

# Newsletter



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## September Newsletter 2021

Welcome to the September 2021 edition of the OPTOKON newsletter, which we issue as the summer turns to fall and we head towards the final quarter of the year. In this edition, we are pleased to announce the exciting new partnership between OPTOKON and AC Proje Tasarim of Turkey and you can find further details in the Company News section.

After most industry exhibitions were cancelled last year due to the pandemic, we are pleased to see this industry segment beginning to return to normal. There are pictures and details of some of the recent exhibitions attended by OPTOKON as well as news on the forthcoming shows where OPTOKON products will be on display.

This edition also has a strong technical theme and features articles on the OPTOKON testing division, EMI testing and an insight into the new OPTOKON high-power connectors. We also have news on the new company introduction video now available on the company website and YouTube channel.

You can also find all our usual features and details of our new product releases.



VYSOČINA DATA CENTER operated by OptoNet Communication, spol. s r.o., Member of the OPTOKON Group.

### New products:

#### LMSW-80ML

Ruggedized Gigabit Ethernet Layer 2 Managed PoE Switch



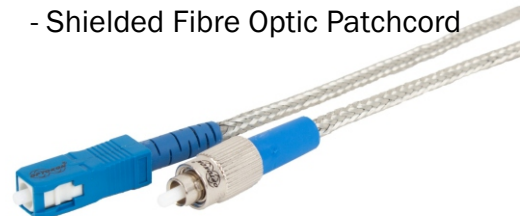
#### OPT-NR-42

42U Special Modular TDCOP Rack



#### ASOP

- Shielded Fibre Optical Patchcord



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## Recent Exhibitions

### IDEF 2021

International Defence Industry Fair

Tüyap Fair Convention and Congress Center, Büyükçekmece, Istanbul., 17.8.2021 – 20.8.2021



### OPTOKON is Sectoral Sponsor on MILITARY RADAR + BORDER SECURITY SUMMIT



## OPTOKON Forthcoming Exhibitions

### MILITARY RADAR + BORDER SECURITY SUMMIT

Hacettepe Beytepe Congress Center, Ankara, Turkey

OPTOKON Stand C13

5.10.2021-6.10.2021

### EDEX

Egypt International Exhibition Centre

New Cairo, Egypt

29.11.2021-2.12.21

### WORLD DEFENSE SHOW

THE GLOBAL STAGE FOR DEFENSE INTEROPERABILITY

Riyadh, Saudi Arabia

6.3.2022-9.3.2022

The following exhibition has been rescheduled until 2022:

### DSA 2022

MITEC, Kuala Lumpur, Malaysia

28.3.2022-3.3.2022

# Company News

## OPTOKON and AC Tasarim Partnership



OPTOKON is pleased to announce a new partnership between with AC Proje Tasarim, A.S. in Ankara, Turkey. The new distributor agreement covers all territories where OPTOKON has facilities and offices. It is the company's intention this business partnership will be a long term one. Both companies are also in the process of concluding a fiber optic cable shielding manufacturing agreement in the very near future.

It is intended that the new agreements will be signed at the MILITARY RADAR + BORDER SECURITY SUMMIT in Ankara on 5.10.21 – 6.10.21 with the issue of a full press release providing greater detail.


AC Proje Tasarım was established in 2003 and offers professional EMI / EMC solutions not only used in Turkish industry but also exported to many countries.

Teamwork, collaboration, cooperation, and partnership when implemented into a business strategy are undoubtedly an excellent way to enhance productivity and innovation and the two companies will work together in manufacturing 'High Technology Rugged Fiber Optic Cables' while exploring new distribution avenues to ensure that OPTOKON and AC Tasarim remain at the forefront of customer satisfaction. In addition to increased mechanical protection of the optical cable to prevent damage to the cable during installation or subsequent handling, the additional shielding by braiding the outer sheath of the cable increases cyber protection during the transmission of sensitive data in the field of information security.

## New OPTOKON company introduction video

Regular visitors to the company website may have noticed the addition of a new company introduction video on the "About Us" page. Lasting just over two and a half minutes and filmed at company headquarters in Jihlava, the video gives a brief insight into the company and the processes and technology used. The video also features OPTOKON Kable, located in nearby Pelhřimov. The video is also available to view on the OPTOKON YouTube channel.



