

IR Presentation 2023 1H

2023 1H Result & Q3 2023 Guidance



August 2023
OE Solutions IR

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Table of Contents

1. Company overview
2. 2023 1H Result Review
3. OE Solutions Vision & Strategy
4. Q3 Guidance
5. Appendix

Company overview



About OE Solutions

Overview

Name	OE Solutions, Co., Ltd	Date of Established	Aug.7, 2003
Number of Employees	358 (Korea: 333 / USA: 15 / Japan: 4/ Taiwan: 6)	Date of Listing	Feb.27, 2014(KOSDAQ code : 138080)
Product	Optical Transceiver & Laser Chip	Homepage	www.oesolutions.com
Locations	Head Quarter : Gwangju, South Korea / US : Ridgefield Park, NJ, USA / JAPAN : Tokyo Japan		

(As of June 30, 2023)

Locations



- Hilversum, Netherlands**
- Europe Headquarter
 - Europe Sales
 - Smart and system R&D

- Gwangju, Korea**
- Global Headquarter
 - Manufacturing
 - R&D

- Seoul (Anyang), Korea**
- Korea Sales
 - R&D

- Seoul (Suwon), Korea**
- Korea Sales
 - Engineering Support

- Taipei, Taiwan**
- China Sales
 - Engineering Support

- Tokyo, Japan**
- Japan Sales
 - Engineering Support

- Ridgefield Park, NJ, USA**
- US Headquarter
 - US (East Coast) Sales
 - Engineering Support

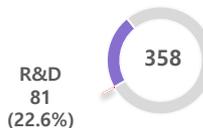
- Irvine, CA, USA**
- R&D

- Santa Babara, CA, USA**
- R&D

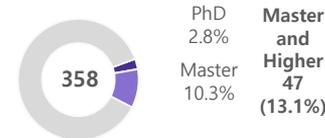


R&D Engineer & Cost

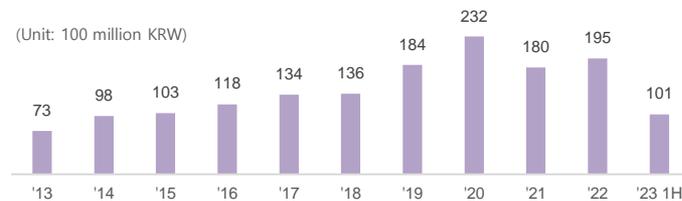
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(Unit: 100 million KRW)



OE Solutions – Global Supplier of Transceivers

Leading Supplier of High-Reliability Optical Components for Challenging Deployment Environments

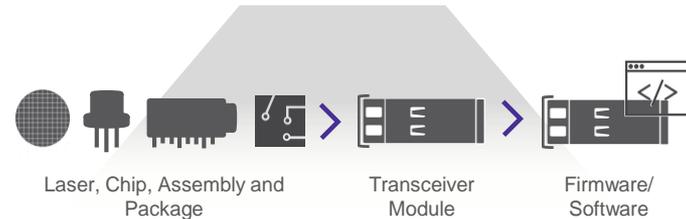


In-house
Design

In-house
Manufacturing

Global Delivery

- ❑ Leading supplier of optical components since 2003
- ❑ Founded by a team of Bell Labs and Samsung veterans
- ❑ Traded on KOSDAQ since 2014
- ❑ Key supplier to tier-1 MSO and Wireless OEMs
- ❑ Serving global customer in over 50 countries
- ❑ Leading supplier of BIDI and I-Temp Optics
- ❑ Leading supplier of Smart SFPs (co-developed with AimValley)
- ❑ Vertically integrated production
- ❑ In-house production in Gwangju, S. Korea factory
- ❑ R&D sites in Korea, USA and the Netherlands

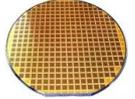
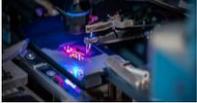


