



Smart Wavelength Tunable Transceivers for RAN Applications

Ken Cockerham

COHERENT

Formerly
II-VI

DWDM Demand

- **OEMs and Network Operators have been deploying 10Gb/s DWDM pluggable transceivers for several decades (both fixed wavelength and tunable versions)**
- **DWDM transceiver demand is forecasted to remain strong for the next several years**
 - Customers are now migrating from 10Gb/s to 25Gb/s (and higher)
- **Costs and pricing differences of wavelength tunable vs. fixed wavelength transceivers have been reduced to only a small percentage**
- **Wavelength Tunable solutions are preferred by MOPA (for all data rates)**
 - The substantial added value of wavelength tunability outweighs the small initial price increase of tunable vs. fixed wavelength transceivers

SMART Transceivers for RAN

- **Challenges for DWDM Transceivers:**
 - Technicians need to track fibers from the optical Mux/Demux to determine which wavelength is needed before installing
 - Field personnel need to stock up to 96 different wavelengths of each part if they are installing fixed wavelength transceivers, or
 - A “tuning box” is needed in the field to set each unit to the proper wavelength for wavelength tunable versions
- **Solution to the challenges: SMART Tunable Transceivers**
 - Leading designers of Wavelength Tunable Transceivers created “Self-Tuning” algorithms which eliminate the need for tuning boxes and tracking fibers and do not require any intervention from the host
 - These were very effective, yet all used different techniques and were proprietary in nature and would not work with a different vendors transceiver connected on the other end
 - Creation of the SmartTunable MSA solves these issues:

SmartTunableMSA

<https://smarttunable-msa.org/>

- **Founding Members:**



- **Tremendous market interest: to date, 10 additional members have joined the SmartTunable MSA:**

- Adva, AT&T, ChemOptics, Effect Photonics, Lightron, Linktel, NEC, OE Solutions, Opticore, Solid

- **Initial focus: 10Gb/s wavelength tunable transceivers**

- Minimum of 40 channels at 100GHz spacing (192.1THz to 196.0THz)
- Supports any channel mapping with a duplex fiber architecture
- Interoperability testing is planned for October 2022 with key OEMs/Network Operators
- Future considerations:
 - 50GHz spacing
 - 25Gb/s data rate and higher
 - Other technologies and features

Additional Smart Transceivers for RAN

- **Single Fiber 10Gb/s Bi-Directional Wavelength Tunable Transceivers are available for fiber starved networks**

- Can deploy up to 40 Channel Pairs with “Self-Tuning”
- Matched wavelength pairs which fit within standard 100GHz spacing



- **25Gb/s Tunable T-SFP28 transceivers with Self-Tuning**

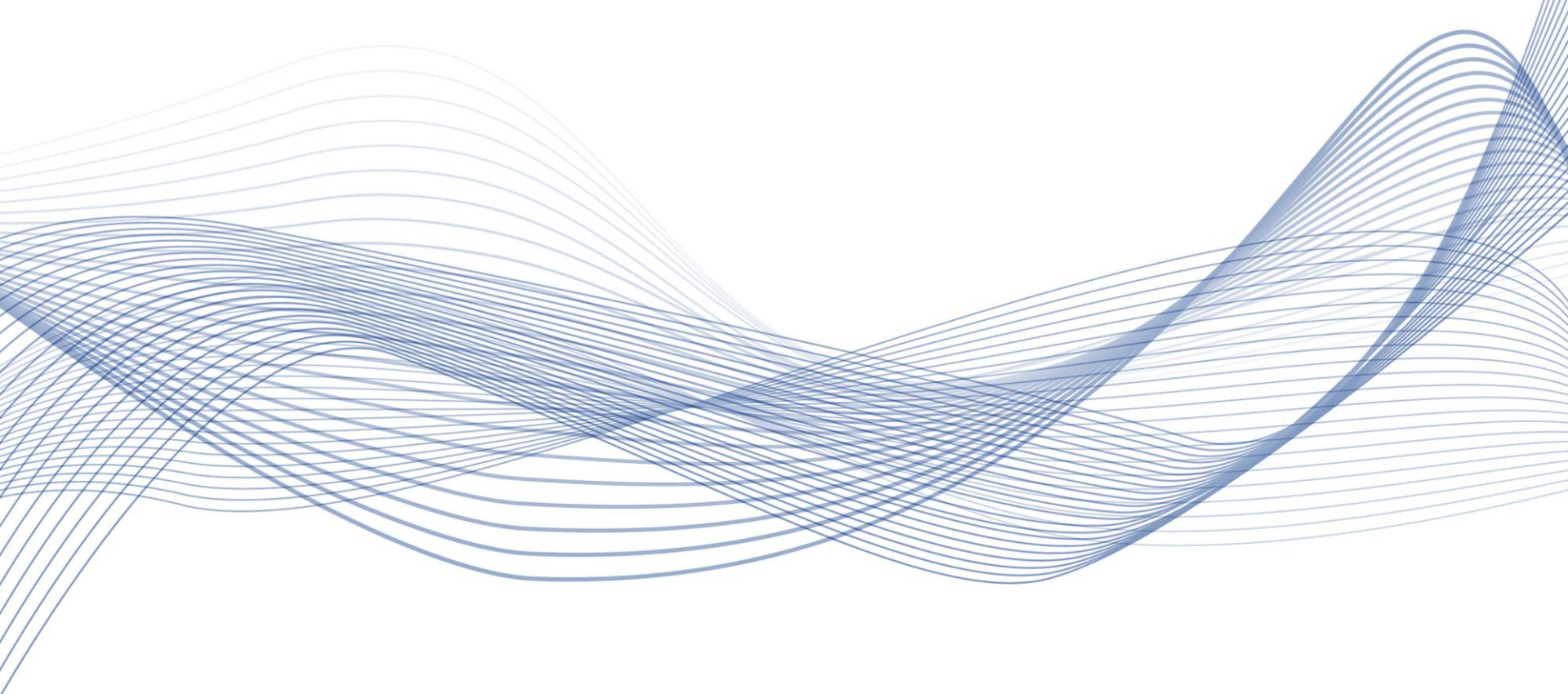
- Can cover reaches up to 15km (dispersion limited)
- Direct Detect version with internal CDR
- Ability to operate at either 25Gb/s or 10Gb/s data rates



- **100Gb/s Coherent: QSFP28 – DCO**

- Targeted for 5G Wireless (and beyond) and Broadband Access Networks
- Optimized for 100GBASE-ZR applications:
 - Reach (80 - 300km) and power consumption (<5.5W)
- I-temp rated for outside plant needs
- Available with automatic wavelength tuning





<https://mopa-alliance.org>

Copyright © 2022