<https://youtu.be/UTavnxQrQoA>   
<https://WWW.OPTOKON.COM/about-us>

## OPTOKON Testing Division

In the first of two articles, Ing. Petr Tyracek, the Chairman of the OPTOKON Technical and Innovation Council, neatly summarizes the key benefits of the laboratories that make up the OPTOKON Testing Division

The OPTOKON testing division is comprised of two laboratories with one laboratory offering Electromagnetic Compatibility (EMC) testing and the second offering climatic and mechanical tests.

The EMC laboratory is equipped with an excellent Lindgren semi-anechoic chamber providing the perfect environment for accurate measurement. The laboratory can currently conduct Electromagnetic Interference (EMI) tests in frequencies from 9.5 kHz to 18 GHz according to the MIL-STD 461 standard for military electronic devices and the EN 55032 standard for consumer electronics. Extremely precise Schwarzbeck antennas and the Rohde&Schwarz measurement receiver ESR 26 (to 26,5 GHz) are used for the EMI measurement.

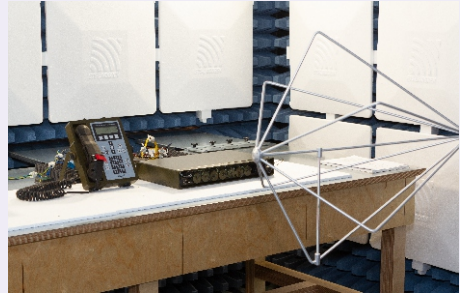
The laboratory for mechanical and climatic testing is specially equipped for mechanical and climatic testing of optical cables and similar components. Some of the measurement equipment can also be used for testing other electronic devices according to MIL and ČOS standards.

Various mechanical and climatic tests have already been accredited and this part of the laboratory has been certified according to the ISO 17025 standard. Test accreditation is valid for tests according to EN 60794-1-21 and EN 60794-1-22 standards.

# Company News

The laboratory has EN 60794-1-21 accreditation for the following tests:

- Tensile performance, method E1
- Abrasion, method E2A and method E2B
- Crush, method E3A
- Impact, method E4
- Repeated bending, method E6
- Torsion, method E7
- Flexing, method E8
- Kink, method E10
- Bend, method E11A



The laboratory has EN 60794-1-22 accreditation for the following tests:

- Temperature cycling, method F1
- Ageing, method F9
- Cable external freezing test, method F15

The second article looks at a typical EMI (Electromagnetic Interference) test conducted using an example of the testing process applied to check that the new LMSW-80ML Ruggedized Gigabit Ethernet Layer 2 Managed PoE Switch met the requirements. The switch is featured in more detail in the New Products section.

The LMSW-80ML must meet MIL-STD 461F and test RE 102 for the EMC requirements. The EMI interference (RE 102) of the product was tested in the frequency range from 2 MHz to 1 GHz. Taking into consideration the frequency range, it was necessary to divide the measurement into three frequency subranges:

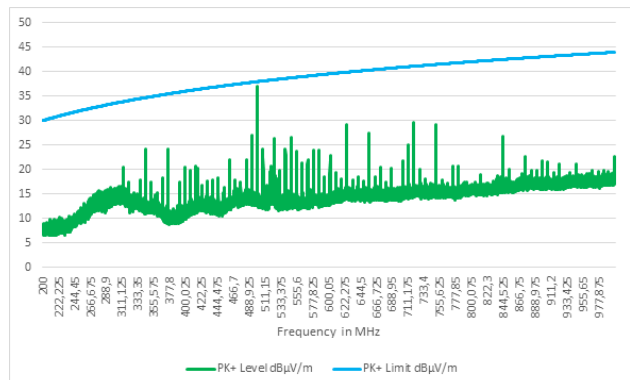
- 2 MHz to 30 MHz, using the rod antenna
- 30 MHz to 200 MHz, using biconical antenna
- 200 MHz to 1 GHz, using logarithmic-periodic antenna

The following figure shows the measurement layout used for the frequency range from 200 MHz to 1 GHz with the antenna in the vertical and horizontal positions. The LMSW was powered by 24V DC.



The level of the radiating electric field was measured using the R&S measuring receiver ESR 26. All measured data was evaluated by the R&S EMC control SW ELEKTRA. The following graph depicts the positive result of the logarithmic-periodic antenna measurement.

