

IR Presentation

Q3 2019

Q3 2019 Results & Q4 2019 Guidance



November 2019
OE Solutions IR

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Q3 2019 Result Review



Financial results

YoY 3Q Revenue achieved **189.6%**, and **QoQ Revenue** achieved **60.6B KRW** raised by **8.2%** compared to 2Q.
Operating profit also achieved **19.9B KRW (32.9%)**.

Increase in revenue and profitability due to increased sales of 5G(NR) products in Korea

(Unit : million KRW)

구분	Q3 18	Q3 19	%	YoY	Q2 19	QoQ
Revenue (Sales)	20,939	60,645		189.6%	56,036	8.2%
Gross profit	8,381	27,075	44.6%	223.1%	23,666	14.4%
Selling general administrative expenses	7,340	7,149	11.8%	-2.6%	7,137	0.2%
Operating income(loss)	1,041	19,926	32.9%	1,814.8%	16,530	20.5%
Profit (loss) before tax	1,113	20,321	33.5%	1,725.9%	16,598	22.4%
Net income	1,067	15,630	25.8%	1,364.5%	11,273	38.6%

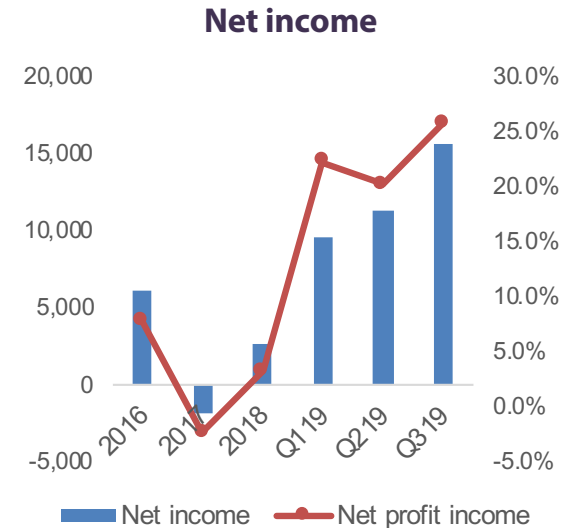
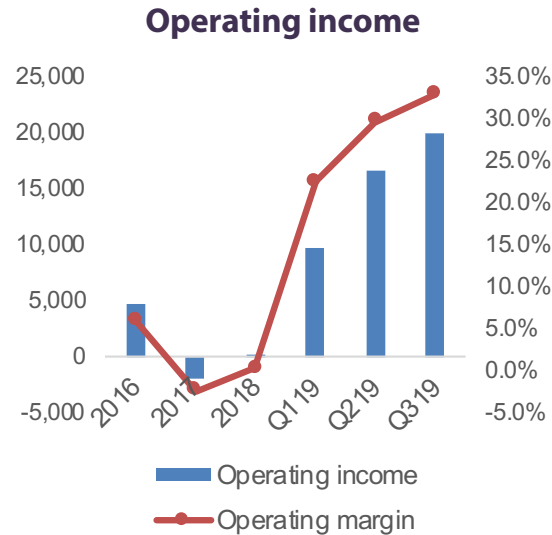
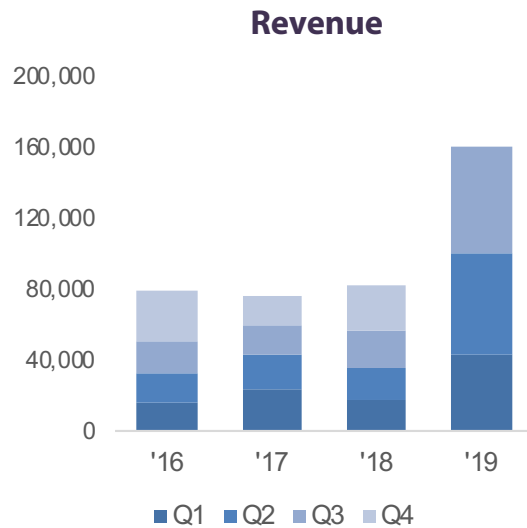
※ Based on consolidated

