Optical Business Unit

23th Sep 2022 **Date**
2022 V3 **Version**

Dongguan Mentech Optical & Magnetic Co., Ltd.

CATALOGUE

Overview

01

Overview

Optical BU – Strategic Positioning

Optical BU Strategic Positioning

Dedicated to optics/optical modules with a focus on provision of OEM/ODM services to industry users

MNC Mentech

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Optical BU-Milestones

2008
- Mentech Founded

2009
- Optical BU Established

2010
- Qualified as HUAWEI Supplier
- ISO9001:2008 Certified

2011
- National Hi-tech Company
- Dongguan Menche Founded
- Energy BU Established

2012
- Passed TL9000
- Public Listing Preparatory Company in Dongguan

2013
- Top 100 Electronics Maker in China
- Guangdong Innovative Company

2014
- Shenzhen R&D Established
- New Manufacturing Facility Opened

2015
- Major Company in Dongguan
- Sales topped 200M USD

2016
- BIYANG Factory Opened
- Engineering Center Company in Guangdong
- Gold IP holder in Dongguan

2017
- IPO in Shenzhen
- Top 500 Manufacturing Company in Guangdong

2018
- Shenzhen Office Opened
- IP Dominant Company in China

2019
- Wuhan R&D Opened

2020
- Pass CNAS certification
- Guangdong Ph.D. workstation

2021
- Guangdong provincial Enterprise Technology Center

Optical BU – R&D/Manufacturing Facilities


Shenzhen R & D Center


Wuhan R & D Center

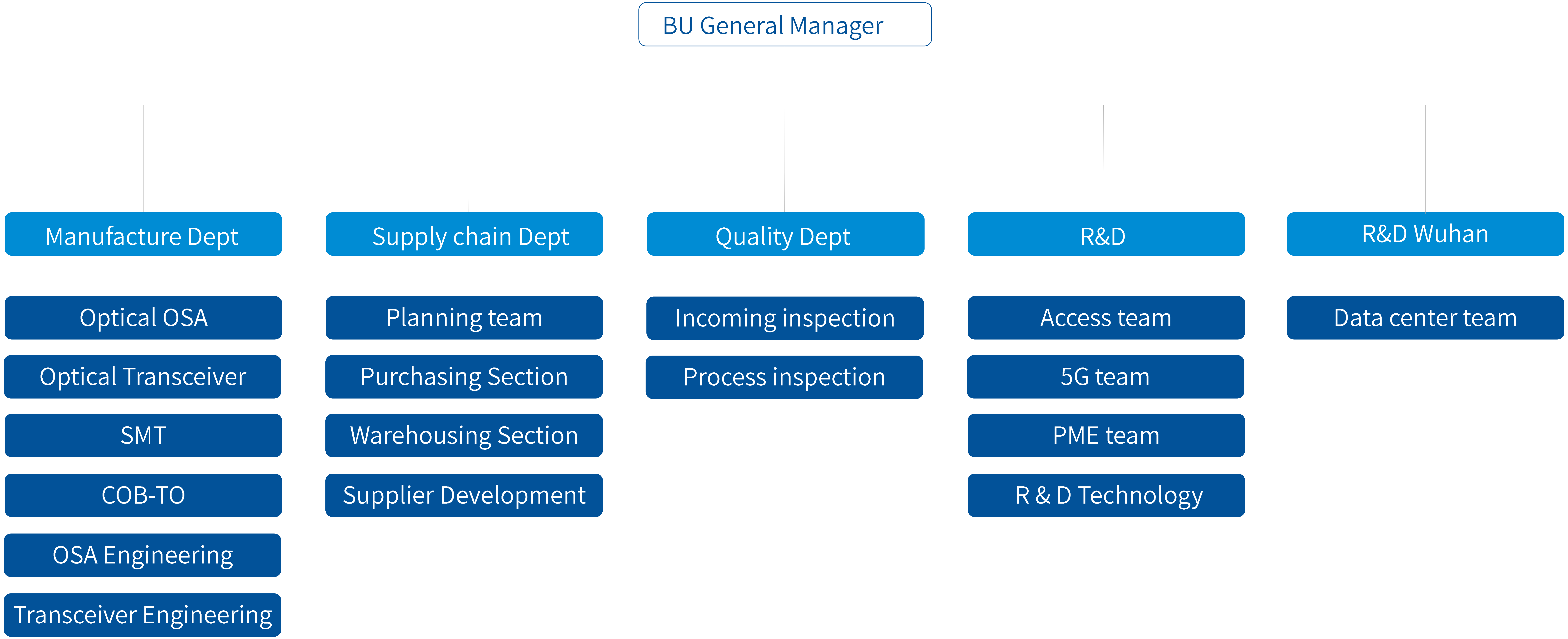

Dongguan R & D Center


Dongguan | Production base


Biyang | Production base

mentech

Optical BU – O-chart



BU General Manager

- Manufacture Dept
  - Optical OSA
  - Optical Transceiver
  - SMT
  - COB-TO
  - OSA Engineering
  - Transceiver Engineering
- Supply chain Dept
  - Planning team
  - Purchasing Section
  - Warehousing Section
  - Supplier Development
- Quality Dept
  - Incoming inspection
  - Process inspection
- R&D
  - Access team
  - 5G team
  - PME team
  - R & D Technology
- R&D Wuhan
  - Data center team

R&D Ability

02

R&D Ability

R & D team

Chen Cong
General Manager

Postdoctoral, senior engineer

8 SCI papers

20 authorized patents

More than 10 Conference Papers

Participated in drafting more than 10 industry standards

Qian Yinbo
General Manager

Postdoctoral, senior engineer

More than 10 SCI papers

26 authorized patents

Won the best paper award in the world

Won the first prize of science and technology of China communication society

Wang Huitao
Chief engineer

Doctor

More than 10 SCI papers

6 authorized patents

Participated in drafting 2 industry standards

Manufacturing-R&D Support

WH

■ 30 engineers
■ Focus on Data Center
☐ 400G SR8
☐ 100G SR4/AOC
☐ 40G SR4/AOC
☐ 25G SR/AOC
☐ 10G SR/AOC
☐ 100G CWDM4/LR4
☐ 40G LR4/PSM4

5G

■ 16 engineers
■ Focus on 5G wireless
☐ 25G MWDM
☐ 25G LWDM
☐ 25G CWDM
☐ 25G LR/LR lite
☐ 25G BIDI
☐ SFP+
☐ XFP
☐ SFP

DG

■ 14 engineers
■ Focus on PON
☐ 10G ONU BOSA
☐ ONU BOSA
☐ 10G ONU Module
☐ ONU Module
☐ XG(S)&GPON COMBO OLT
☐ XG(S)-PON OLT
☐ 10G EPON OLT
☐ GPON OLT
☐ EPON OLT

Platform

■ 9 engineers
■ Focus on platform
☐ PME
☐ TE
☐ CE
☐ Etc.

Manufacturing-Engineering Support

LD CHIP Team

- ■ 6 engineers
- ☐ Wafer FA/ characterization
- ☐ Wafer Fabrication
- ☐ Vacuum Process
- ☐ Wafer bonding/Lapping
- ☐ Optical testing metrology
- ☐ Semi-conduct Equipment

TO/COB Team

- ■ 6 engineers
- ☐ COB process
- ☐ DB/WB
- ☐ TO Process

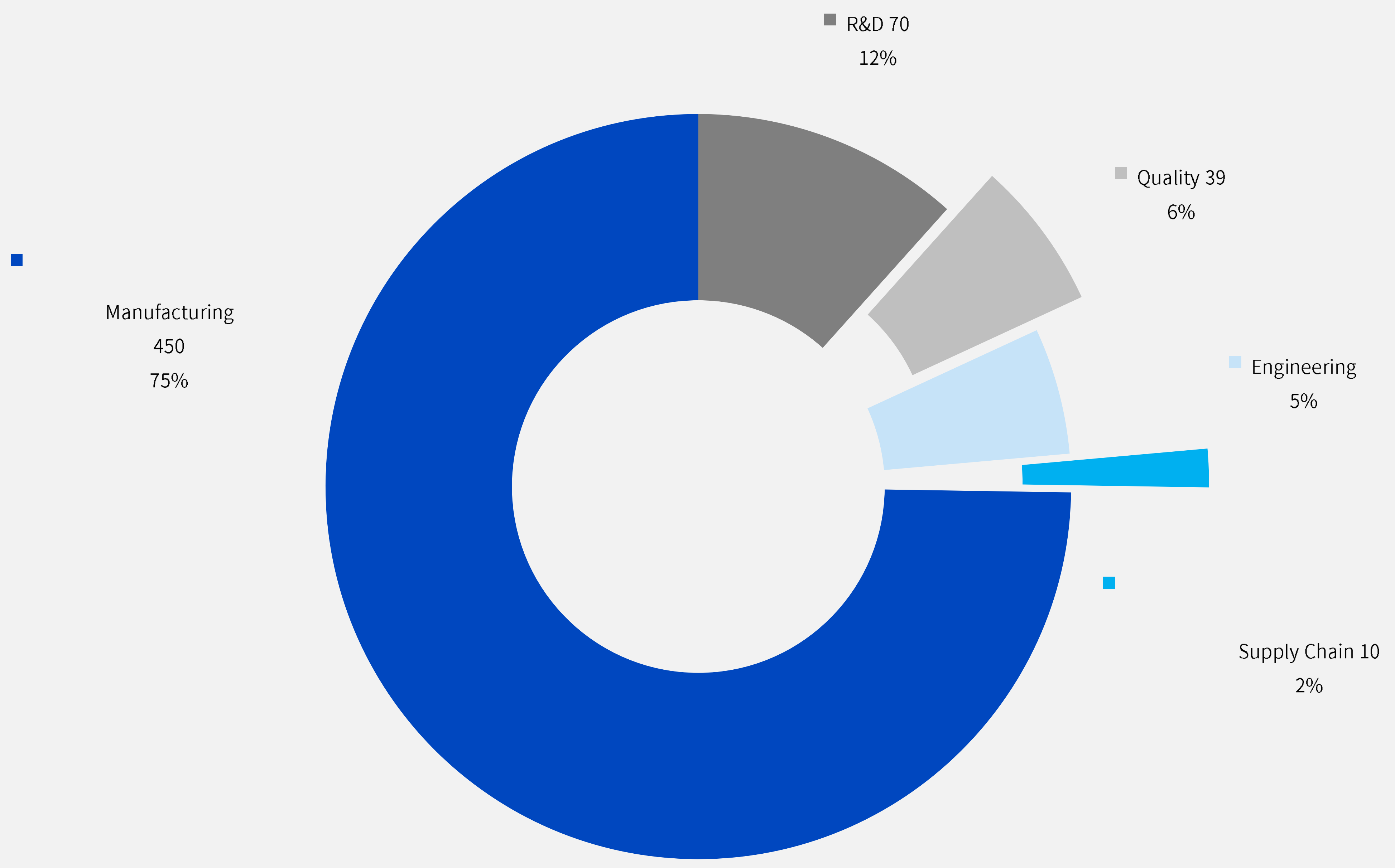
OSA Team

- ■ 9 engineers
- ☐ Filter Bonding
- ☐ Active Alignment
- ☐ Laser Welding
- ☐ Burn-in

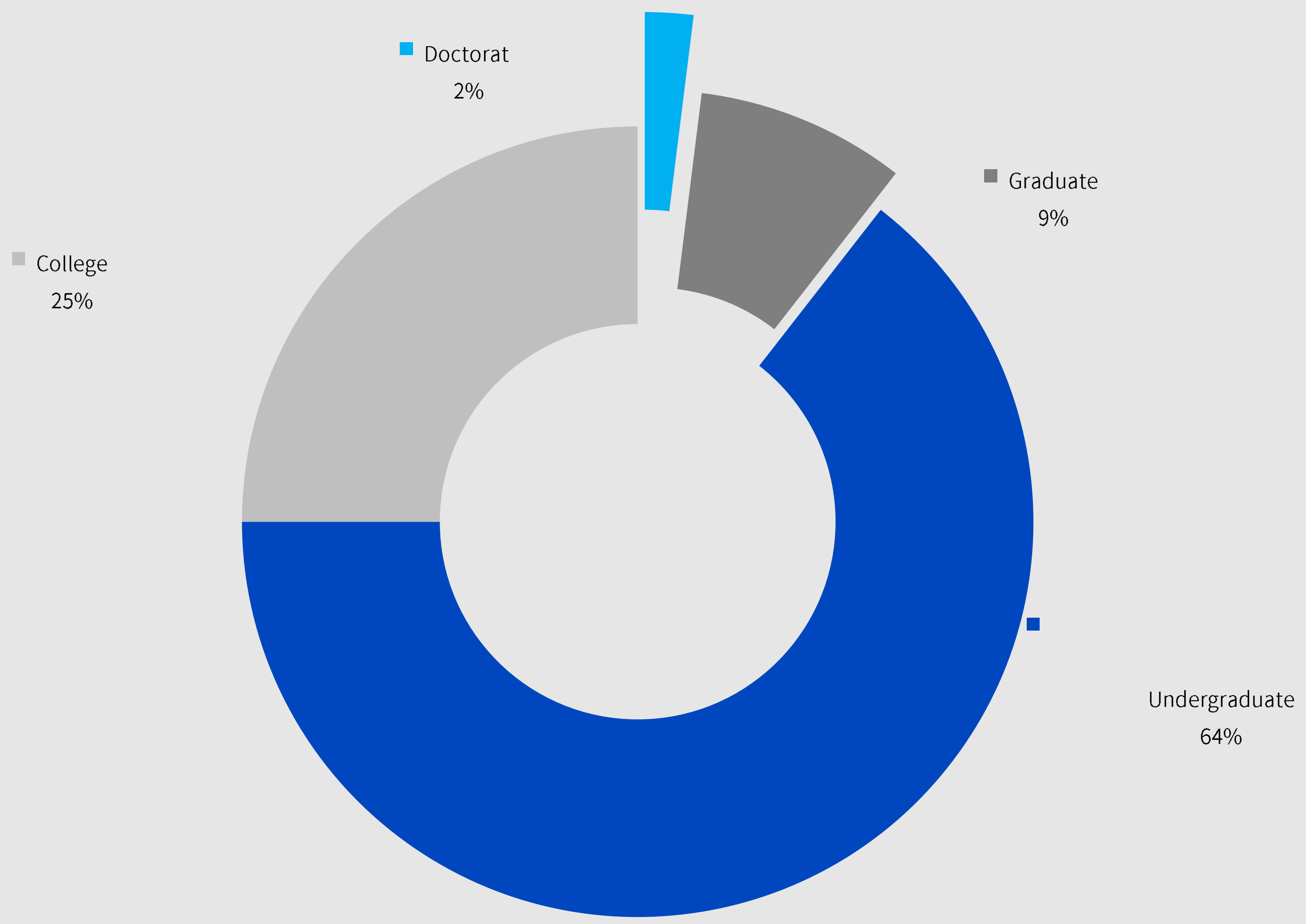
Module Team

- ■ 12 engineers
- ☐ Hot-Bar soldering
- ☐ Calibration
- ☐ Burn-in
- ☐ Temperature Testing

Optical BU – Personnel Composition



Personnel Composition



Personnel Education Background

R & D investment


R & D investment of Optical BU

Mentech attaches great importance to improving scientific and technological strength and product quality , R & D investment is maintained at 5% - 7% of business income. Continuously research and develop new technology, new products, to provide customers with more optimized solutions.