Measurements in the rest frequency ranges were also positive meaning that the LMSW-80ML is in line with MIL-STD 461F, test RE 102 requirements



# Company News

## CDIS Magazine

As regular readers will be aware, OPTOKON is a regular contributor to the CDIS (Czech Defence Industry & Security) magazine, which is the media platform for the Defence and Security Industry Association of the Czech Republic. In the latest edition, the OPTOKON harsh environmental network is featured in the magazine.

## RUGGEDIZED NETWORK

OPTOKON HARSH ENVIRONMENTAL TACTICAL NETWORK

### CONNECTORS & PATCHCORDS

- OPTOKON HMA EXPANDED BEAM CONNECTORS
- OPTOKON HMA FERRULE CONNECTORS
- OPTOKON HMA PATCHCORDS

Reliable, ruggedized, high performance connectors for all harsh environments

### OPTICAL TEST EQUIPMENT

- OFI-920 RUGGEDIZED LOSS TEST SET

OPTOKON harsh environmental portable fiber optic test equipment performs the crucial function of test log field and deployable harsh environment fiber cables to ensure long term reliability and operation.

### CABLE DRUMS

OPTOKON high quality deployable cable drums are provided in various sizes and configurations to suit varying field applications.

### MILITARY INDUSTRY DEVICES

- RUGGEDIZED MEDIA CONVERTERS AND FIELD SWITCHES
- LIGHT RUGGEDIZED FIELD SWITCHBOARDS
- LMCP SERIES OF LIGHT MOBILE RUGGEDIZED COMPUTING PLATFORMS, SERVERS NAS AND UPS
- RUGGED TABLETS, PC AND DISPLAYS
- RUGGEDIZED IP AND ANALOG PHONES

### OPTOKON MECHANICAL TESTING, TEMPERATURE AND SEMI-ANCHOCHAMBER

The OPTOKON testing division offer individual temperature and mechanical test methods according to the standard IEC EN 60721-3-2.

#### TEST ROOM OPTIONS:

- Accredited fiber optic calibration laboratory 317/2011
- EMC test (MIL-STD 461C and EN 50147-1)
- Tensile test fiber optic cables
- Cable abrasion test
- Pressure resistance test
- Shock resistance test
- Repeat bending test
- Torsion test
- Test of cable flexibility
- Bending test in loop
- Dynamic bending test
- Temperature cycling
- Water penetration test

Calibration services:  
- Calibrating thermometers from -40°C to +140 °C.

### LMCP-7H

Compact, ultra-durable server

- Intel® Xeon® Core™ Processor
- Up to 64 GB DDR4
- 3x 1G network server ports
- 7x 1G switch ports

Connectors and cables for extreme temperatures ranging from -60°C to +85°C

### LMCP-7H

Compact, ultra-durable server

- Intel® Xeon® Core™ Processor
- Up to 64 GB DDR4
- 3x 1G network server ports
- 7x 1G switch ports

### LMCP-28H-NG

Light Mobile Computing Platform

- 2x 100/1000Base-X HMA uplinks
- 2x 10/100/1000Base-T switched PoE LAN ports
- 3x or 5x 10/100/1000Base-T routed WAN ports - 1x of them 10GBase-T

### LMIPT-41

High-class Rugged IP Phone

- Proven Cisco technology
- Five programmable line keys
- Encrypted voice communications
- Widescreen VGA backlight color display

### LMSW-E33

Ruggedized 1/10 Gigabit Ethernet Layer 2/3 Managed PoE Switch

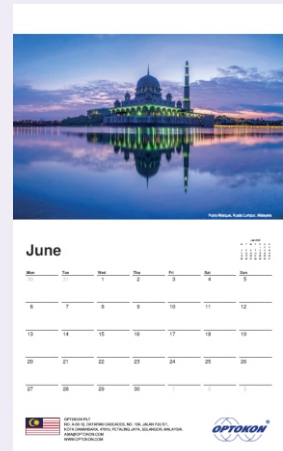
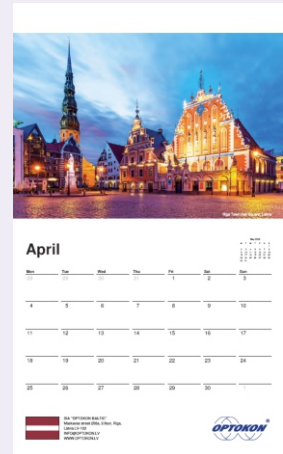
- 2x 10G WAN, FO HMA or RJ-45
- 8 or 24x LAN 10/100/1000Base-T, PoE