Laser, Chip, Assembly and
Package

Transceiver
Module

Firmware/
Software

Vertical Integration

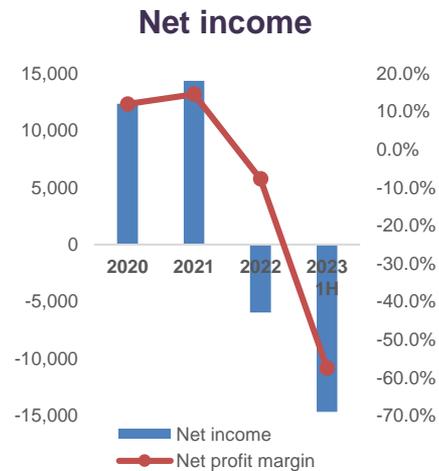
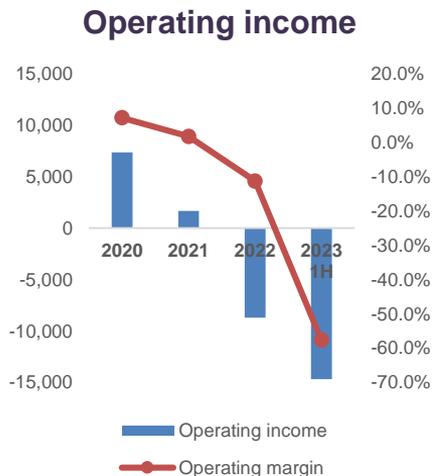
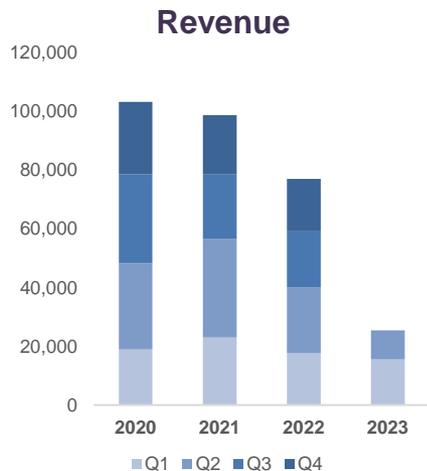
 Manufacturing Process		 Manufacturing Technology		
Chip		DML, EML, PIC (up to 50Gbps)	Epitaxy / Fabrication / Wafer Characterization	
Assembly		TO/ XMD (Cooled/ Uncooled)	Die Bonding, Wire Bonding, Seam Sealing, Burn-in, DC/AC Test	
Package		OSA (TOSA/ ROSA/ BOSA)	Laser welding, Epoxy bonding, DC/AC Test	
Circuit / Module		Transceiver (up to 400Gbps)	Auto Soldering / Auto Tuning / Test	
Firmware / Software		Sub-system (Network Migration & Self-Monitoring Technology)	Co-developed with AimValley, a networking technology expert in Netherlands	
Production		Own manufacturing, assembly & testing facility	Low cost, flexible production	

2023 1H Result review



Financial Results

2023 1H Revenue **25.5B KRW**, Operating income **-14.7B KRW(-57.7%)**, Net income **-14.7B KRW(-57.6%)**



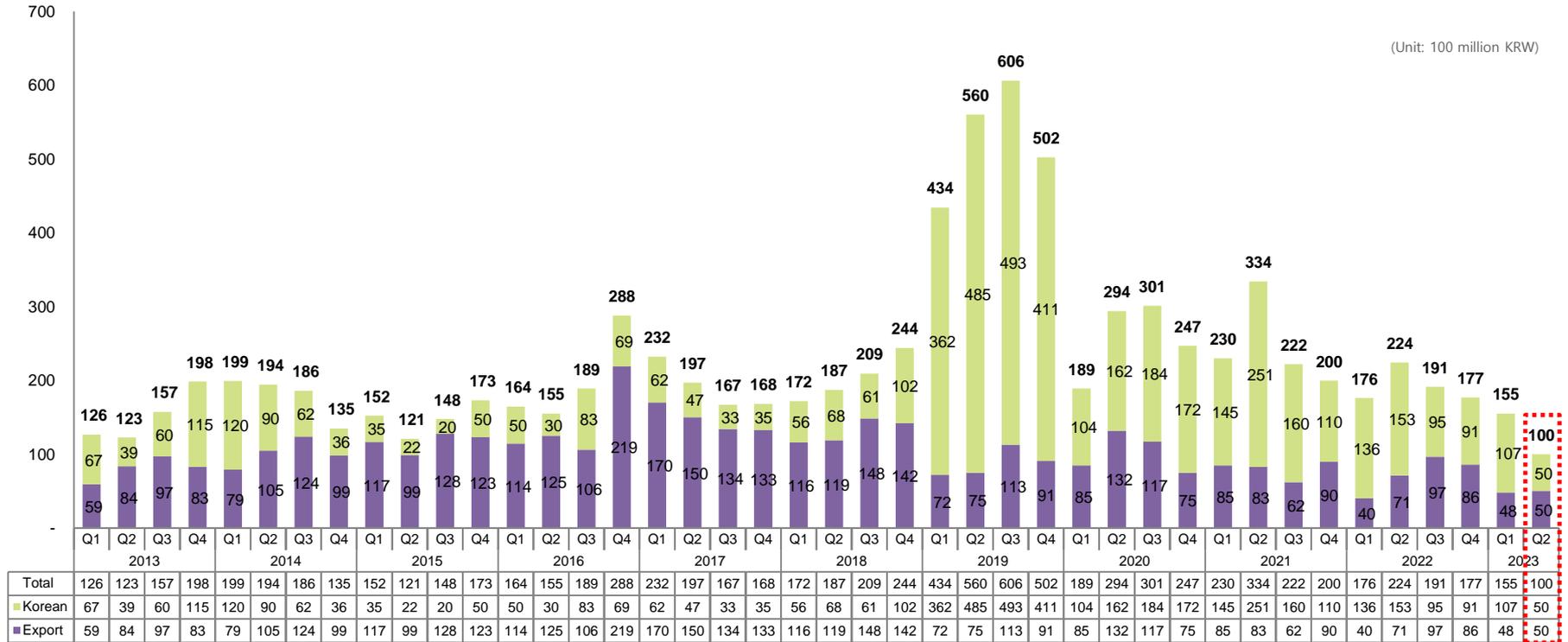
※ 연결 기준

(Unit : million KRW)