广东省高新技术产品

证书


广东省高新技术产品

证书


广东省名优高新技术产品

证书


广东省高新技术产品

证书


为表彰东莞市专利奖获得者，特颁发此证书。

东莞市专利奖

证书

Manufacturing

03

Manufacturing

Automation workshop

80%

Transformation and upgrade to smart factory

Intelligent production mode is one of the key points in Mentech’ s development. Our Optical, Electronics, and Power BUs have achieved large-scale automated production and customized automation. We continue to cooperate with automation manufacturers to develop equipment to meet the needs of more customers.

Manufacturing-OEM/ODM Services

OEM
ODM

Funding Advantage

Larger scale manufacturing/stock as a public company

R&D Ability

70 person-strong team, from ONU to 400G module

Servicing Capability

Sustained large delivery & business support

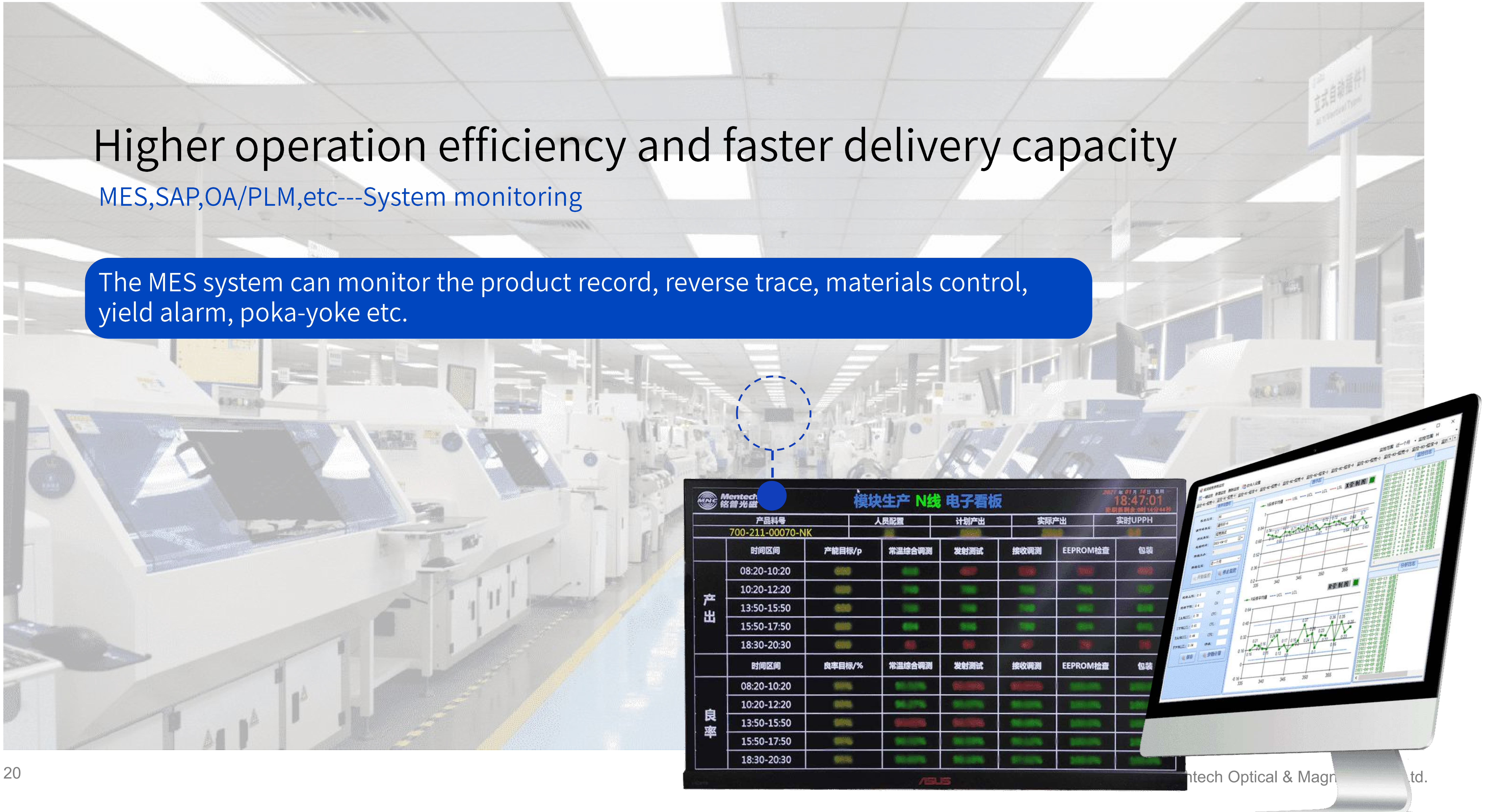
OEM Experience

Experienced OEM/ODM for optical devices/modules

Vertically Integrated

Optical Chip
TO
COB/COC
OSA
Optical Module

IT system management



Higher operation efficiency and faster delivery capacity

MES,SAP,OA/PLM,etc---System monitoring

The MES system can monitor the product record, reverse trace, materials control, yield alarm, poka-yoke etc.

模块生产 N线 电子看板

2021 年 01 月 18 日 星期

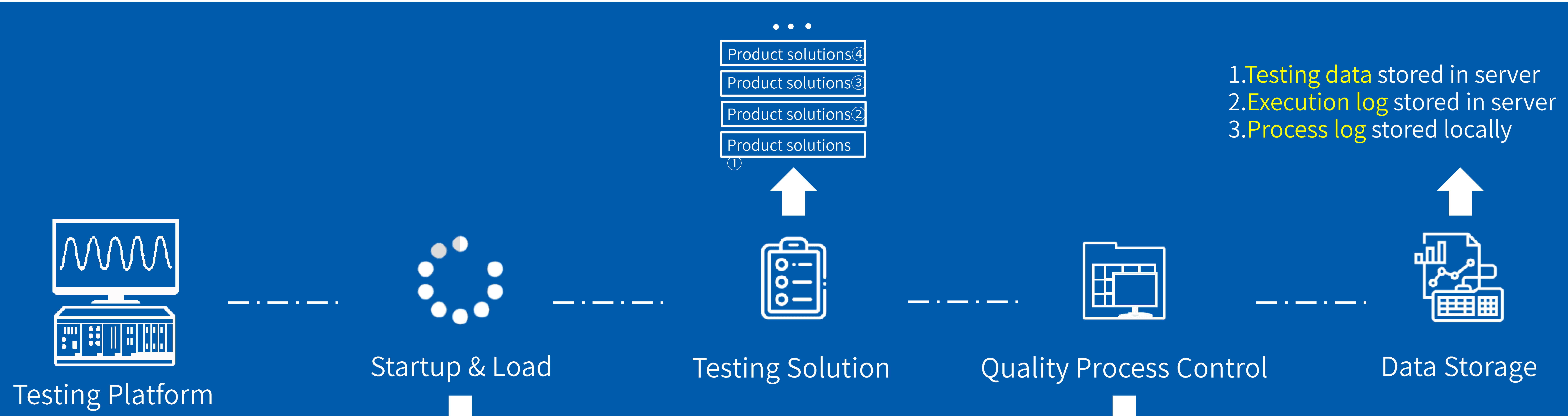
18:47:01

产品料号	人员配置	计划产出	实际产出	实时UPPH
700-211-00070-NK	[redacted]	[redacted]	[redacted]	[redacted]

	时间区间	产能目标/p	常温综合调测	发射测试	接收调测	EEPROM检查	包装
产出	08:20-10:20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	10:20-12:20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	13:50-15:50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	15:50-17:50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	18:30-20:30	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	时间区间	良率目标/%	常温综合调测	发射测试	接收调测	EEPROM检查	包装
良率	08:20-10:20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	10:20-12:20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	13:50-15:50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	15:50-17:50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	18:30-20:30	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Manufacturing – Product Testing Platform

Modular testing platform, capable of rapid development to cater for needs of different customers/solutions



• • •

Product solutions④
Product solutions③
Product solutions②
Product solutions①

1.Testing data stored in server
2.Execution log stored in server
3.Process log stored locally

Testing Platform

Startup & Load

Testing Solution

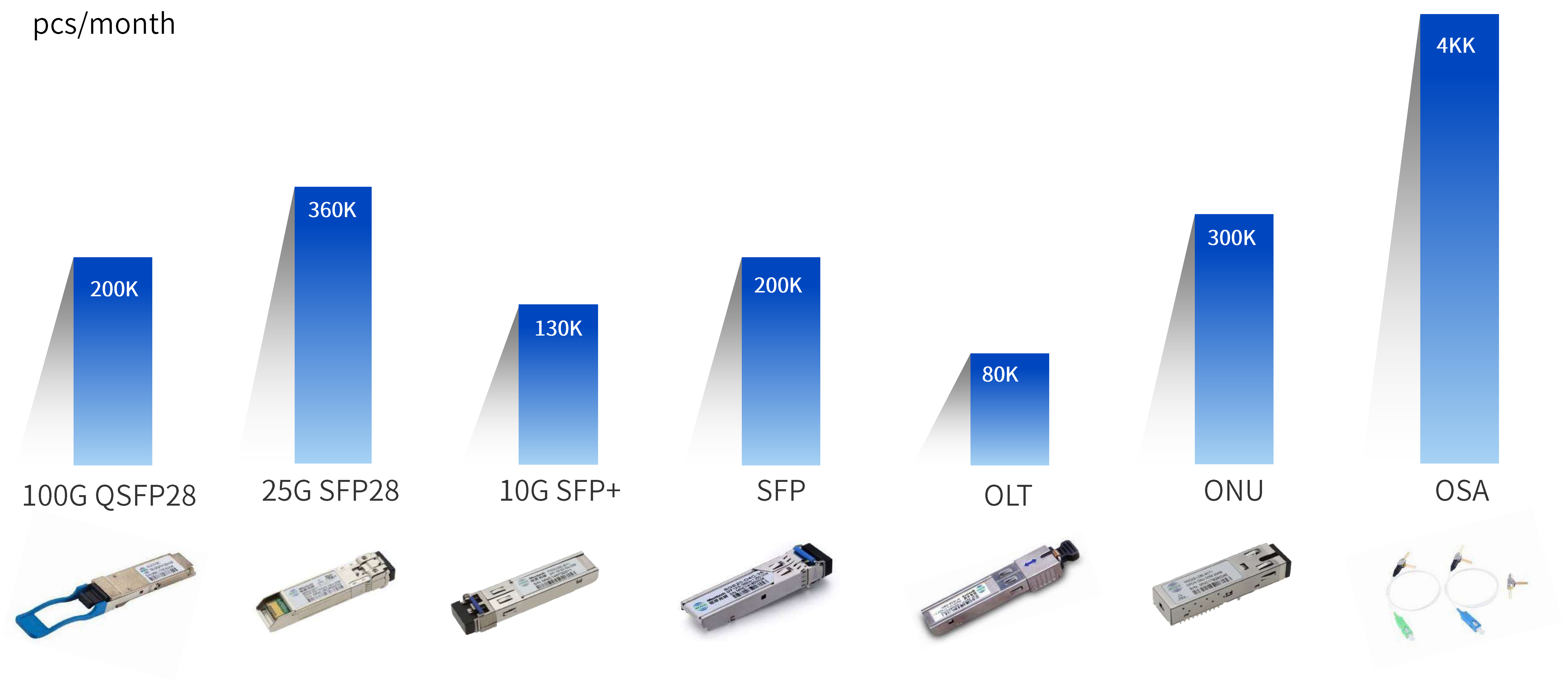
Quality Process Control

Data Storage

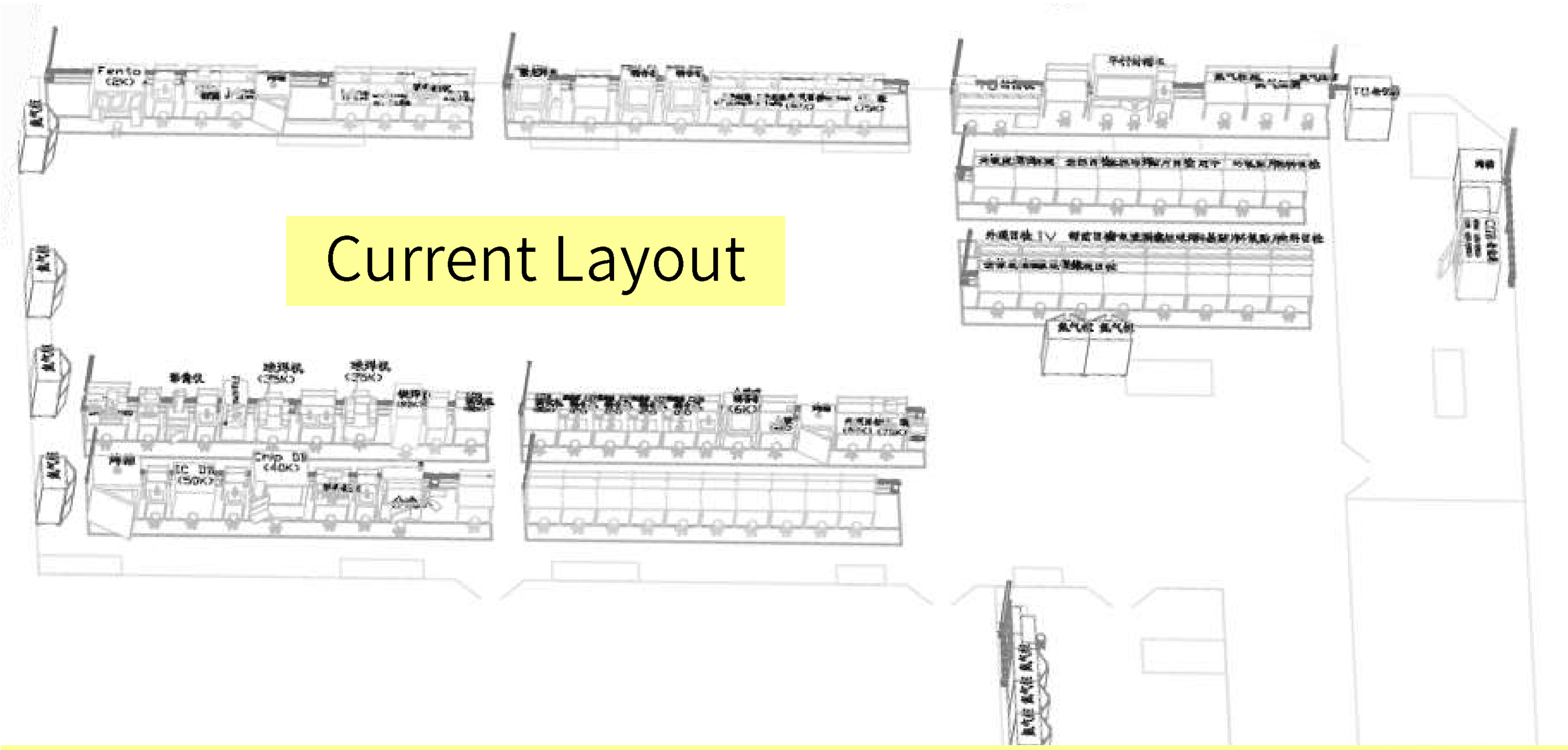
1.Load config & get necessary privilege
2.Load testing standard corresponding to product tested
3.Load testing standards for vulnerable parts