Financial Results_Graph

Accumulative Revenue by 3Q **160.0B KRW**

Operating income **46.2B KRW(28.9%)**

Net income **36.5B KRW(22.8%)**



※ Based on consolidated

(Unit : million KRW)

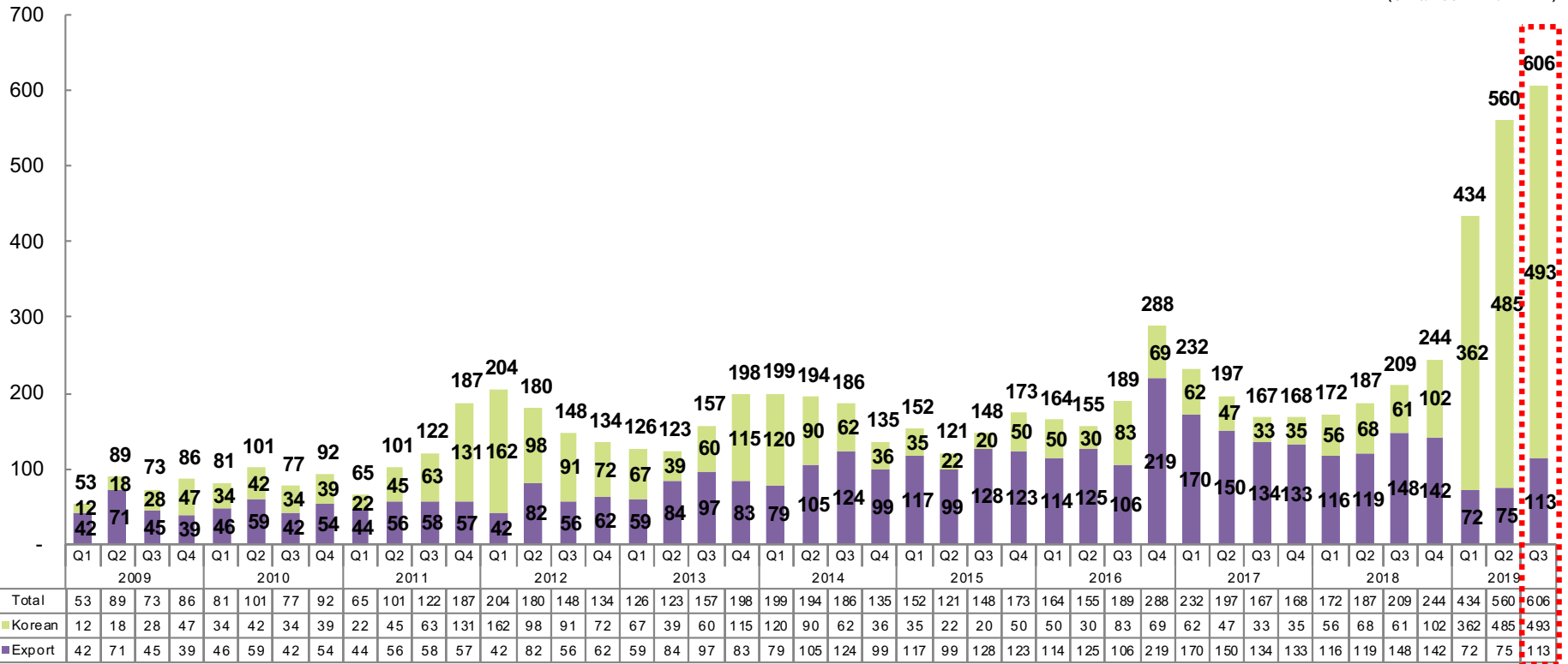
	2016	2017	2018	Q1 2019	Q2 2019	Q3 2019	2019 (Accumulative)
• Revenue	79,720	76,594	81,504	43,409	56,036	60,645	160,090
• Operating income	4,721	-1,917	234	9,735	16,530	19,926	46,191
• Operating margin	5.9%	-2.5%	0.3%	22.4%	29.5%	32.9%	28.9%
• Net income	6,127	-1,786	2,590	9,641	11,273	15,630	36,544
• Net profit margin	7.7%	-2.3%	3.2%	22.2%	20.1%	25.8%	22.8%

Quarterly Revenue trends

Growth by expanding investment in Korea 5G infrastructure in 2019

In 2020, Korea (domestic) and overseas 5G sales are expected to drive overall top-line growth.