	2020	2021	2022	2023 1H	2023 1Q	2023 2Q
• Revenue	103,178	98,681	76,954	25,491	15,498	9,993
• Operating income	7,333	1,655	-8,705	-14,696	-6,670	-8,026
• Operating margin	7.1%	1.7%	-11.3%	-57.7%	-43.0%	-80.3%
• Net income	12,352	14,372	-5,977	-14,674	-5,224	-9,450
• Net profit margin	12.0%	14.6%	-7.8%	-57.6%	-33.7%	-94.6%

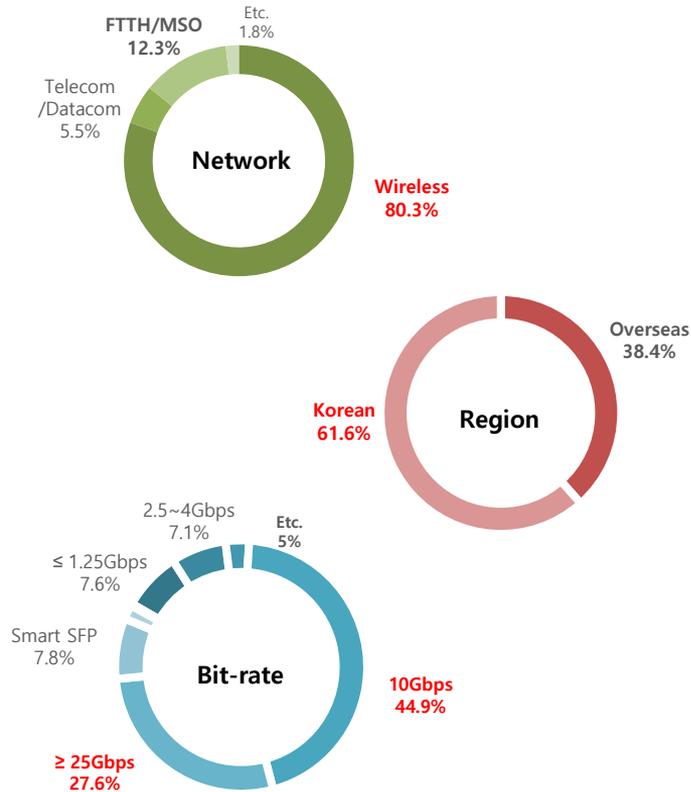
Quarterly Revenue trends

Anticipating a performance turnaround due to increased sales of High bit-rate products in 2024



※ Based on separate standard

Sales details



(Unit: 100 million KRW)

	2022 1H	2023 1H	YoY (%)
Network			
• Wireless	318.1	204.8	-35.6%
• Telecom/Datacom	17.2	14	-18.6%
• FTTH/MSO	42.4	31.4	-25.9%
• etc.	12.8	4.7	-63.3%
Region			
• Korean	288.7	156.9	-45.7%
• Overseas	111.8	98	-12.3%
Overseas ratio	27.9%	38.4%	
Bit-rate			
• ≤1.25Gbps	30.2	19.3	-36.1%
• 2.5~4Gbps	47.7	18.1	-62.1%
• 5~6Gbps	9.9	7.7	-22.2%
• 10Gbps	160.5	114.4	-28.7%
• ≥25Gbps	117.4	70.3	-40.1%
• Smart SFP	21.4	19.8	-7.5%
• Component / Chip	12.8	4.7	-63.3%
• etc.	0.6	0.6	-
Total	400.5	254.9	-36.4%

※ Based on separate standard

OE Solutions Vision & Strategy



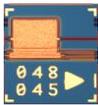
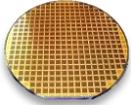
Vision

Connecting the world with customers through innovative solutions using OptoElectronic(OE) technology

Strategy

Laser Chip → Transceiver Vertical integration

Optical Component



- 10G / 25G / 50G / 100G will start using in-house laser chip
- 5G, 6G Wireless / Data center / LiDAR
- Through In-house capability 1)Cost competitive 2)Supply and demand stabilization
- Road map
 - Wireless : 10G / 25G / 50G EML, Tunable Chip
 - Data center : 50G EML
100G EML PAM4 : With joint ETRI
 - LiDAR : High power laser (Narrow linewidth)