1.Monitoring FPY, ready to alarm and stop
2.Monitoring stability, capable of SPC alarm
3.Materials control(jumper, testing board socket)

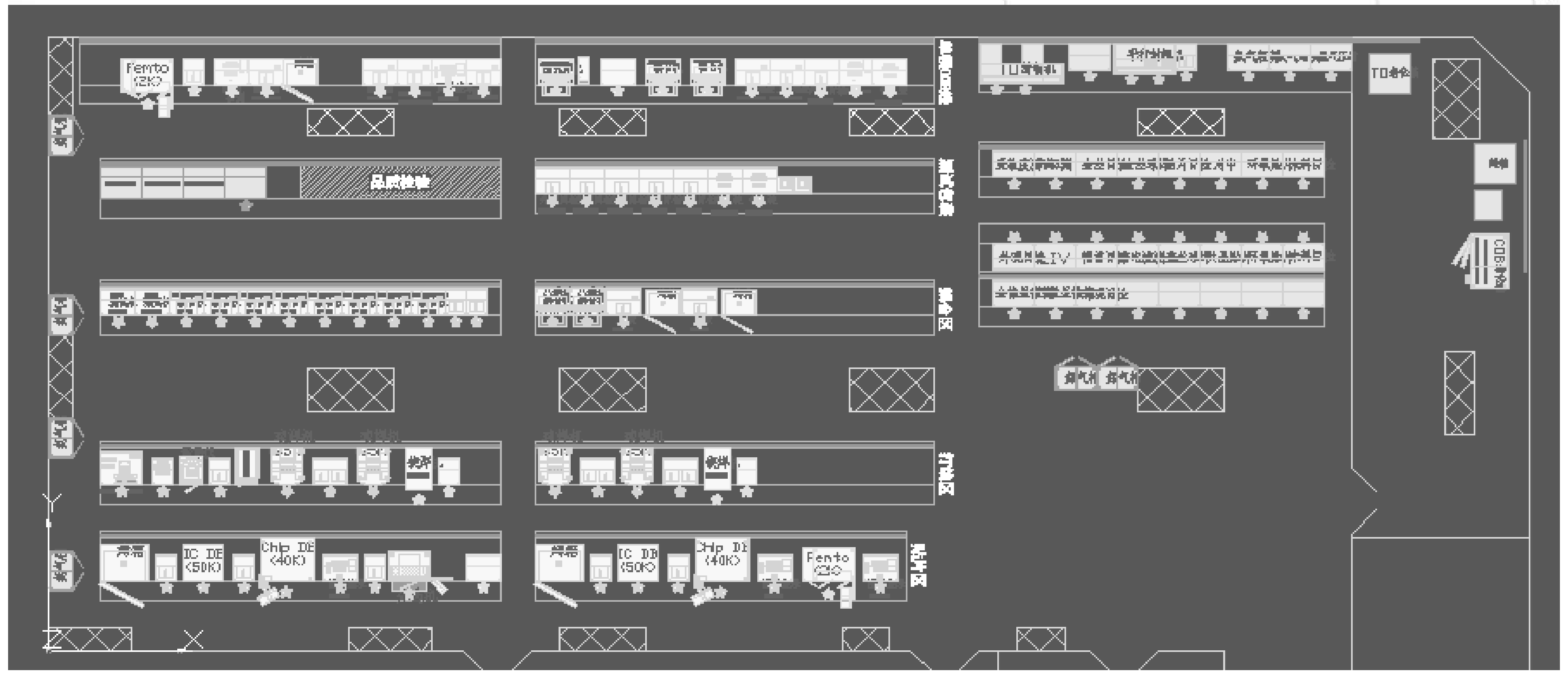
Manufacturing-Delivery Capability



Manufacturing-COB-TO Production Line Layout


Current Layout

Planned layout with output increased



Location

3F, Block #4, Dongguan

Area

700 square meters

COB Line Configuration

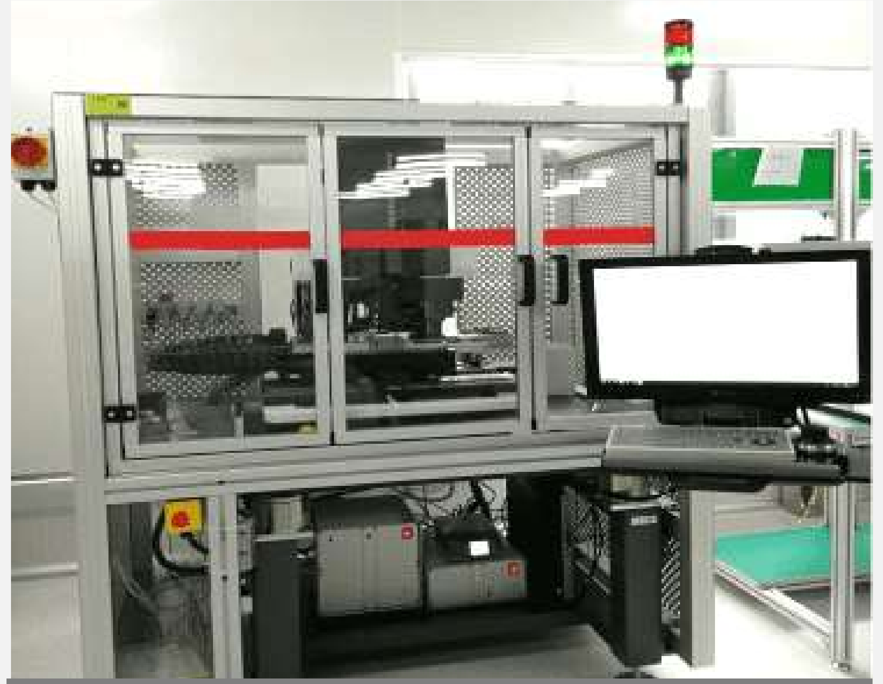
Multi-mode COB automated line: 1

Single-mode COB automated line: 1

TO46/TO56 semi-automated line: 1 respectively

TO46/TO56/TO38 automated line: 3(planned)

Manufacturing-COB Production Line Equipment



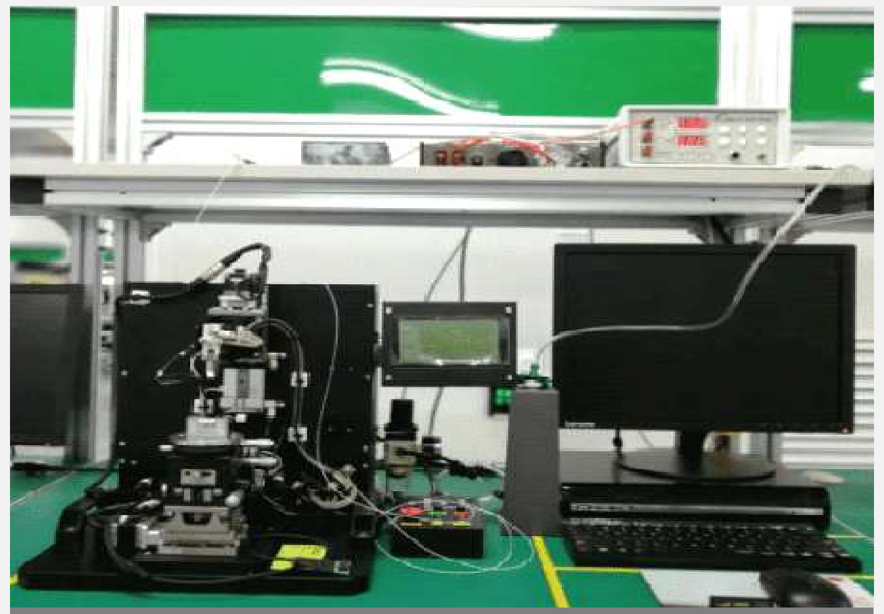
Qty: 1
Brand: Finelacer Femto
Usage: COB surface mount, Soldering
Precision: 0.5um
Output: 10k/mth

Qty: 1
Brand: PALOMAR
Usage: COB surface mount, Optical chip die bond
Precision: ≤5um@3sigma
Output: 40k/mth

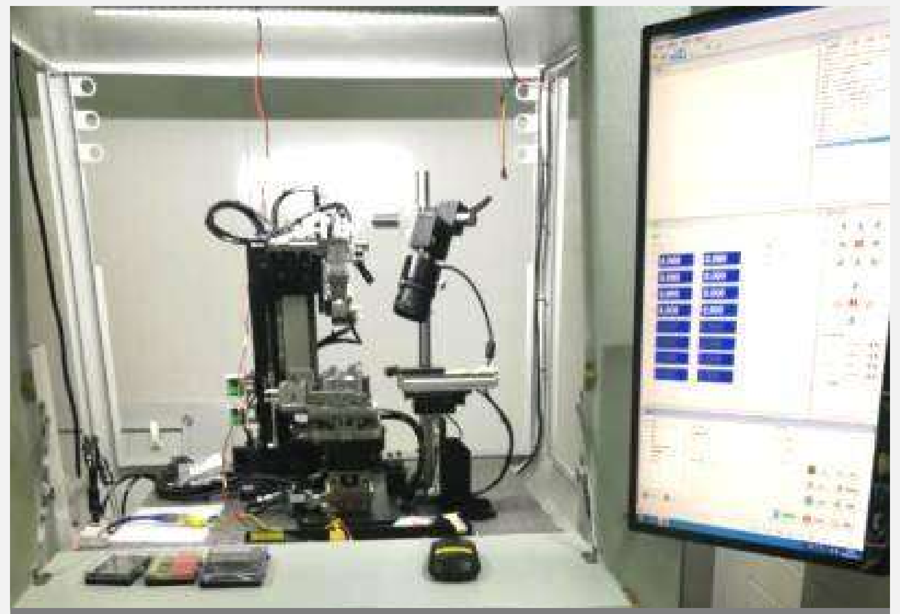
Qty: 1
Brand: ENG
Usage: COB surface mount LDD&TIA die bond
Precision: ≤15um@3sigma
Output: 60k/mth

Qty: 2
Brand: KS
Usage: COB soldering
Precision <= +/- 2 .0um
Output: 80k/mth

Qty: 1
Brand: HESSE
Usage: COB soldering
Precision: <= +/-3.0um
Output: 40k/mth



Qty: 4
Brand: home brand
Usage: 25G automated coupling
Precision: ≤0.1um
Output: 40k/mth



Qty: 1
Brand: home brand
Usage: 100G automated coupling
Precision: ≤0.1um
Output 10k/mth

Qty: 1
Brand: home brand
Usage: Weathering VCSEL&DFB
Output: Weathering 26K 25G COB &10K 100G COB at once

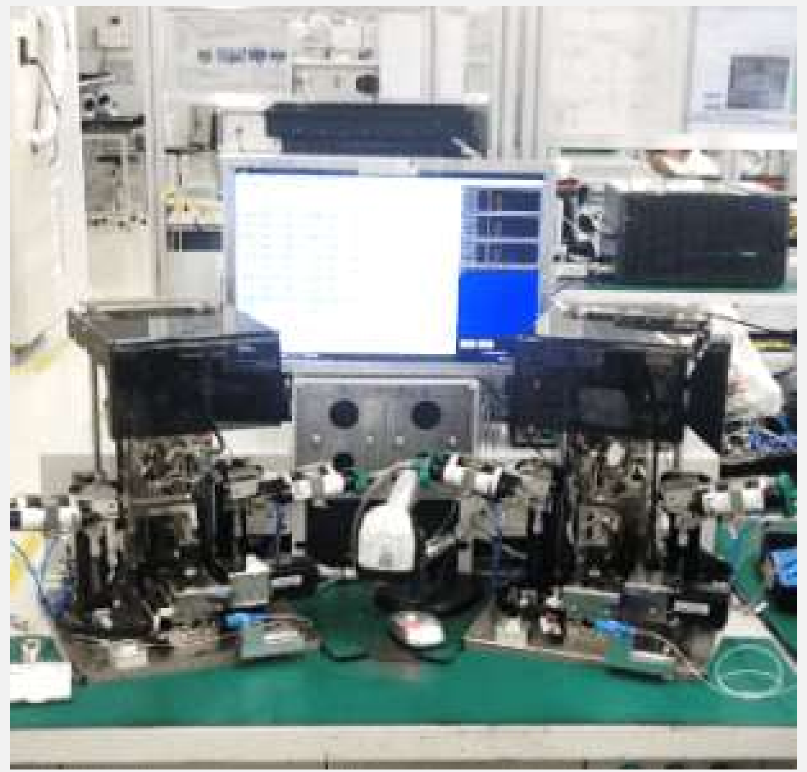
Manufacturing-OSA Production Line Equipment

Qty: 1
Brand: Ultrasonic cleanser
Usage: Metal cleansing
Output: 1400k/mth

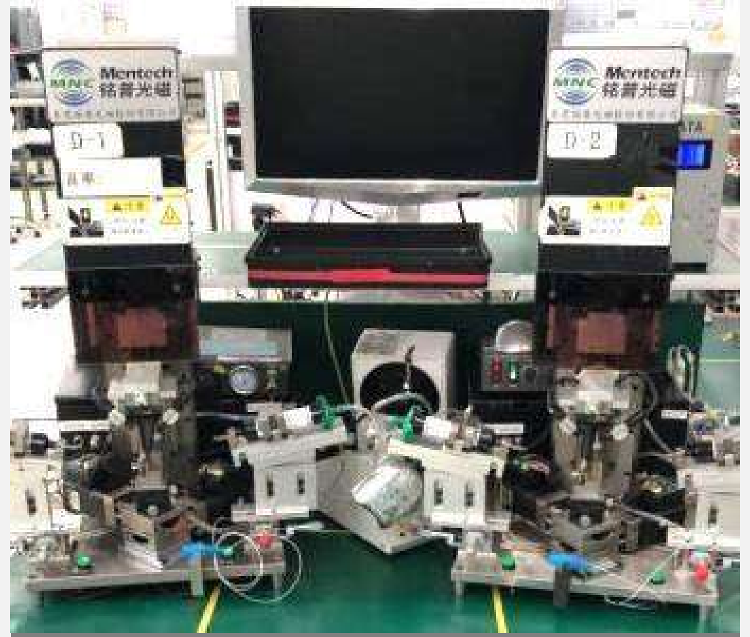
Qty: 2
Brand: Sinobonder
Usage: 0 degree glass surface mount
Output: 784k/mth

Qty: 2
Brand: Sinobonder
Usage: 45 degrees glass surface mount
Output: 784k/mth

Qty: 36
Brand: Sinobonder
Usage: TX coupling
Precision: <= +/-2.0um
Output: 2400k/mth



Qty: 13
Brand: Sinobonder
Usage: RX coupling
Precision: <= +/-5.0um
Output: 1092k/mth



Qty: 20
Brand: home brand
Usage: RX coupling
Precision: <= +/-5.0um
Output: 1680k/mth