OPTOKON - CISCO Solution Technology Integrator

WWW.OPTOKON.COM

EUROPEAN UNION  
 European Regional Development Fund  
 Operational Programme Enterprise  
 and Innovations for Competitiveness

Best Business Partner  
 We are pleased to inform you that OPTOKON job ducts will be presented at the Military Radar & Radar Security Summit in Brno from October 5-6, 2021.  
 Please accept our invitation to visit us at OPTOKON booth C13.



## Group Calendar

OPTOKON has produced its 2022 calendar, which this year focuses on the OPTOKON Group and features picturesque scenes from various sights and attractions in the country of each group branch. The calendar will be available shortly.



# Company News

## High-power connectors

*Pavel Pospíchal, the Technical Director of OPTOKON explains the technology used in the new high-power connectors from OPTOKON.*

### High power optical connector - an HPF optical connector for high performance

Standard telecommunication and data transmission networks that use fibre optic cables for signal transmission operate with optical signal power levels in the order of units up to tens of mW. The optical power of the transmitted signal does not usually exceed an absolute value of 20 dBm, which represents 100 mW.

SM single mode or MM multimode fibers are usually used for the transmission of these signals, and a number of optical connectors, working on the principle of PC, physical contact, are then used for their connection. The connection for signal transmission must be provided core-to-core, i.e., on an area of dimensions up to 10 µm.

However, many applications require a higher level of optical signal, which with a small connection area leads to a significant increase in power density per unit area:

- Long haul networks with EDFA amplifiers
- PoF - power supply of connected devices via fiber
- Remote optical sensor systems
- High-performance laser applications used in medical and industrial fields.
- And more

The HPF optical connector is designed for systems operating with high levels of optical power and is designed for high-performance applications with an optical power of up to 10 W for SM fibers.

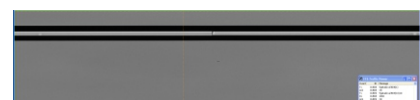
The connector works on the principle of expanded beam physical contact technology. A portion of the standard SM fiber is connected to a graded refractive index fiber with a collimating lens, which increases the beam diameter and reduces the power density at the connector interface. The lower energy density eliminates damage to the surface of the optical fiber, mainly due to micrometric particles, which heat up strongly at a higher level of the optical signal.

### Key benefits:

- increase of optical power in networks with optical fibers – higher thermal load of the connector front
- High Power Connector – fiber optic core extension = higher MFD (Mode Field Diameter) value
- reduction of power density per unit area at the front of the connector
- option of signal transmission with a higher optical power level – increase up to 16x compared to the power load
- long-term test at 10 W, 2,000 h on HPF connector
- connector with low insertion attenuation (IL - Insertion Loss)
- Ultra polish (UPC) technology to increase the value of return loss attenuation (RL)

The VYTRAN device is used to prepare the technology for the high-power connectors.

For more than 23 years, Vytran has pioneered glass processing and specialty fiber splicing, and developed a comprehensive applications library that is used in our GPX-3000 Series optical fiber processors. The GPX-3000 Series is a versatile glass processing and fiber splicing platform designed for fabricating splices, tapers, couplers, fiber terminations and combiners on optical fibers from 40 µm to 2 mm in diameter. All GPX systems incorporate a filament “furnace” assembly that provides an environment-free, stable, high-temperature heat source for precise control of glass processing conditions. An embedded real-time control system and powerful machine level macro programming language allow the user to develop unique event-driven routines, enabling fast and flexible optical fiber processing development. All high-level system communication is through a user-friendly PC-based graphical interface, allowing easy operation and convenient data storage.



Optimized SMF Cable A and GRIN weld



GPX-3000  
Filament Fusion Splicer

# New Products

## LMSW-80ML Ruggedized Gigabit Ethernet Layer 2 Managed PoE Switch

8x 10/100/1000Base-T, RJ-45 with PoE+  
 The LMSW-80ML is a ruggedized field switch that has been developed according to the requirements for optical networks in harsh environmental conditions. It is designed for operation in military tactical networks, for installation in heavy industry enterprises, oil refineries and mining plants, and rescue actions during natural disasters. The switch combines all the advantages associated with excellent data network performance and a ruggedized design.