Transceiver



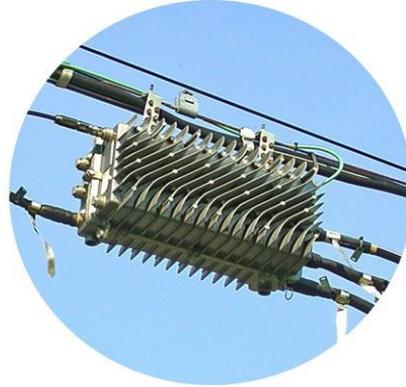
- Global 5G Wireless Transceiver All line-up
- Transceiver profitability and competitive advantage through in-house technology
- High bit-rate Transceiver development to launch a variety of Network Target products (Data center, Telecom, FTTH)
- Road map
 - 50Gbps / 100Gbps / 400Gbps PAM4 for wireless and Data Center interconnector
 - 10Gbps / 25Gbps Tunable Transceiver for WDM
 - Digital Coherent Transceiver for 100Gbps / 200Gbps / 400Gbps

Market and Applications which OE Solutions Transceiver serves



Wireless Fronthaul

- Support of all CPRI and Ethernet rates up to 25Gbps
- Standard, Extended and Industrial temperature ranges
- BIDI and WDM variants



Fixed Broadband

- Broad range of types including WDM
- Temperature ranges beyond IT
- High link budget variants



Transport & Interconnect

- Broad portfolio of TDM, CWDM and DWDM transceivers
- Non-standard wavelengths
- Standard, Extended and Industrial temperature ranges - and beyond
- BIDI and BIDI-CWDM variants



Network Enhancements

- Network migration, TDMoP/CES pseudo wire
- Service assurance including Level 2 and 3 OAM
- Network timing - SyncE over copper
- Smart management solutions

Optical Transceivers for Every Network

Metro Access

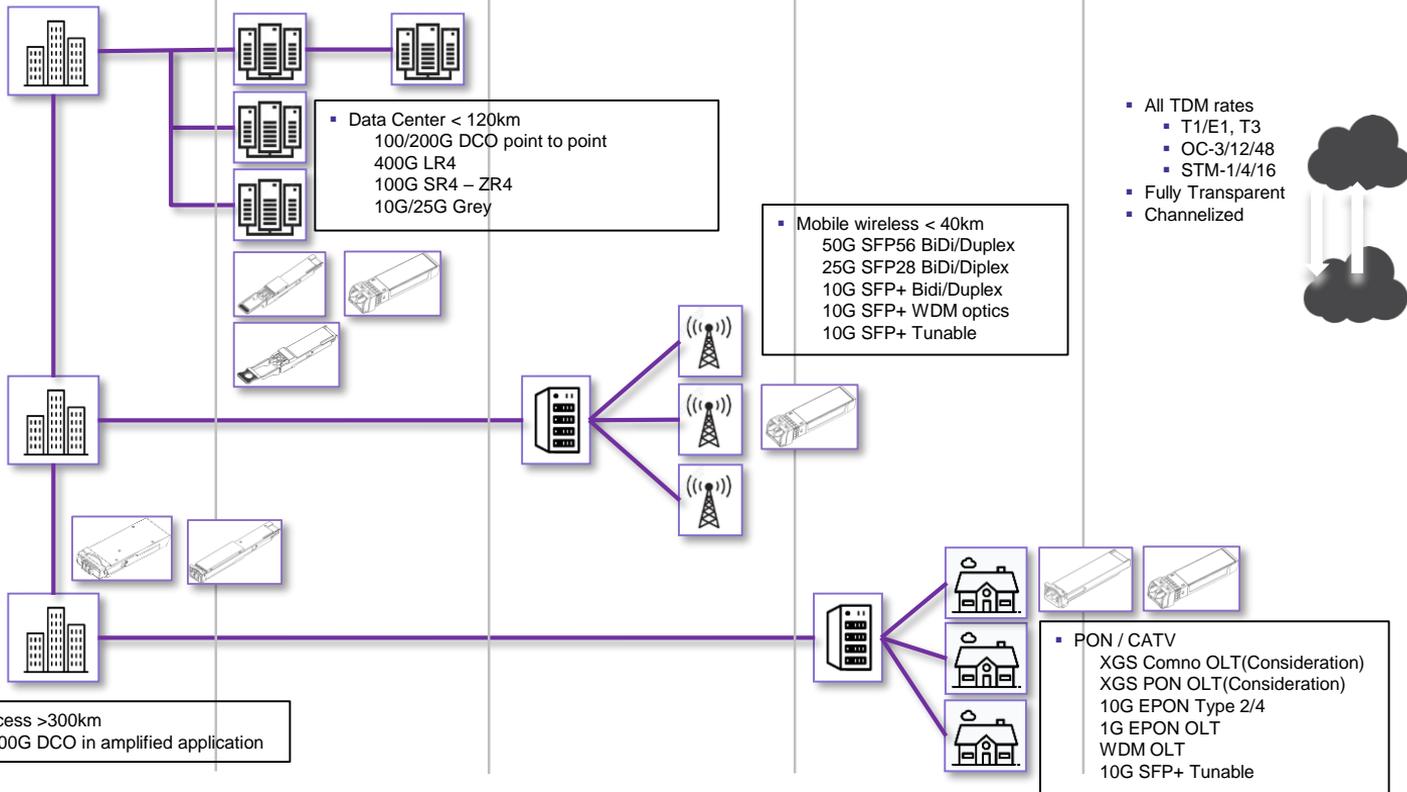
Data Center

Mobile Wireless

PON / CATV

Network Migration

Service Assurance



- Metro Access >300km
100/200G DCO in amplified application

- Data Center < 120km
100/200G DCO point to point
400G LR4
100G SR4 – ZR4
10G/25G Grey