Qty: 8
Brand: sanwood
Usage: glue healing
Output: 2688k/mth

Qty: 17
Brand: sanwood
Usage: OSA Hi-low temp cycle
Output: 3800k/mth

Qty: 1
Brand: HAITUO
Usage: OSA-TE Hi-low temp testing
Output: 8.9k/mth

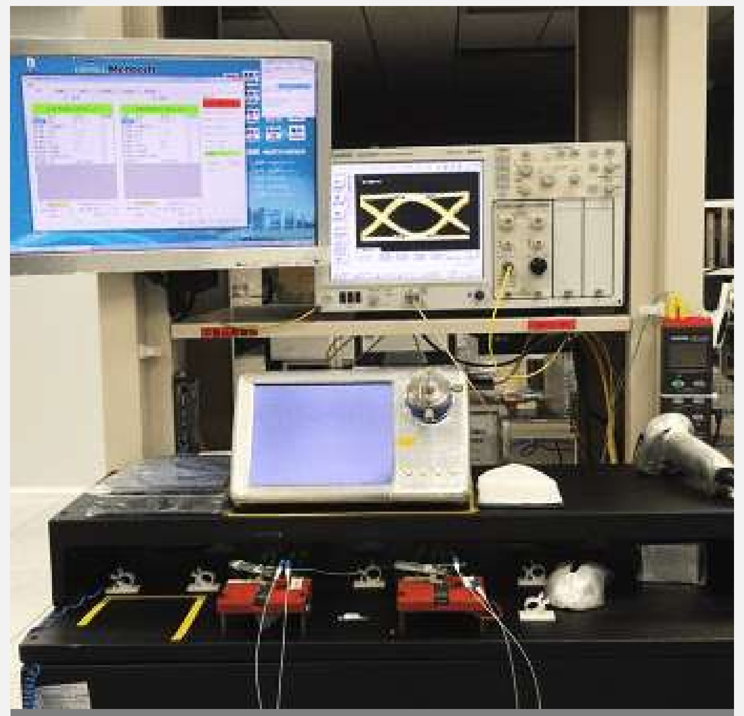
Qty: 24
Brand: home brand
Usage: BOSA testing
Output: 4700k/mth

Manufacturing-Module Production Line Equipment

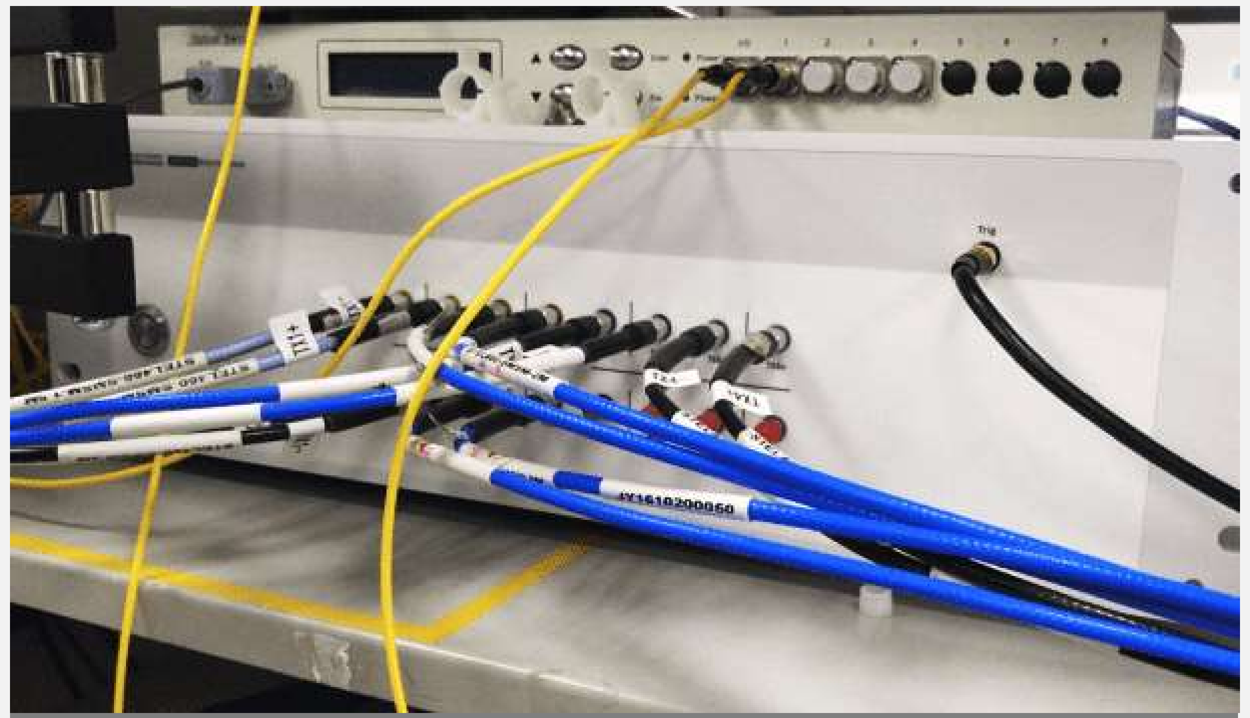
Name: high temp soldering
Qty: 4
Brand: techson
Usage: Soft board soldering
Precision: ±0.1mm
Output: 20.8k/mth

Name: X-RAY
Brand: SCIENSCOPE
Usage: High temp soldering inspection
Output: 20.8k/mth

Qty: 6
Brand: HAITUO
Usage: Module temp adjust
Precision: ±1°C
Output: 15.6k/mth



Name: Oscilloscope
Qty: 33
Brand: Agilent
Usage: Eye diagram test
Output: 624k/mth



Name: BER measurer
Qty: 65
Brand: stelight/home brand
Usage: Bit error test
Output: 624k/mth

Quality Assurance

04

Quality Assurance

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QA System

Constantly updated quality management system.


▲ISO9001 -2015


▲ISO14001 -2015


▲ISO45001 -2018


▲ ISO/IEC 27001 -2013


▲ISO/IEC 17025 -2017


▲ IATF 16949 -2016


▲TL9000 -H R6.2/5.7


▲ANSI/ESD S20.20-2014


▲IECQ QC080000 -2017


▲GB/T29490 -2013


▲ GB/T 23001 - 2017

Qualifications

Our products meet the quality, safety, performance, EMC certification requirements of many countries.


TUV


CE


FCC


UL


IEC CB


TLC


Wangrui


ROHS

QA– All-Encompassing

Business SAP	Supply Chain SAP	IQC/PQE/IPQC SAP/MES	FQC SAP/MES	OQC SAP	COE
Order Assessment	Ordering & Production Plan	Materials/ Equipment/ Prototype/ IPQC Assessment IPC/SPC Monitoring	FQC Inspection ORT Lab	Label Inspection Packaging Inspection	Quality Feedback Issue Reaction 8D Report Improvement
Orders	Supply Chain	Manufacturing	Product Inspection	Packaging Shipping	Customer Service

Customer Satisfaction

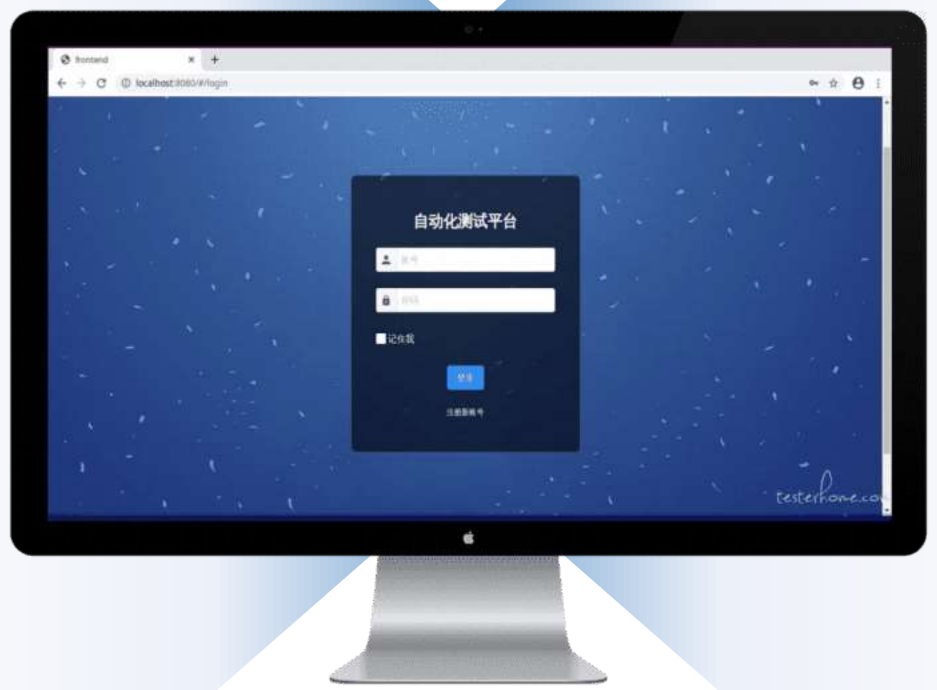
QA– Quality System

Repair Tracking System

- Items required repairing all trackable
- Status trackable at real time

Auto Measuring System

- Data fetched and saved at real time
- SPC Monitoring



Materials Tracking System

- All-encompassing Barcode Management
- Batch-wise association for key materials
- Barcode tracking of key positions

Skip Alarm

- Foolproof spacing
- Procession stopped if any steps skipped

Material Life limit Management

- Pause when materials reaching life limit

FPY Alarm

- Alarm when threshold reached
- Pause triggered when threshold reached
- Manned monitoring & resetting

QA– Testing Capability

High and Low Temp Chamber

TEMP Range:
-40°Cto+150 °C

Thermal Shock Chamber

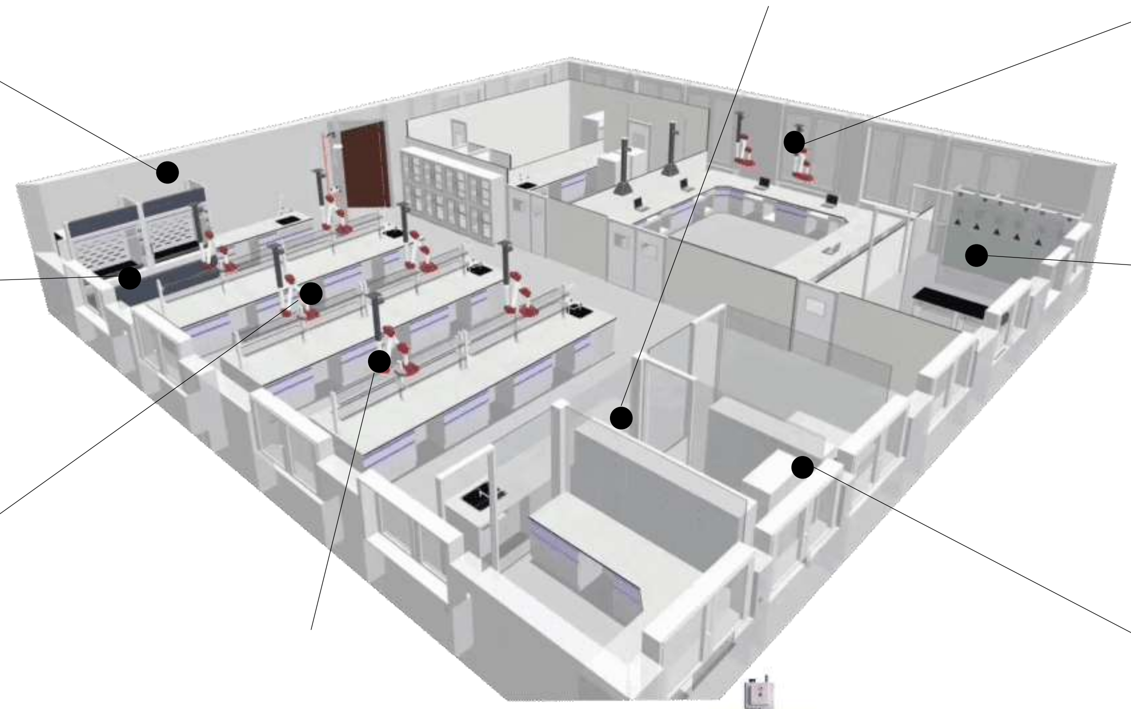
TEMP Range:
:-40°Cto+120 °C
Exchange Time：
5 mins
Duration:
30mins

Plating Thickness Tester

Non - destrutive
Plating thicknes
Compostion Analyer

Vibration Test

Simulating to Vibration during
Transportation，Check the product Appearance/structu strength