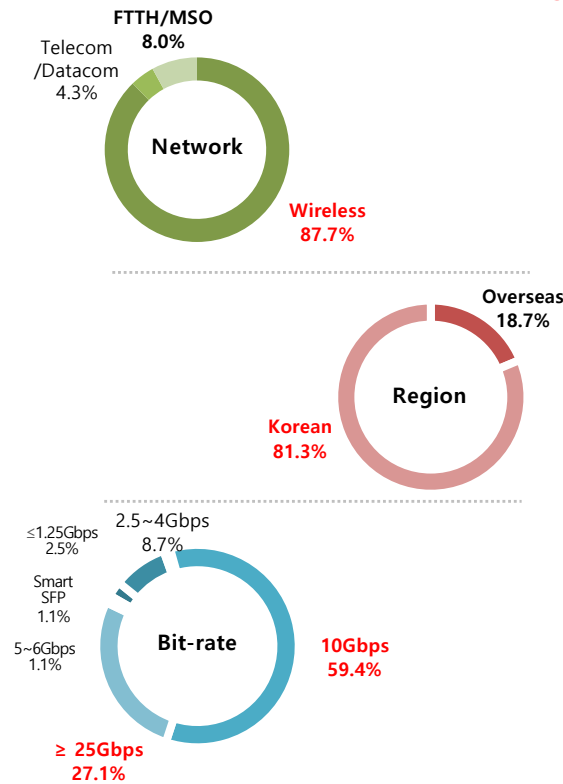
(Unit: 100 million KRW)



※ Based on separate standard

Sales details

Wireless product revenue from Korea (domestic) 5G-related investments accounted for 87.7% of total sales, of which 81.3% accounted for domestic sales.
Overseas sales also began to turn around to 113.4B KRW, up 52.2% QoQ.



(Unit: 100 million KRW)

	Q2 2019	Q3 2019	QoQ (%)
Network			
• Wireless	504.1	531.8	5.5%
• Telecom/Datacom	20.5	25.9	26.3%
• FTTH/MSO	35.4	48.5	37.0%
Region			
• Korean	485.5	492.8	1.5%
• Overseas	74.5	113.4	52.2%
Overseas sales ratio	13.3%	18.7%	
Bit-rate			
• ≤1.25Gbps	14.3	15.0	4.9%
• 2.5~4Gbps	59.4	53.0	-10.8%
• 5~6Gbps	4.1	6.6	61.0%
• 10Gbps	273.6	360.2	31.7%
• ≥25Gbps	198.5	164.0	-17.4%
• Smart SFP	9.9	6.6	-33.3%
• Others	0.2	0.8	300.0%
Total	560.0	606.2	8.2%

※ Based on separate standard



5G(NR) Mobile Network Business

OE — 
SOLUTIONS

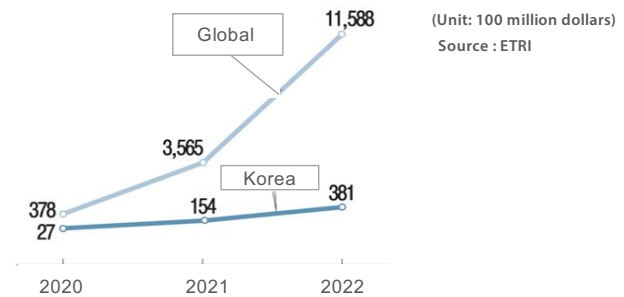
5G(NR) Mobile Network Business

Revenue Growth due to Korean buildout of 5G infrastructure in 2019
Expected to be followed by growth in overseas market (North America, Japan,China)

5G Network Supply chain



Market Environment and Business Outlook



• Korea

- 5G Products Q3 sales of 40.5B KRW(67%) / 2019 sales of 115.7B KRW (72%)
- Investment in Nationwide for 3.5GHz frequency band and 28GHz frequency investment scheduled for 2020

