our modern ways communication are in one way or another dependent on fiber optic networks.

Fiber optical based infrastructures are today carrying high traffic volumes and plays a vital role in society. The threat from sabotage leading to disruption of the transmitted data may seriously affect the information society of today.

Joint research project

Micropol Fiberoptic has together with Chalmers University of Technology and Swedish Defense Material Administration (FMV) during the OFC



Facts about Micropol:

- Micropol is a Swedish company, established in 1988
- Technology leaders in passive fiber optics
- Business areas: Defence & Security and Networks
- 2100 m² production facility, including clean room production
- Certified according to ISO 9001:2015
- 35 employees, whereof 22 in production
- Annual turnover 66 MSEK

conference in San Diego demonstrated a joint research project. The team has demonstrated that eavesdropping on SM or MM fiber is possible and can be detected by analyzing the change of polarization in the fiber.

Micropol Fiberoptic and FMV demonstrated in San Diego that eavesdropping is possible to conduct even at a very low increase of the attenuation. (+0,3 dB at a 40km line 10Gb/s)

This is an improvement versus existing methods that relies on measuring the changes in attenuation, which is challenging to detect at these low levels.

Micropol Fiberoptic has introduced a new type of alarm that is measuring changes in the polarization of the fiber. The change in polarization is generating a certain "signature". These signatures can be analyzed and used to create an alarm if someone is eavesdropping the fiber.

In order to eavesdrop a fiber, first the fiber must be peeled which is creating a special signature,

secondly the fiber must be bended to a certain radius in order to read the information which is then creating another signature. Combining these two signatures together gives a clear indication that an intrusion is taking place which triggers the alarm.

The method can also be used to detect vibrations in the ground that can harm the optical fiber such as an excavator digging close to the cable.

Another advantage with the Micropol solution is that during installation, known disturbances in the environment like heavy traffic or elevators that will affect the polarization state, will be filtered away to avoid false alarms.

Measuring and analyzing polarization signatures is superior to measuring changes in the attenuation. The method can be applied in optical networks parallel to the information that is being monitored. In practice this means that an optical network can be monitored, and the alarm will detect sabotage but also unintentional threats like construction work close to the cable.

Facts about CAMO ALARM

- Detects intrusions to the fiber and can filter away false alarms
- Monitors a wide frequency spectra
- Can be installed to existing fiber networks
- Can be installed in 19" racks
- Uses polarization signatures to detect intrusions and sabotage
- For additional information please see [research poster](#).