Metallic Microscope

Plating Thicknes
Soldering check

2.5D Measurement Equipment

Accuracy:
1um

X-ray fluorescence analyzer

RoHS test

Salty Corrosion Tester

Simulating to out Door and check
Product corrosion
Resistance

A wide range of reliability tests can be conducted in our testing lab

QA– Intercept Testing Capability

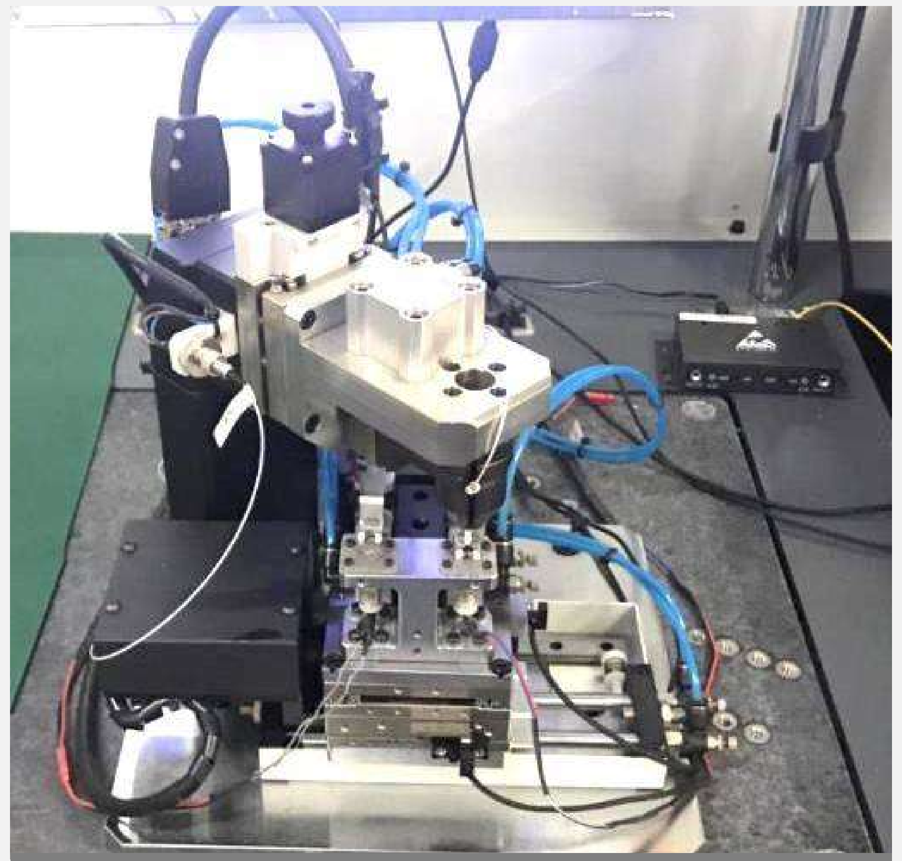

High/Low Temp Test

X-Ray Test

2.5D Test


Force Scale

Focal Length Test


Integrating Sphere Test


Welding Depth/Width Test


Metallographic Microscope

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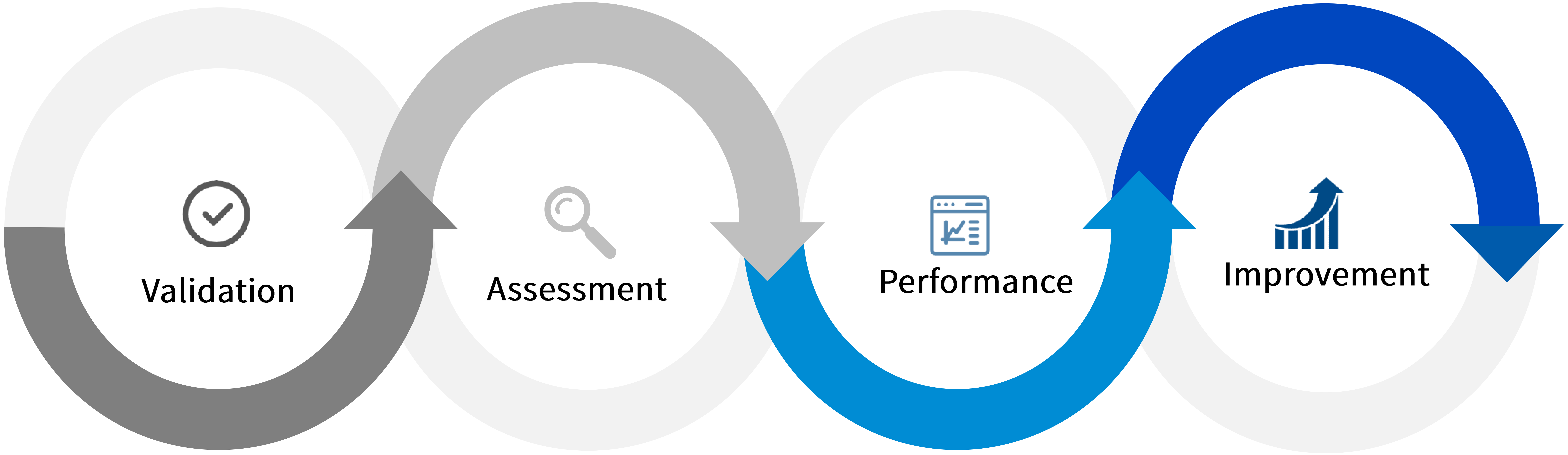
QA–Professional Supply Chain Management



Supplier Validation

Strict validation standard to ensure only high quality suppliers are introduced

Supplier Assessment

Annual supplier assessment to prevent any lapse in quality

Supplier Performance

Pivot to suppliers with better performance in tests conducted regularly

Supplier Improvement

Delegation for major incidents, Stay prepared for challenges

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QA– Quality Principles

Pollution-free Safe
Production

Full Engagement for
Quality

Cut Waste
Eco-aware

Keep Promise
Keep Improving

Key products

05

Key products

Optical BU

100G QSFP28 series

SR4

PSM4

CWDM4

LR4

AOC

Data center

FTTB

PON ONU/OLT

Edge

WCB

Trunk

Wireless
4G/5G

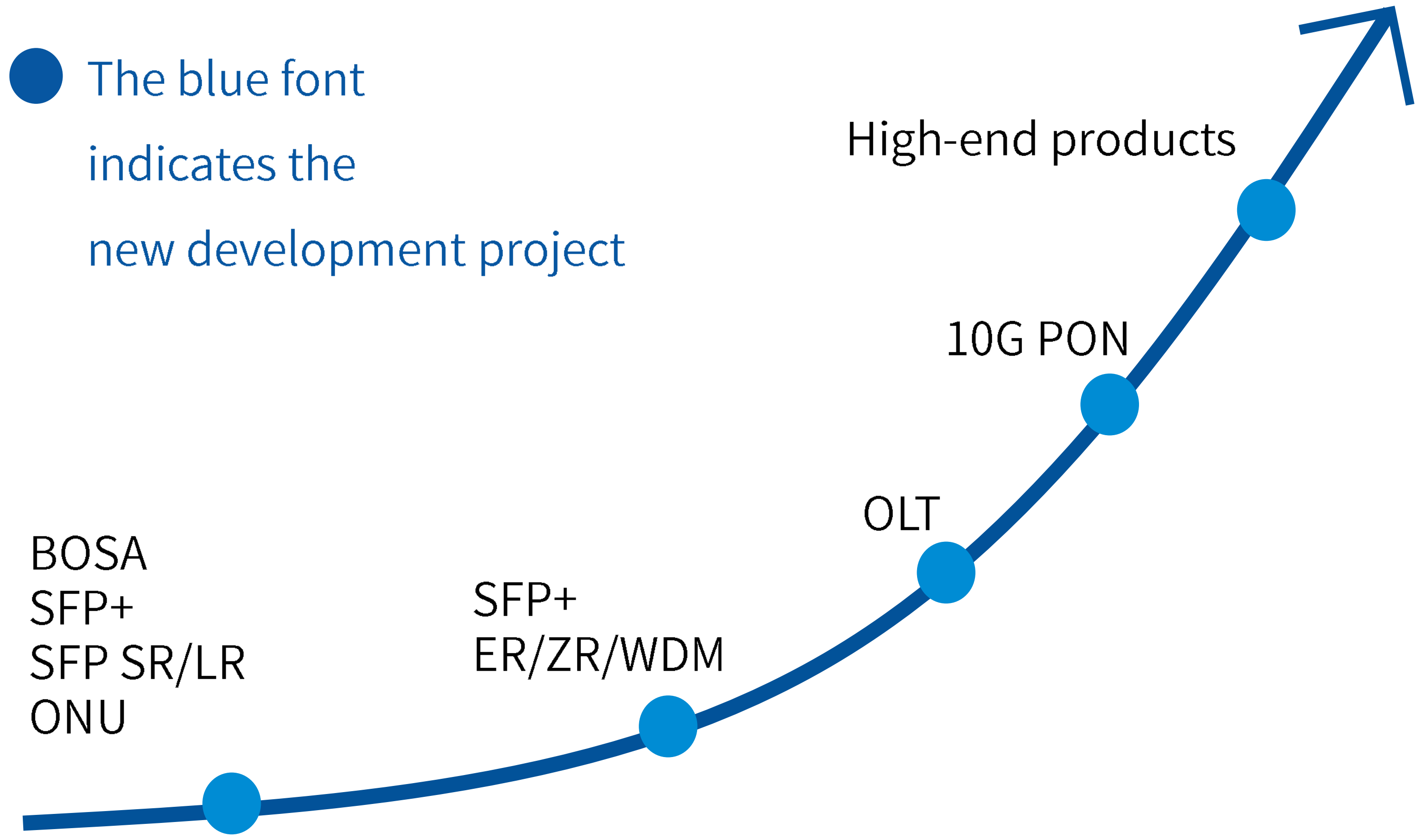
FTTH

SFP+/SFP28

SFP/SFP+/XFP/SFP28/QSFP28

Evolution of Mentech optical module

● The blue font indicates the new development project



2014~2015

SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
ONU
BOSA
SFP+ SR/LR
SFP
ONU
BOSA

2016

GPON OLT
EPON OLT
SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
ONU
BOSA

2017

100G LR4
10G EPON OLT Sy XFP&SFP+
10G EPON OLT Asy XFP
XG-PON OLT XFP&SFP+
XGS-PON ONU
XG-PON ONU
10G EPON ONU Asy
10G EPON ONU Sy
10G ONU BOSA
GPON OLT
EPON OLT
SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
ONU
BOSA

2018

100G CWDM4
100G PSM4
100G SR4
100G AOC
40G PSM4
40G SR4
40G LR4
25G LR
25G AOC
10G AOC
XGS(XG)&GPON COMBO OLT
XG&GPON COMBO OLT
XGS-PON OLT
100G LR4
10G EPON OLT Sy XFP&SFP+
10G EPON OLT Asy XFP
XG-PON OLT XFP&SFP+
XGS-PON ONU
XG-PON ONU
10G EPON ONU Asy
10G EPON ONU Sy
10G ONU BOSA
GPON OLT
EPON OLT
SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
ONU
BOSA

2019

400G SR8
400G DR4
200G SR8
100G LR4
100G CWDM4, PSM4
100G SR4
100G AOC
50G SR
40G PSM4, LR4
40G SR4
25G LR, BIDI, CWDM
25G/10G AOC
XGS(XG)&GPON COMBO OLT
XG&GPON COMBO OLT
XGS-PON OLT
10G EPON OLT Sy XFP&SFP+
10G EPON OLT Asy XFP
XG-PON OLT XFP&SFP+
XGS-PON ONU
XG-PON ONU
10G EPON ONU Asy
10G EPON ONU Sy
10G ONU BOSA
GPON OLT
EPON OLT
SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
ONU
BOSA

2020

400G FR4
400G DR4
400G SR4
400G SR8
200G SR8
100G DR
100G FR
100G LR4
100G LR4
100G CWDM4, PSM4
100G SR4
100G AOC
40G PSM4, LR4
40G SR4
50G SR
25G / 10G AOC
25G LR, BIDI,CWDM
SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
XGS(XG)&GPON COMBO OLT
XG&GPON COMBO OLT
XGS-PON OLT
10G EPON OLT Sy XFP&SFP+
10G EPON OLT Asy XFP
XG-PON OLT XFP&SFP+
XGS-PON ONU
XG-PON ONU
10G EPON ONU Asy
10G EPON ONU Sy
10G ONU BOSA
EPON/GPON OLT
ONU
BOSA

2021

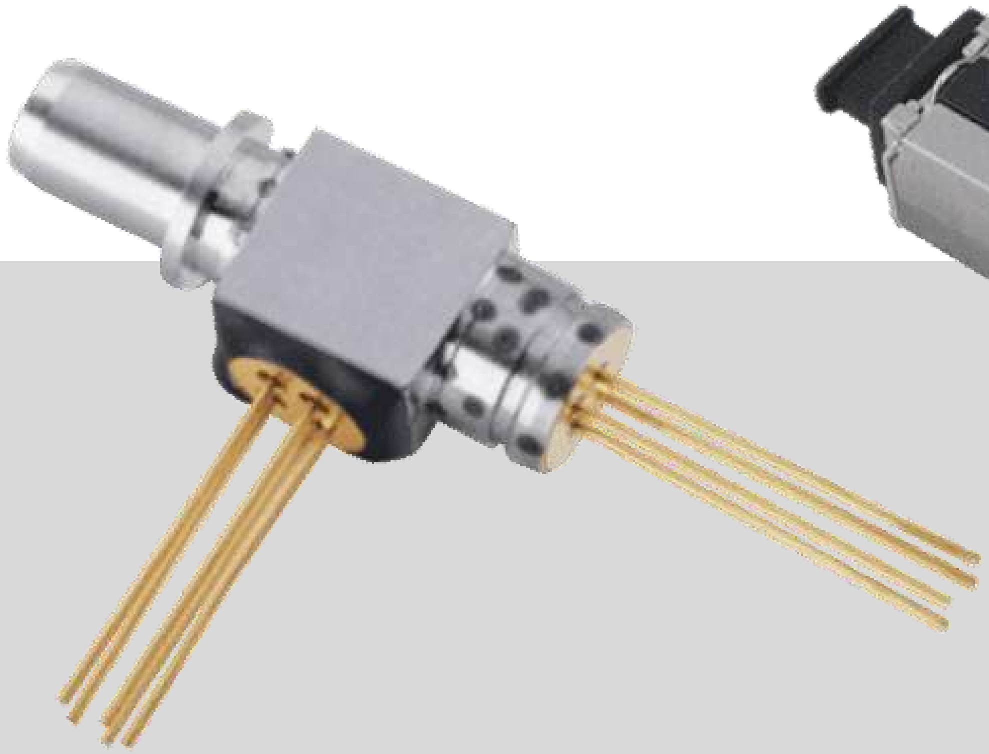
400G FR4
400G DR4
400G SR4
400G SR8
200G SR8
100G DR
100G FR
100G LR4
100G LR4
100G CWDM4, PSM4
100G SR4
100G AOC
40G PSM4, LR4
40G SR4
50G SR
25G / 10G AOC
OSC SFP
25G LR, BIDI,CWDM
SFP+ CWDM/DWDM
SFP+ ER/ZR
SFP+ SR/LR
SFP
XGS(XG)&GPON COMBO OLT
XG&GPON COMBO OLT
XGS-PON OLT
10G EPON OLT Sy XFP&SFP+
10G EPON OLT Asy XFP
XG-PON OLT XFP&SFP+
XGS-PON ONU
XG-PON ONU
10G EPON ONU Asy
10G EPON ONU Sy
10G ONU BOSA
EPON/GPON OLT
ONU
BOSA