- Mobile wireless < 40km
50G SFP56 BiDi/Duplex
25G SFP28 BiDi/Duplex
10G SFP+ BiDi/Duplex
10G SFP+ WDM optics
10G SFP+ Tunable

- All TDM rates
 - T1/E1, T3
 - OC-3/12/48
 - STM-1/4/16
- Fully Transparent
- Channelized

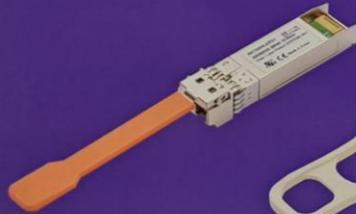
- Packet Network Probes
 - L2/ Ethernet
 - L3/ IP

- PON / CATV
XGS Comno OLT(Consideration)
XGS PON OLT(Consideration)
10G EPON Type 2/4
1G EPON OLT
WDM OLT
10G SFP+ Tunable

Strong in Wireless(5G, 6G) market, recently expanding the serving markets to Telecom and Data Center applications

Optical Transceivers for Next-Generation Networks

50G SFP56 BIDI
BR40/40km IT



100G QSFP28
ZR4/80km ST



100G QSFP28
DCO 120km IT



100G QSFP-DD
DCO 120km IT



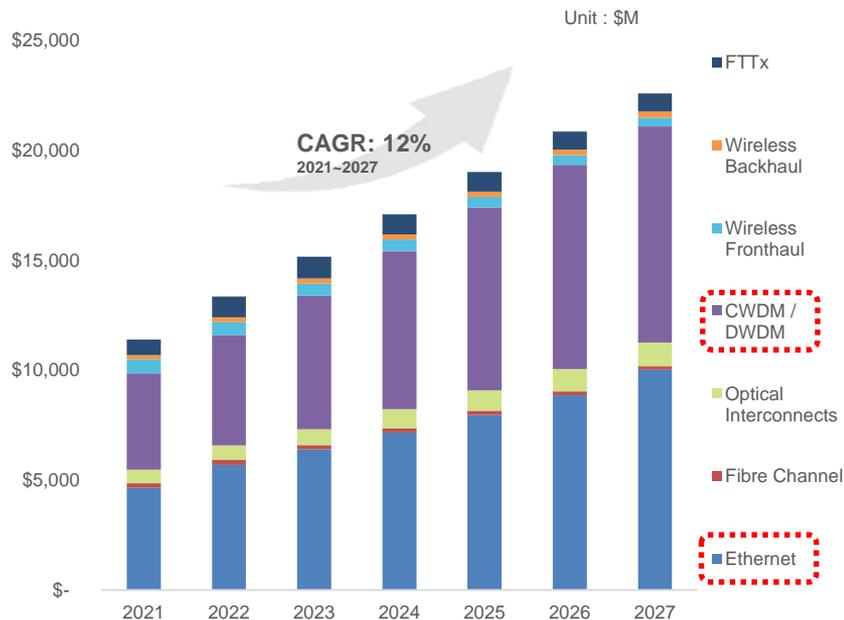
100/200G CFP2
DCO EDFA 120km IT



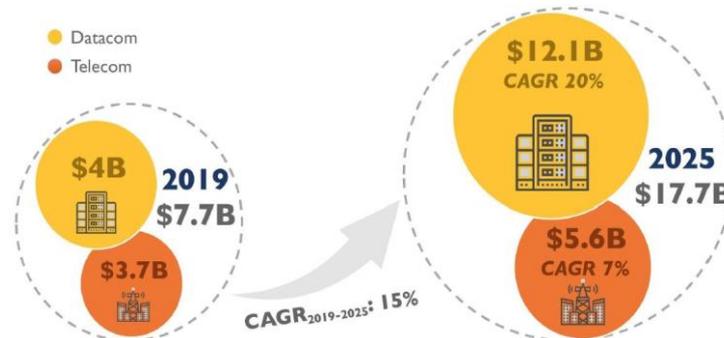
OE SOLUTIONS

Demand for Transceivers continues to increase to infrastructure investments that require data connectivity

Transceiver Market Forecast



Source : LightCounting, 2022



Source : Yole Developpement, 2020

Market and Applications which OE Solutions Laser Chip serves

Strong in telecom market, recently expanding the serving markets to LiDAR, Laser Sensors, and Data Center applications



Communications
LD & OSA

- 10G EML 1577nm
- 10G EML WDM(80km)
- 25G/50G O Band EML
- Tunable PIC Laser / ITLA