For more detailed information contact our sales department [SALES@OPTOKON.COM](mailto:SALES@OPTOKON.COM)

## OPT-NR-42 42U Special Modular TDCOP Rack

The OPT-NR-42 is highly configurable to end-user requirements and has unique features that benefit system designers, installers and network managers. The OPT-NR-42 is primarily intended for placement of 6x Optical Modular Cable Head TDCOP and is compatible with 19" optical modules. The OPT-NR-42 cabinets can be located on different interconnection nodes on fiber optic networks (WAN, SAN, LAN or FTTx) for point to point or PON configurations with the integration of splitters in Central Office or POP (Point Of Presence) with a large number of subscribers.



Front view



Back view without back cover

[The datasheet can be downloaded here.](#)

## ASOP - Shielded Fibre Optic Patchcord

The OPTOKON Shielded Fiber Optic Patchcord enables easy handling and installation in a similar way to standard electrical cable. This most recent version of the Shielded Fiber Optic Patchcord offers increased protection against the possibility of light leakage in order to eavesdrop on the signal while reducing the bending radius below the recommended limit. This unique design ensures an easier construction process, therefore reducing the return loss and extending the life span of the optical fiber.



[The datasheet can be downloaded here.](#)

# New Products

## OPTOKON Kable

OPTOKON Kable, a member of the OPTOKON Group, provides cables for both the Czech and international market and is a supplier for one of the largest domestic telecommunications companies offering fixed-line access networks, mobile access networks and international telecommunication services.

### Round Duplex Cable

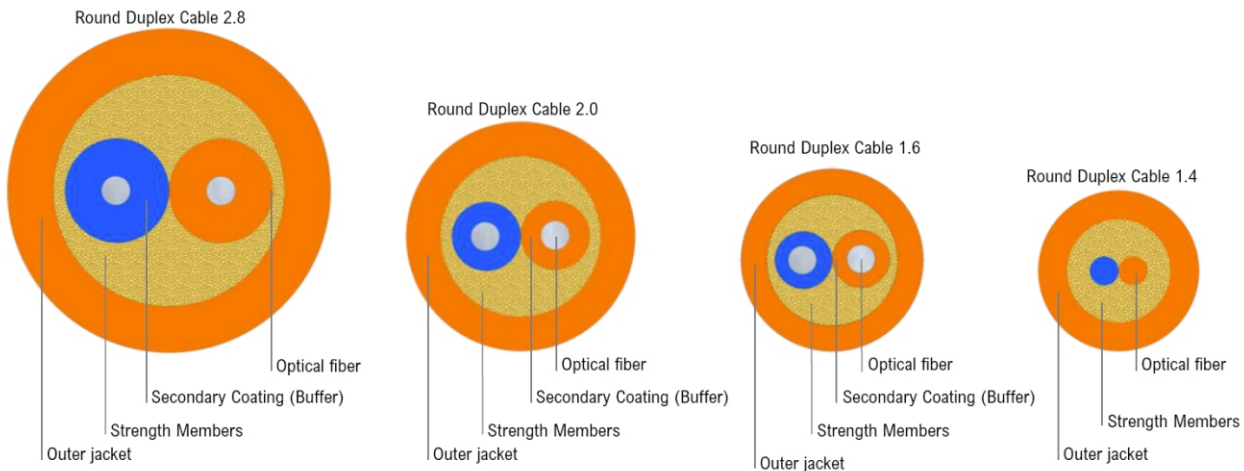
For indoor general purposes, e.g. patch cords, office LAN connections or point-to-point interconnection. Ideal for Uniboot Duplex Patch Cables.

The duplex round micro cable is for general indoor use and is designed with the emphasis on ever-increasing customer requirements for space saving. The cable contains optical fibers in a tight secondary coating with a diameter of 0.49 mm, which was developed specifically for this cable. The cable is available in a full range of fiber optic types.

Features:

- small diameter
- low weight
- high flexibility
- use of halogen-free materials only
- RoHS compliant

[The datasheet can be downloaded here.](#)



### ADSS Flat Cable SC 24F

With up to 24 fibers, the ADSS flat cable is ideal for aerial use. Its high crush resistance means it is also suitable for direct burial installation into sand beds.

[The datasheet can be downloaded here.](#)