Product O-chart

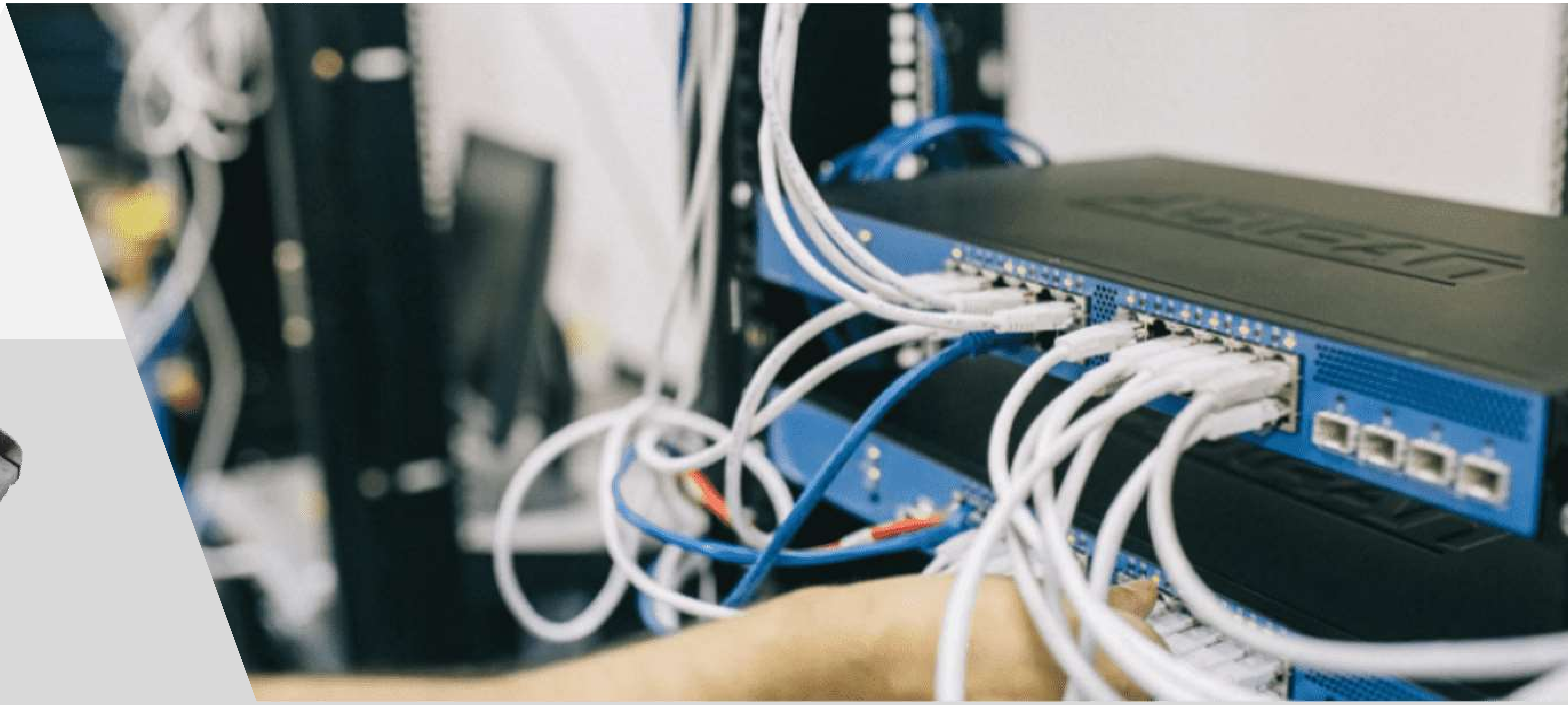
- Access
  - OLT
    - XG(S)&GPON Combo OLT
    - XGS-PON OLT
    - XG-PON OLT
    - 10G EPON OLT
    - EPON OLT
    - GPON OLT
  - ONU
    - XGS-PON ONU
    - XG-PON ONU
    - 10G EPON ONU Symmetric
    - 10G EPON ONU Asymmetric
    - GPON ONU
    - EPON ONU
  - BOSA
    - XGS-PON ONU BOSA
    - XG-PON ONU BOSA
    - 10G EPON ONU BOSA Symmetric
    - 10G EPON ONU BOSA Asymmetric
    - GPON ONU BOSA
    - EPON ONU BOSA
- 5G
  - XFP
    - XFP ZR
    - XFP ER
    - XFP LR
  - SFP28
    - SFP28 MWDM
    - SFP28 LWDM
    - SFP28 CWDM /LR
    - SFP28 BIDI
    - SFP28 SR
  - SFP+
    - SFP+ ER /ZR
    - SFP+ LR /LR lite
    - SFP+ SR
    - SFP+ BIDI
  - SFP
    - SFP 155M~6G
- Data
  - QSFP-DD
    - QSFP-DD DR4/FR4
    - QSFP-DD SR8
    - QSFP-DD SR4
  - QSFP28
    - QSFP28 LR4
    - QSFP28 CWDM4
    - QSFP28 PSM4
    - QSFP28 SR4
  - QSFP28+
    - QSFP+ LR4
    - QSFP+ PSM4
    - QSFP+ SR4
  - AOC
    - QSFP-DD AOC
    - QSFP28 AOC
    - QSFP+ AOC
    - SFP28 AOC
    - SFP+ AOC

Access product line

- OSA



- PON

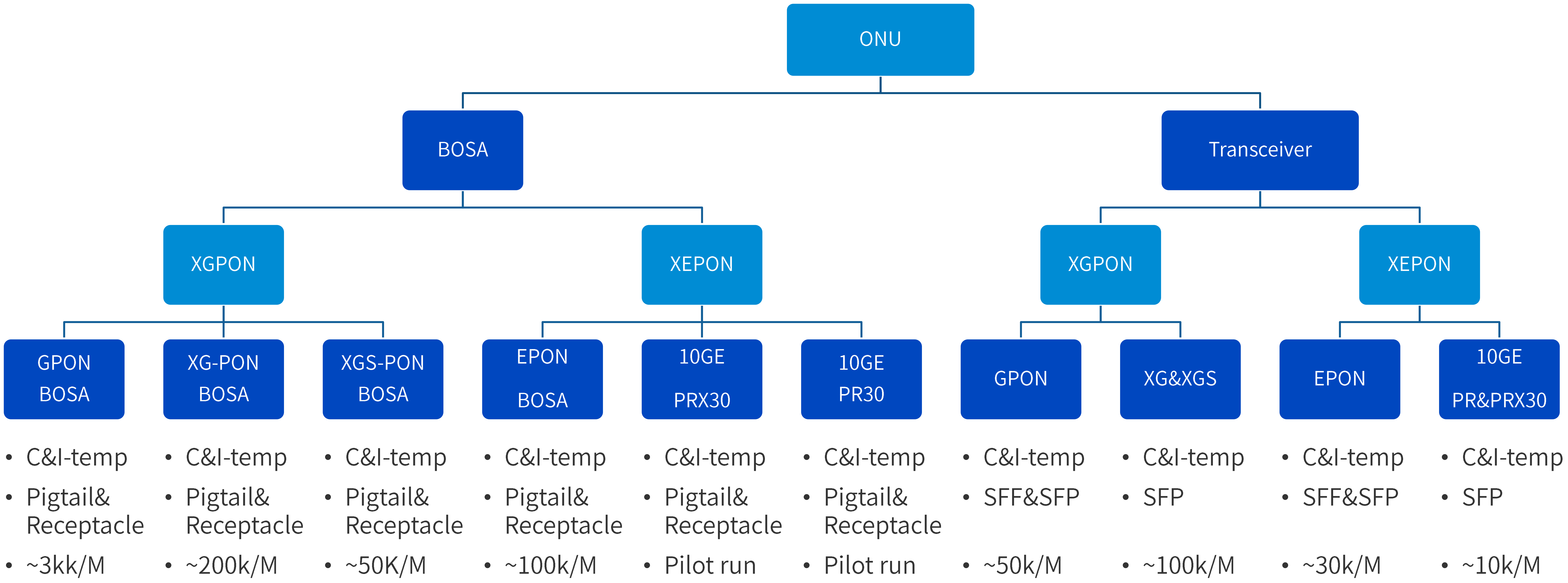


Access product development plan

🟦 MP/Try Run 🔹 Feasibility study ◼ Plan

2020	2021	2022
🟦 GPON OLT/ONU	🟦 GPON OLT/ONU（low cost)	◼ 100G PON
🟦 XG(S)PON OLT/ONU	🟦 XG(S)PON ONU(low cost)	◼ 50G PON OLT/ONU
🟦 EPON OLT/ONU	◼ 25G PON ONU	🟦 COMBO PON OLT（low cost)
🟦 10G EPON OLT/ONU	🔹 COMBO PON OLT（low cost)	🔹 25G PON ONU
🟦 COMBO PON OLT		

ONU O-chart

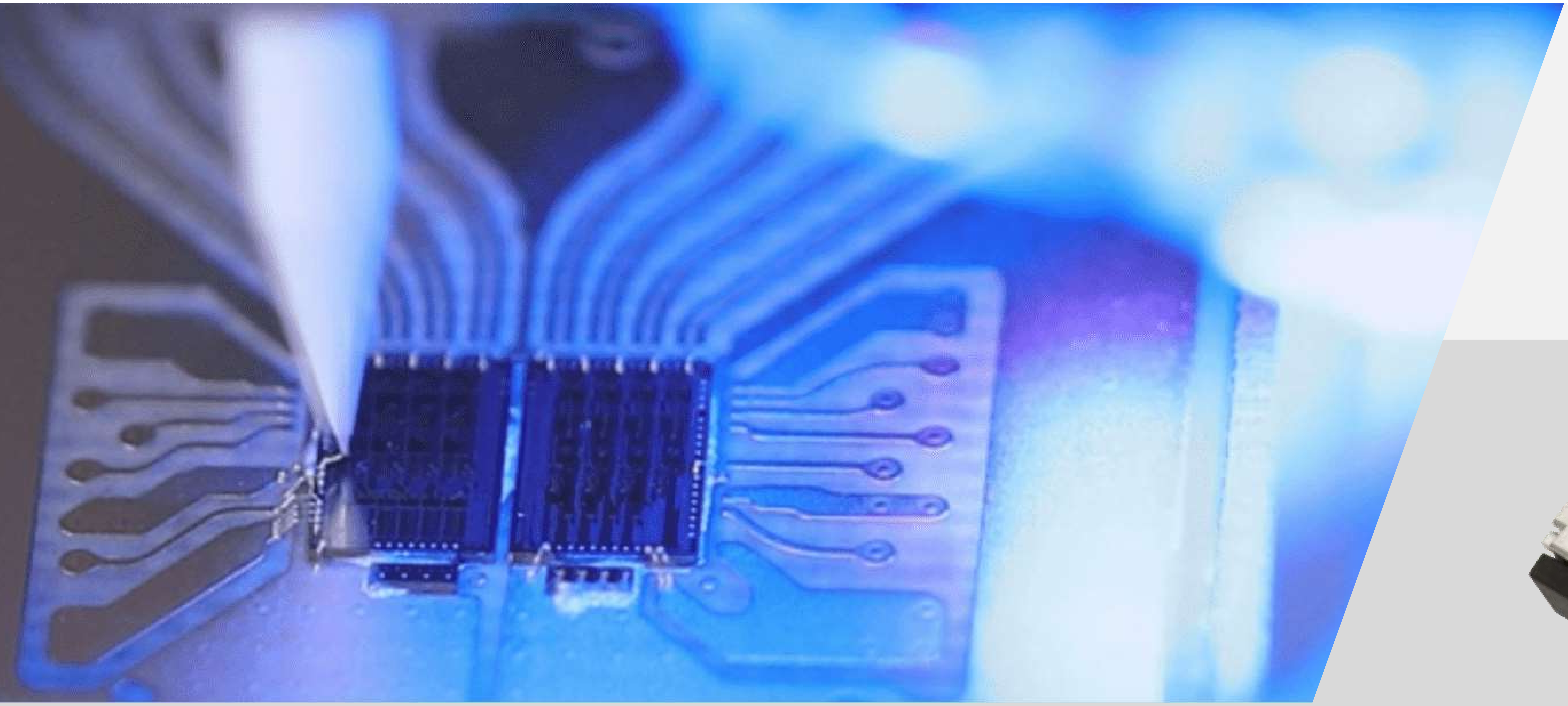


- ONU
  - BOSA
    - XGPON
      - GPON BOSA
        - C&I-temp
        - Pigtail& Receptacle
        - ~3kk/M
      - XG-PON BOSA
        - C&I-temp
        - Pigtail& Receptacle
        - ~200k/M
      - XGS-PON BOSA
        - C&I-temp
        - Pigtail& Receptacle
        - ~50K/M
    - XEPON
      - EPON BOSA
        - C&I-temp
        - Pigtail& Receptacle
        - ~100k/M
      - 10GE PRX30
        - C&I-temp
        - Pigtail& Receptacle
        - Pilot run
      - 10GE PR30
        - C&I-temp
        - Pigtail& Receptacle
        - Pilot run
  - Transceiver
    - XGPON
      - GPON
        - C&I-temp
        - SFF&SFP
        - ~50k/M
      - XG&XGS
        - C&I-temp
        - SFP
        - ~100k/M
    - XEPON
      - EPON
        - C&I-temp
        - SFF&SFP
        - ~30k/M
      - 10GE PR&PRX30
        - C&I-temp
        - SFP
        - ~10k/M

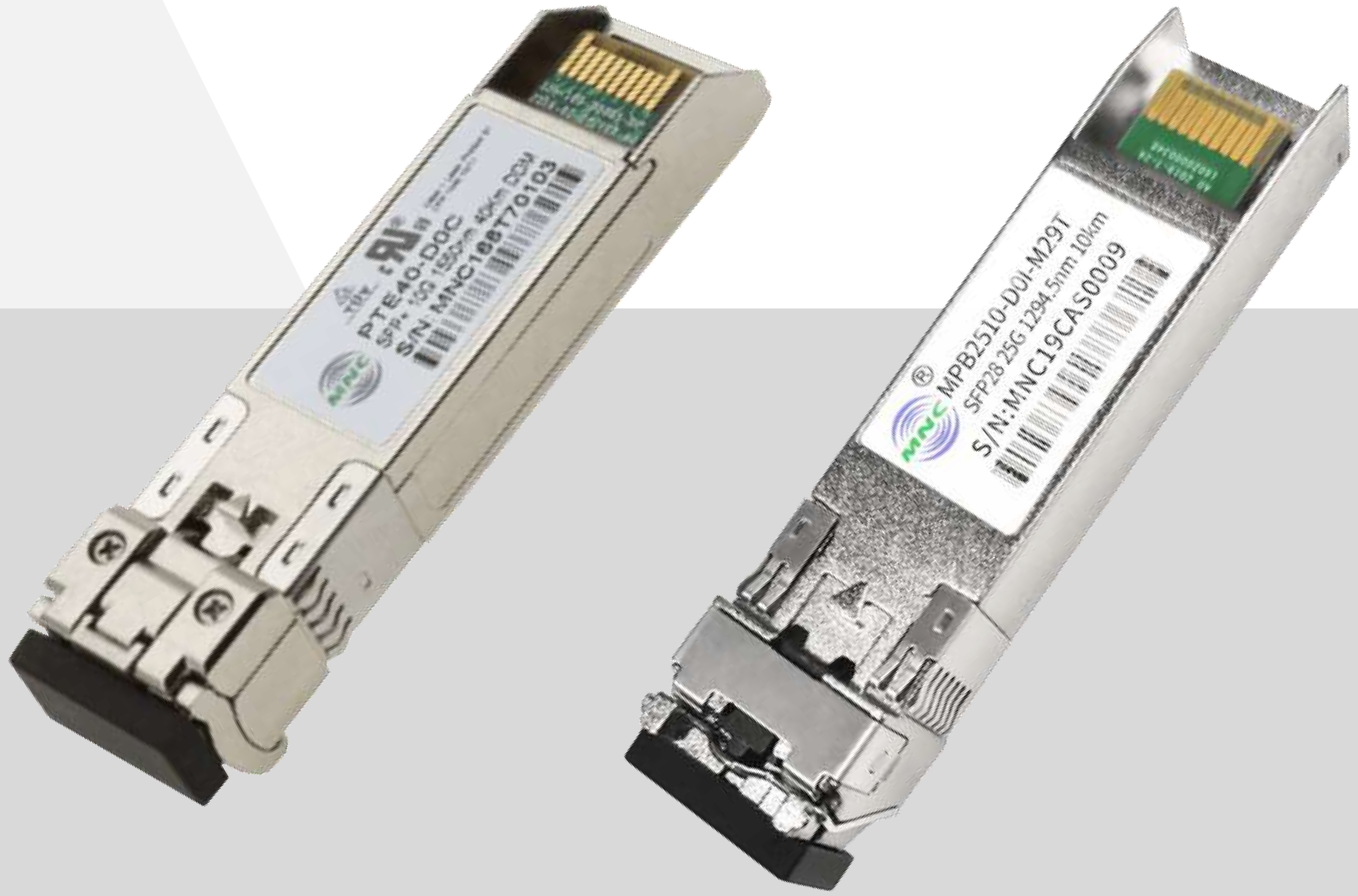
OLT O-chart

- OLT Transceiver
  - XGPON
    - GPON
      - B+/C+/C++
      - C&I-temp
      - SFP&XFP
      - ~70k/M
    - XG-PON
      - N1/N2a
      - C-temp
      - XFP&SFP+
      - Samples
    - XGS-PON
      - N1/N2
      - C-temp
      - SFP+
      - Samples
    - XG COMBO
      - B+/C+
      - C-temp
      - SFP+
      - Samples
    - XGS COMBO
      - B+/C+
      - C-temp
      - SFP+
      - Samples
  - XEPON
    - EPON
      - PX20+
      - C&I-temp
      - SFP
      - ~10k/M
    - 10GE Asymmetric
      - PRX30
      - C&I-temp
      - XFP
      - Samples
    - 10GE Symmetric
      - PR30
      - C&I-temp
      - XFP&SFP+
      - Samples