AI/DC High speed Laser

- 25G EML LWDM
- 50G EML CWDM4
- 100G EML O-Band



Next generation
AI/DC Laser

- 1310nm HP Laser for ELSFP
- CWDM HP Laser for ELSFP
- 1310nm HP Laser for SiPH
- CWDM4 HP Laser for SiPH

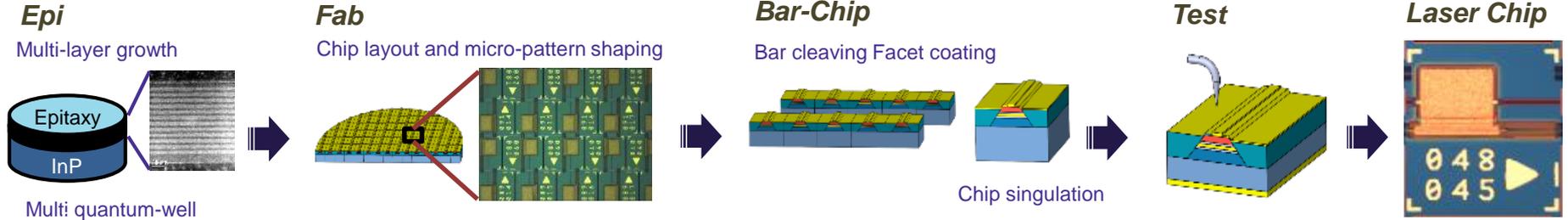


HP Laser for LiDAR

- 1550nm HP Laser(100mW)
- 1550nm HP Laser(200mW)
- Gain Chip(SOA) 1430/1550nm

Core Components and Process

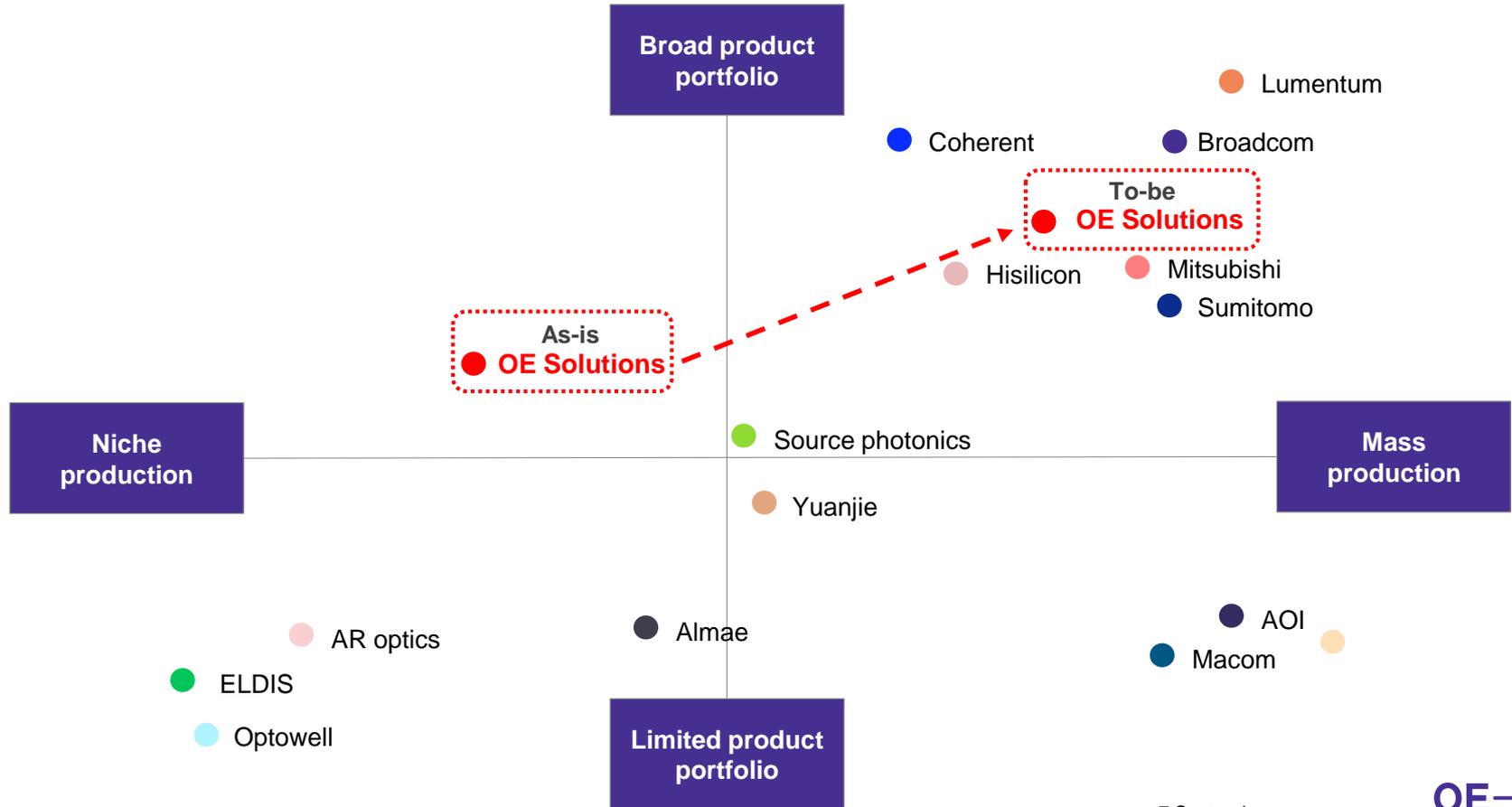
Laser Chip Process