5G product line



- 🟦 SFP/SFP+/XFP
- 🟦 5G Frontend



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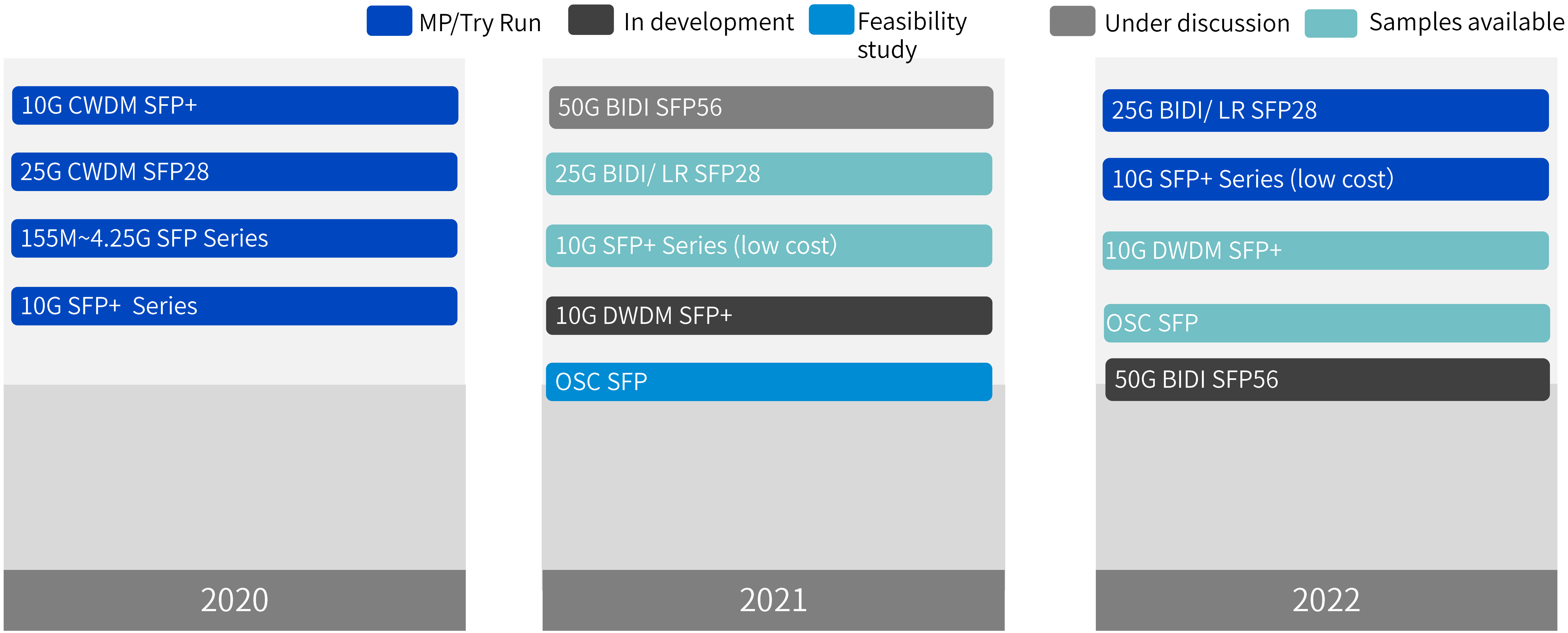
5G product development plan



🟦 MP/Try Run ⬛ In development 🔵 Feasibility study ◼ Under discussion 🟩 Samples available

- 🟦 10G CWDM SFP+
- 🟦 25G CWDM SFP28
- 🟦 155M~4.25G SFP Series
- 🟦 10G SFP+ Series

2020

- ◼ 50G BIDI SFP56
- 🟩 25G BIDI/ LR SFP28
- 🟩 10G SFP+ Series (low cost)
- ⬛ 10G DWDM SFP+
- 🔵 OSC SFP

2021

- 🟦 25G BIDI/ LR SFP28
- 🟦 10G SFP+ Series (low cost)
- 🟩 10G DWDM SFP+
- 🟩 OSC SFP
- ⬛ 50G BIDI SFP56

2022

25G SFP28 Specification Table

Parameter	25G SFP28 LR	25G SFP28 BIDI	25G SFP28 CWDM	25G SFP28 LWDM	25G SFP28 MWDM	25G SFP28 DWDM
Distance	10km	10km	10km	10km	10km	10km
Wavelength	1310nm	1270/1330nm	CWDM	MWDM	LWDM	DWDM
Power dissipation	<1.5W	<1.5W	<1.5W	<2W	<2W	<2W
Transmitter	25G DML(DFB)	25G DML(DFB)	25G DML(DFB)	25G DML(DFB)	25G DML(DFB)	25G DML(DFB)
Receiver	25G PIN	25G PIN	25G PIN	25G PIN	25G PIN	25G PIN
Case Operating Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Status	Mass production	Mass production	Mass production	Samples ready	Samples ready	Developing

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25G SFP28 LR

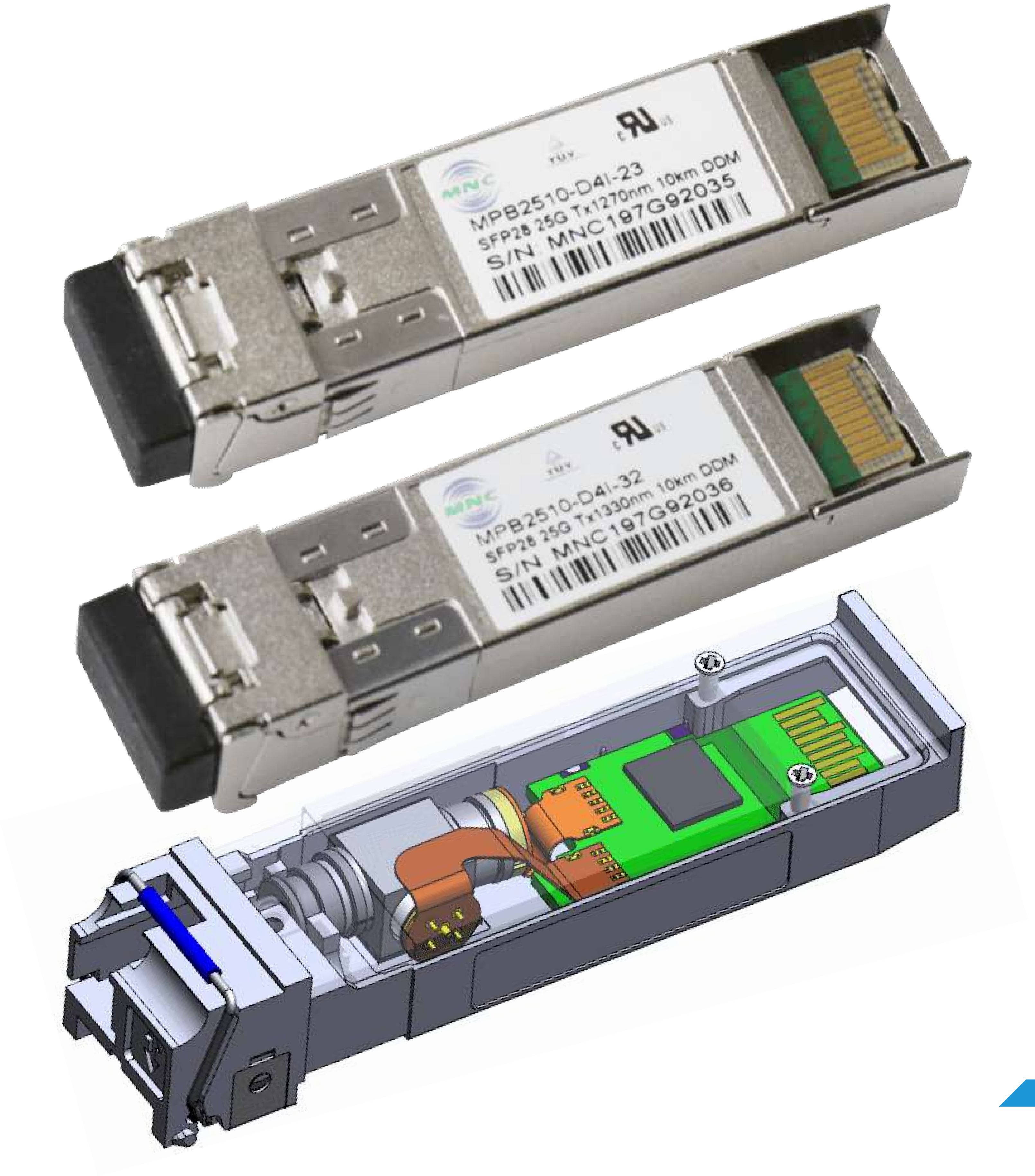
- Up to 25.78 Gb/s rate
- Hot-pluggable SFP28 footprint
- 1310nm DFB laser transmitter
- Duplex LC connector
- RoHS2.0 compliant
- Up to 10 km on 9/125μm SMF
- Power consumption < 1.5W
- Single 3.3V power supply
- Industrial temperature range -40°C to +85°C

- Status: Mass production

25G SFP28 BIDI

- Up to 25.78 Gb/s rate
- Hot-pluggable SFP28 footprint
- 1270/1330nm DFB laser transmitter
- Single LC connector
- RoHS2.0 compliant
- Up to 10 km on 9/125μm SMF
- Power consumption < 1.5W
- Single 3.3V power supply
- Industrial temperature range -40°C to +85°C

- Status: Mass production



25G SFP28 CWDM

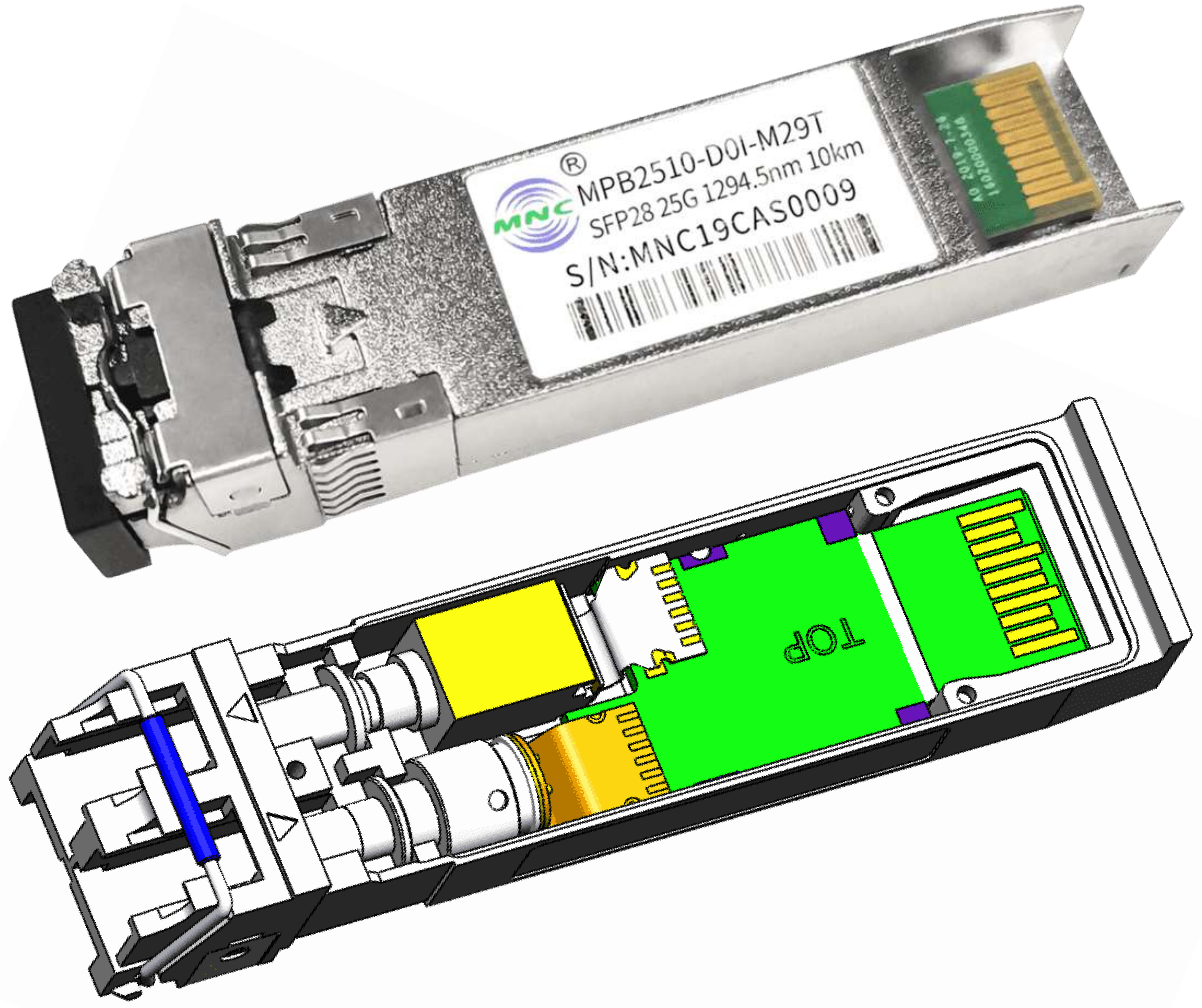
- Up to 25.78 Gb/s rate
- Hot-pluggable SFP28 footprint
- 1271/1291/1311/1331/1351/1371nm DFB laser transmitter
- Duplex LC connector
- RoHS2.0 compliant
- Up to 10 km on 9/125μm SMF
- Power consumption < 1.5W
- Single 3.3V power supply
- Industrial temperature range -40°C to +85°C

- Status: Mass production 300k/M

25G SFP28 LWDM

- Up to 25.78 Gb/s rate
- Hot-pluggable SFP28 footprint
- Cooled LWDM（1269.23~1318.35nm）DFB Laser and PIN photo detector
- Duplex LC connector
- RoHS2.0 compliant
- Up to 10 km on 9/125μm SMF
- Power consumption < 2W
- Single 3.3V power supply
- Industrial temperature range -40°C to +85°C

- Status: Samples ready



25G SFP28 MWDM

- Up to 25.78 Gb/s rate
- Hot-pluggable SFP28 footprint
- Cooled MWDM（1267.5~1374.5nm）DFB Laser and PIN photo detector
- Duplex LC connector
- RoHS2.0 compliant
- Up to 10 km on 9/125μm SMF
- Power consumption < 2W
- Single 3.3V power supply
- Industrial temperature range -40°C to +85°C

- Status: Samples ready

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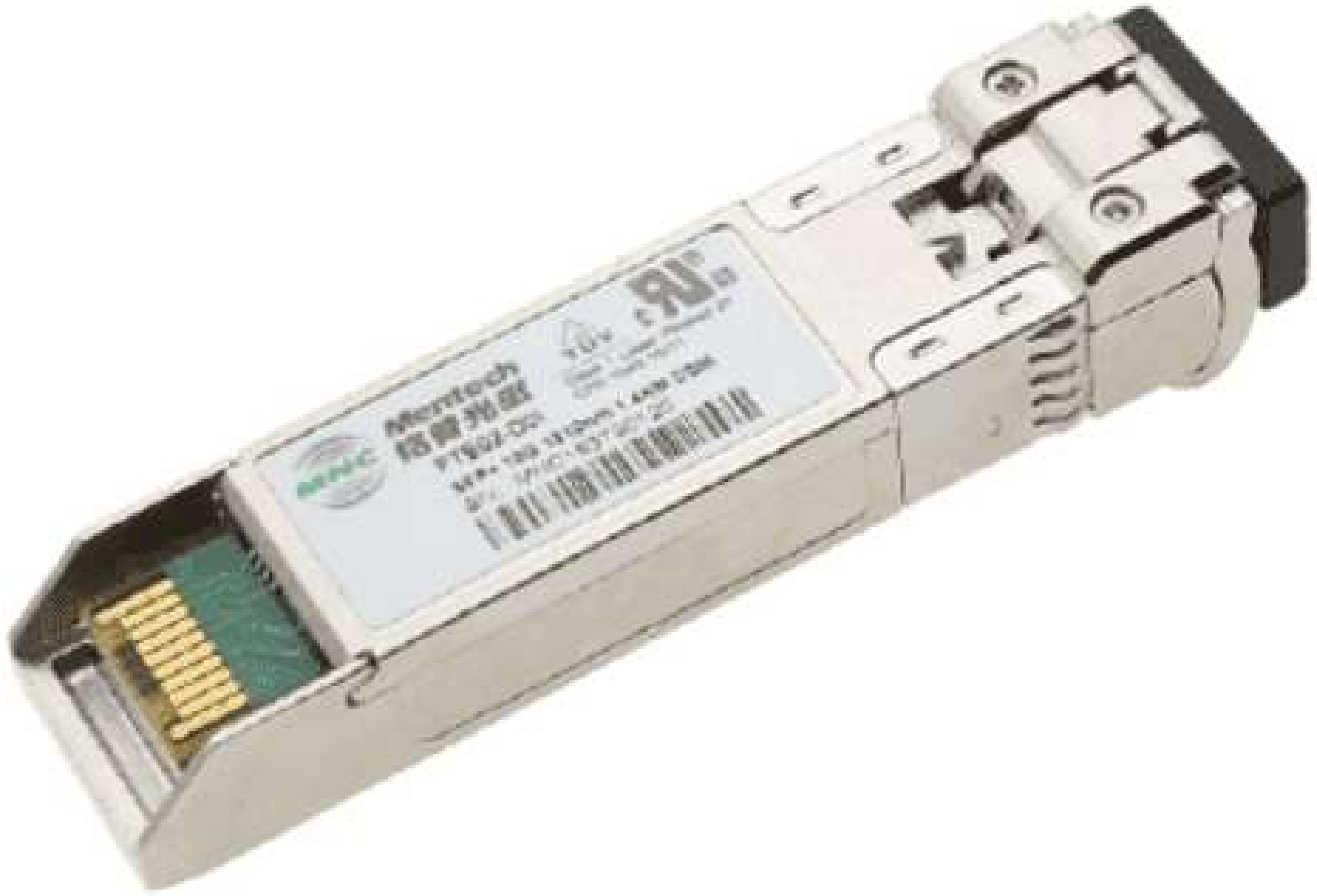
10G SFP+ Specification Table

Parameter	10G SFP+ LR	10G SFP+ BIDI	10G SFP+ CWDM
Distance	10km	10km	10km
Wavelength	1310nm	1270/1330nm	CWDM
Power dissipation	<1W	<1W	<1.5W
Transmitter	10G DML(DFB)	10G DML(DFB)	10G DML(DFB)
Receiver	10G PIN	10G PIN	10G PIN
Case Operating Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Status	Volume shipping	Volume shipping	Volume shipping

10G SFP+ LR

- Hot-pluggable SFP+ footprint
- Up to 10km link length
- Supports 9.95 to 10.5 Gb/s bit rates
- Uncooled 1310nm DFB laser
- < 1W power dissipation
- Duplex LC connector
- RoHS2.0 compliant
- Single 3.3V power supply
- Industrial temperature range -40°C to 85°C

- Status: Mass production



10G SFP+ BIDI

- Hot-pluggable SFP+ footprint
- Up to 10km link length
- Supports 9.95 to 10.5 Gb/s bit rates
- Uncooled 1270/1330nm DFB laser
- < 1W power dissipation
- Single LC connector
- RoHS2.0 compliant
- Single 3.3V power supply
- Industrial temperature range -40°C to 85°C

- Status: Mass production

10G SFP+ CWDM

- Hot-pluggable SFP+ footprint
- Up to 10km link length
- Supports 9.95 to 10.5 Gb/s bit rates
- CWDM DFB Laser and PIN receiver
- < 1.5W power dissipation
- Duplex LC connector
- RoHS2.0 compliant
- Single 3.3V power supply
- Industrial temperature range -40°C to 85°C

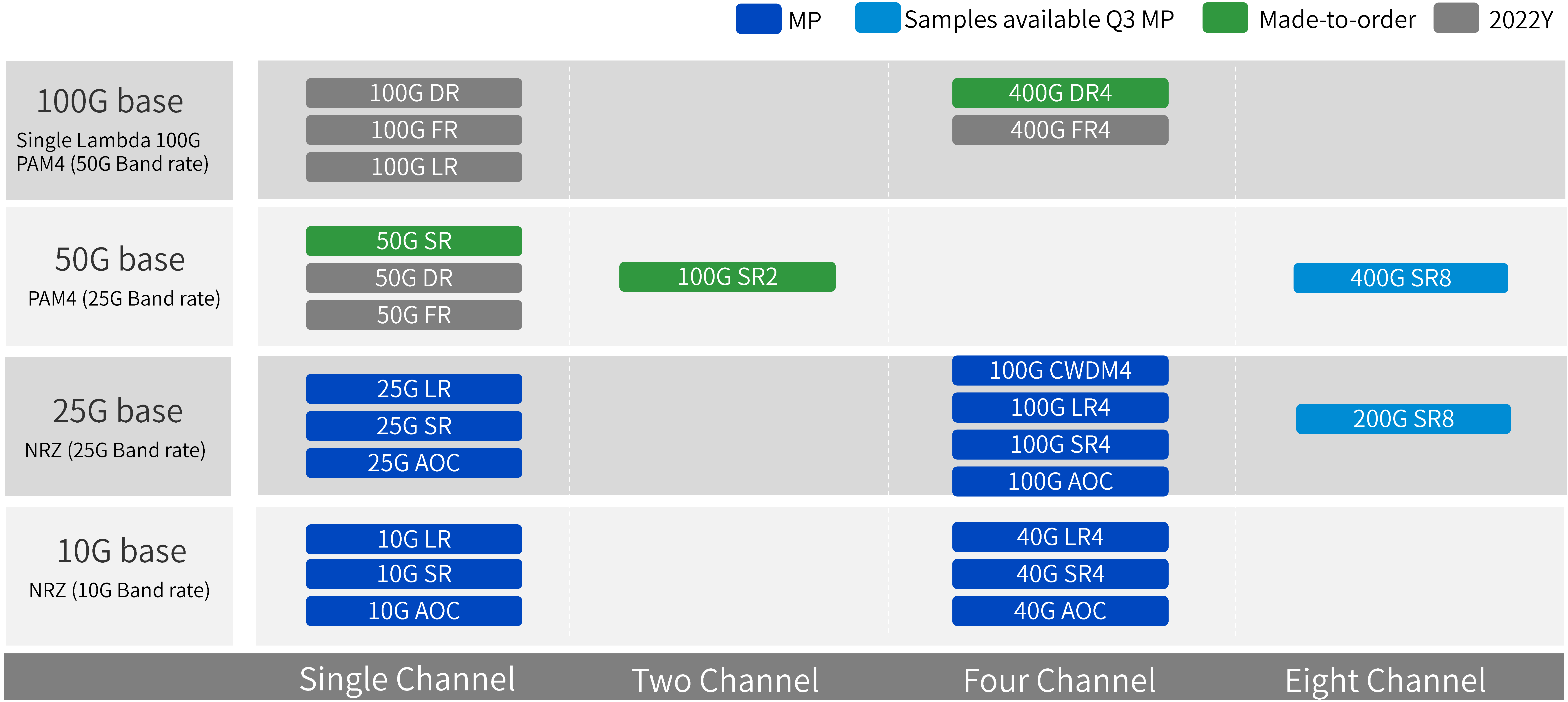
- Status: Mass production

Data communication product line

- High-speed optical module

- AOC

Development plan



🟦 MP　🔷 Samples available Q3 MP　🟩 Made-to-order　◼ 2022Y

	Single Channel	Two Channel	Four Channel	Eight Channel
100G base Single Lambda 100G PAM4 (50G Band rate)	◼ 100G DR ◼ 100G FR ◼ 100G LR		🟩 400G DR4 ◼ 400G FR4	
50G base PAM4 (25G Band rate)	🟩 50G SR ◼ 50G DR ◼ 50G FR	🟩 100G SR2		🔷 400G SR8
25G base NRZ (25G Band rate)	🟦 25G LR 🟦 25G SR 🟦 25G AOC		🟦 100G CWDM4 🟦 100G LR4 🟦 100G SR4 🟦 100G AOC	🔷 200G SR8
10G base NRZ (10G Band rate)	🟦 10G LR 🟦 10G SR 🟦 10G AOC		🟦 40G LR4 🟦 40G SR4 🟦 40G AOC	

Transceiver - 10G&25G SR

Part. No	Specifications							
	Package	Connector	Rate (Gbps)	Laser (nm)	Fiber Type (nm)	Reach*1 (m)	Case Temp (°C)	DDM
MPTED3-D0C-8VT1	SFP+	LC	10.3125	850	MMF	300	0~70	Y
MPB25D1-D0C-8VT1	SFP28	LC	25.78125	850	MMF	100	0~70	Y

Note*1：10G: OM2 fiber 100m，OM3 fiber 300m； 25G: Typical OM2 fiber 70m，OM3 fiber 100m

Transceiver - 40G&100G SR4

Part. No	Specifications							
	Package	Connector	Rate*1 (Gbps)	Laser (nm)	Fiber Type (nm)	Reach*2 (m)	Case Temp (°C)	DDM
MQA4ZD2-DMC-8VT1	QSFP+	MPO	10.3125	850	MMF	300	0~70	Y
MQBG1D1-DMC-8VT1	QSFP28	MPO	25.78125	850	MMF	100	0~70	Y

Note*1：For each channel

Note*2：10G: OM2 fiber 100m，OM3 fiber 300m；25G: Typical OM2 fiber 70m，OM3 fiber 100m

Transceiver - 100G CWDM4

Part. No	Specifications							
	Package	Connector	Rate*1 (Gbps)	Laser*2 (nm)	Fiber Type (nm)	Reach (m)	Case Temp (°C)	DDM
MQBG102-D0C-T1	QSFP28	LC	25.78125	CWDM	SMF	2km	0~70	Y

Note*1：For each channel

Note*2：Typical wave length: 1271nm, 1291nm, 1311nm, 1331nm

Transceiver - 100G LR4（COB&BOX)

	Specifications							
	Package	Connector	Rate*1 (Gbps)	Laser*2 (nm)	Fiber Type (nm)	Reach (m)	Case Temp (°C)	DDM
MQBG110-D0C-T1	QSFP28	LC	25.78125	LWDM	SMF	10km	0~70	Y
MQBG110-D0I-T1	QSFP28	LC	25.78125	LWDM	SMF	10km	-40~85	Y

Note*1：For each channel

Note*2：Typical wave length: 1295.56nm, 1300.05nm, 1304.58nm, 1309.14nm

AOC - P2P AOC

Part. No*1	Specifications							
	Package	Connector	Rate (Gbps)	Laser (nm)	Fiber Type (nm)	Reach*2 (m)	Case Temp (°C)	DDM
MPTED3-DZC-XXXT	SFP+	-	10.3125	850	MMF	1-300	0~70	Y
MPB25D1-DZC-XXXT	SFP28	-	25.78125	850	MMF	1-100	0~70	Y
MQA4ZD2-DZC-XXXT	QSFP+	-	4x10.3125	850	MMF	1-300	0~70	Y
MQBG1D1-DZC-XXXT	QSFP28	-	4x25.78125	850	MMF	1-100	0~70	Y

Note*1：XXX means cable length(m)

Note*2：10G: Typical OM2 cable<100m, OM3 cable<300m； 25G: Typical OM3 cable<70m, OM4 cable<100m

AOC - Breakout AOC

Part. No*1	Specifications							
	Package	Connector	Rate (Gbps)	Laser (nm)	Fiber Type (nm)	Reach*2 (m)	Case Temp (°C)	DDM
MQA4ZD1-DBC-XXXT	QSFP+ SFP+	-	4x10.3125	850	MMF	1-300	0~70	Y
MQBG1D1-DBC-XXXT	QSFP28 SFP28	-	4x25.78125	850	MMF	1-100	0~70	Y

Note*1：XXX means cable length(m)

Note*2： Typical OM2 cable<100m, OM3 cable<300m； 25G: Typical OM3 cable<70m, OM4 cable<100m

AOC - Breakout AOC(Pigtail)

Part. No*1	Specifications							
	Package	Connector	Rate (Gbps)	Laser (nm)	Fiber Type (nm)	Reach*2 (m)	Case Temp (℃)	DDM
MQA4ZD1-D0C-XXXT	QSFP+	LC	4x10.3125	850	MMF	1-300	0~70	Y
MQBG1D1-D0C-XXXT	QSFP28	LC	4x25.78125	850	MMF	1-100	0~70	Y

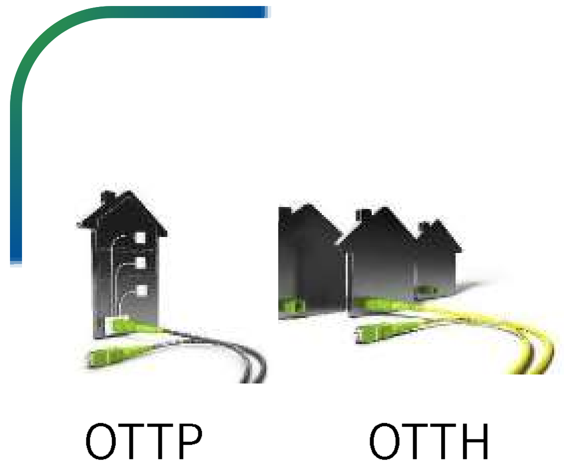
Note*1：XXX means cable length(m)

Note*2：10G: Typical OM3 cable<300m； 25G: Typical OM3 cable<70m, OM4 cable<100m

Key Products – Product Applications

Switch

OTN/SPN



Optical Access

ONU

4G/5G

Data Center

mentech

Optical BU – Partners

In no particular order

ZTE中兴
FiberHome
ZOWEE
BROADCOM
SK telecom
中国移动 China Mobile
RAISECOM
TP-LINK
NOKIA
NEC
中国电信 CHINA TELECOM
中怡数宽
TwoWin
COMMSCOPE
SERCOMM
China unicom中国联通
Telefonica
MitraStar
ADTRAN
VNPT

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