Laser Chip Product



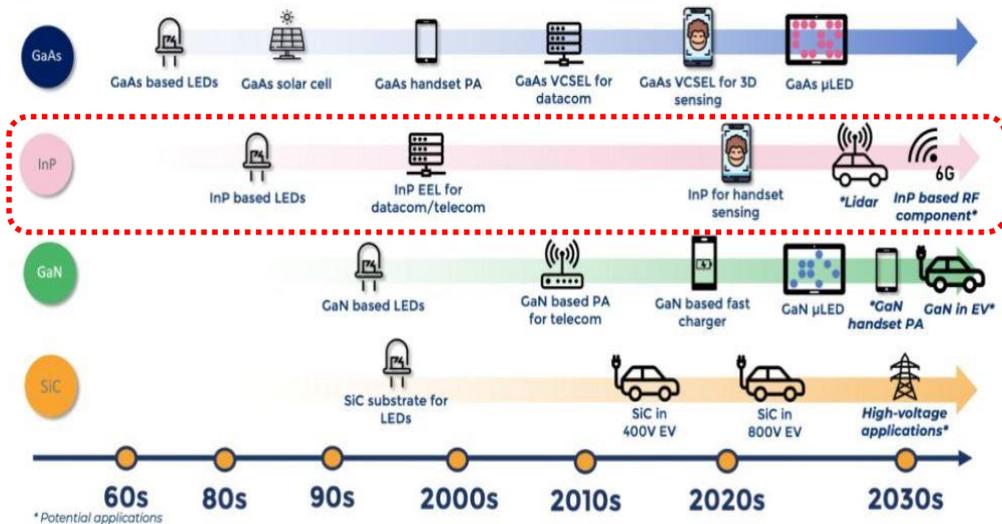
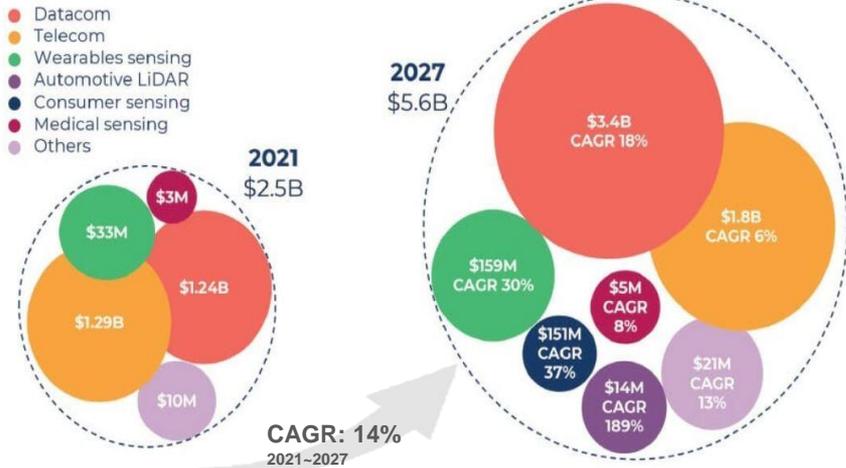
OE Solutions Laser Chip Position



The InP photonics device market has the potential for expansion into various business sectors

InP photonics device Market

Source : Yole Developpement, 2022



Q3 Guidance



Q3 Revenue is expected to **11B KRW**

Quarterly Guidance

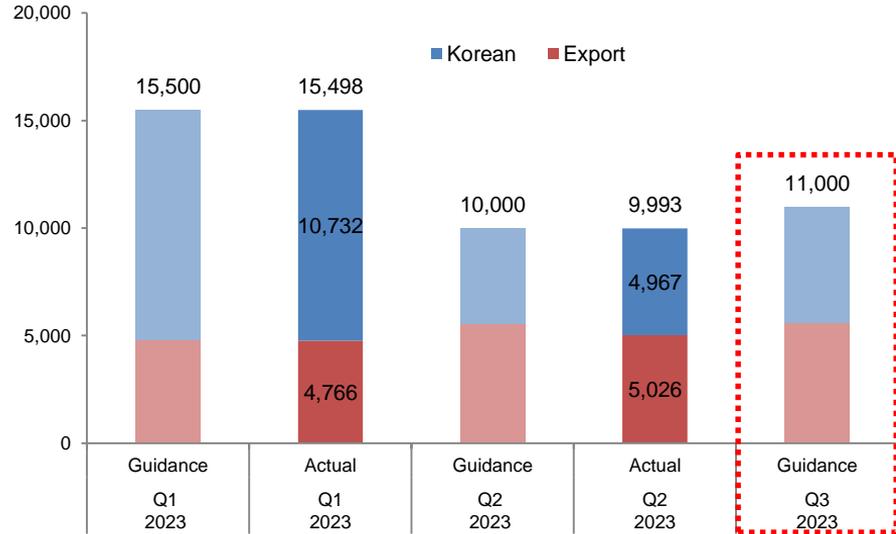
(Unit : million KRW)

	Q3 2022 Actual	Q4 2022 Actual	Q1 2023 Actual	Q2 2023 Actual	Q3 2023 Guidance
Revenue (Sales)	19,143	17,764	15,498	9,993	11,000
Korean	9,494	9,142	10,732	4,967	5,400
Export	9,649	8,623	4,766	5,026	5,600

※ Consolidated and forecast as of August 2023

Quarterly Trends

(Unit : million KRW)



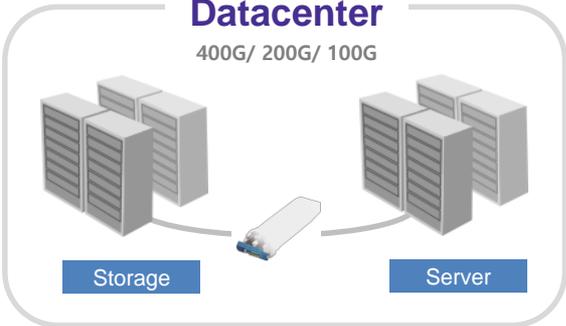
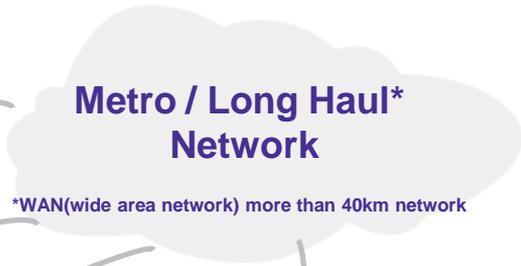
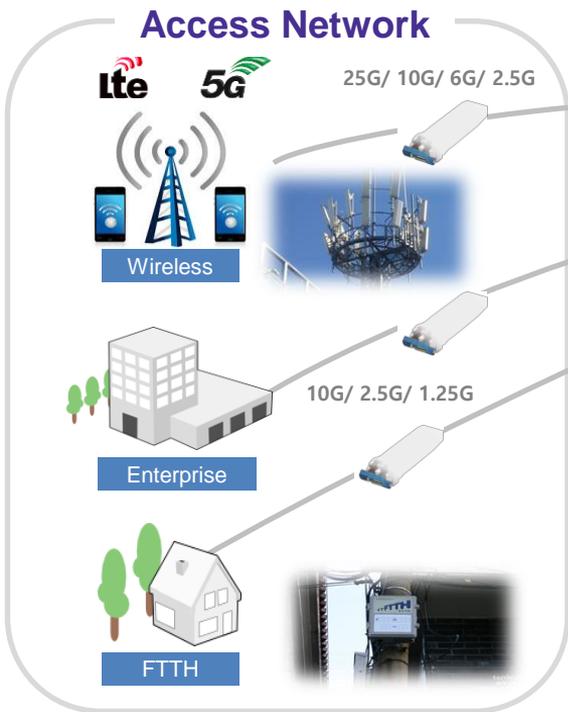
Appendix

- Product Application
- Customers
- Financials statement



The use of Transceiver in the Network

Transceiver required for network connections



Supplier to The World's Leading Network Equipment Manufacturers

NOKIA

ADTRAN



infinera

ciena

SAMSUNG

JUNIPER
NETWORKS

FUJITSU



NEC



harmonic



Consolidated financial statements

Statement of financial position

(Unit : million KRW)

	2021	2022	2023 1Q	2023 2Q
Current assets	106,938	99,267	106,958	95,637
Non-current assets	94,901	88,652	77,550	76,292
Total assets	201,839	187,920	184,508	171,929
Current liabilities	40,745	38,921	42,344	39,211
Non-current liabilities	1,794	1,344	1,410	1,388
Total liabilities	42,539	40,264	43,754	40,599
Capital	5,312	5,312	5,312	5,312
Paid-in capital in excess of par value	52,002	52,002	52,002	52,002
Retained earnings	99,665	90,861	83,682	74,232
Total equity	159,300	147,656	140,754	131,330

Income statement

(Unit : million KRW)

	2021	2022	2023 1Q	2023 2Q
Revenue	98,681	76,954	15,498	9,993
Cost of sales	62,416	52,818	13,430	10,673
Gross profit	36,265	24,136	2,068	-680
Selling general administrative expenses	34,610	32,841	8,738	7,346
Operating income	1,655	-8,705	-6,670	-8,026
Profit before tax	11,967	-6,453	-5,217	-6,051
Net income	14,372	-5,977	-5,224	-9,450

Thank you.

OE — 
SOLUTIONS

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