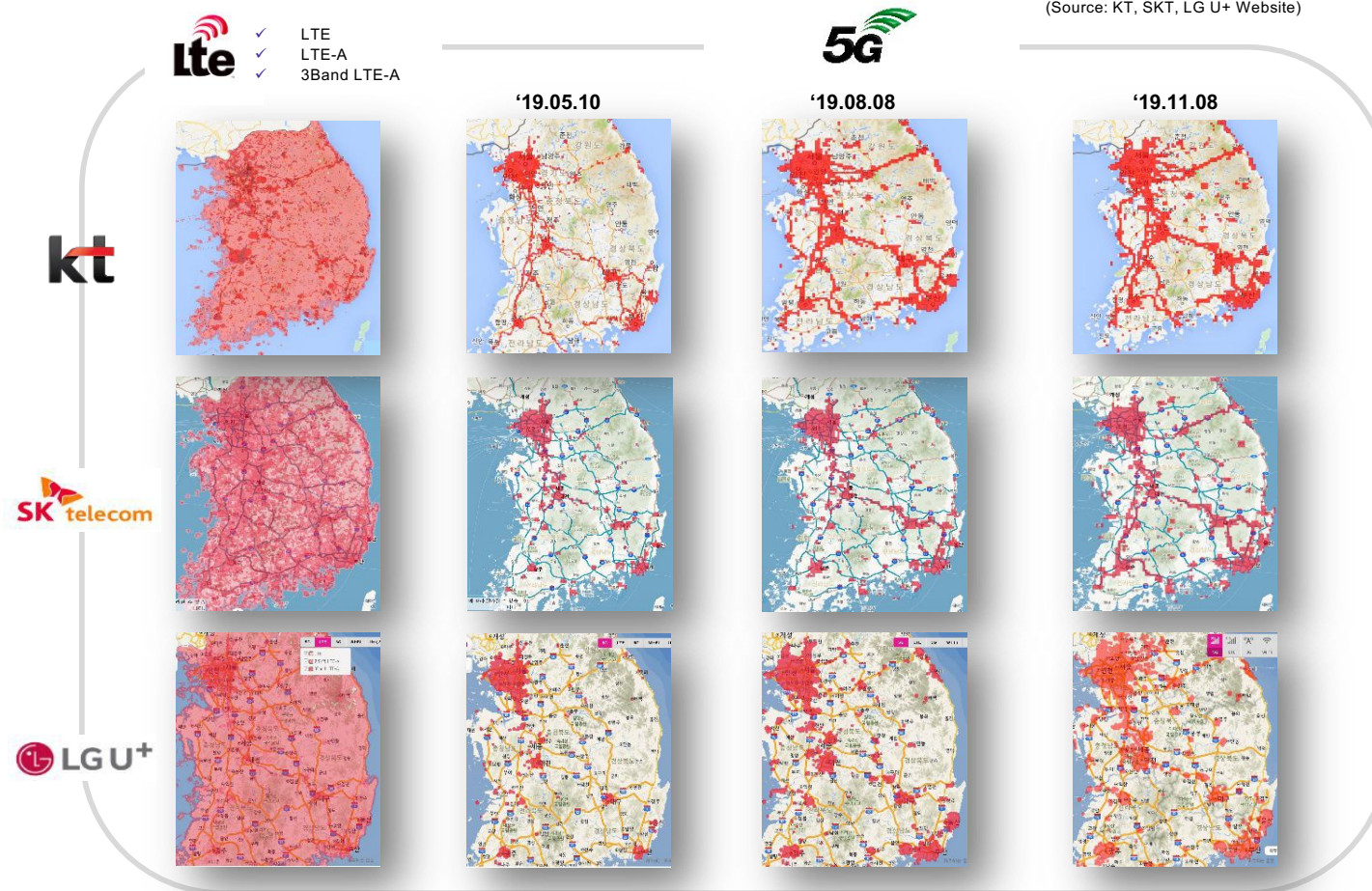
→ OES 10G/25G optical transceiver demand is expected to increase

• Overseas

- North American operators such as Verizon, AT&T, Japanese operators such as NTT Docomo, KDDI and Chinese operators China mobile, China Unicom are so competing in the 5G market initiative.
- We expect 5G infra construction to ramp in overseas in 2020

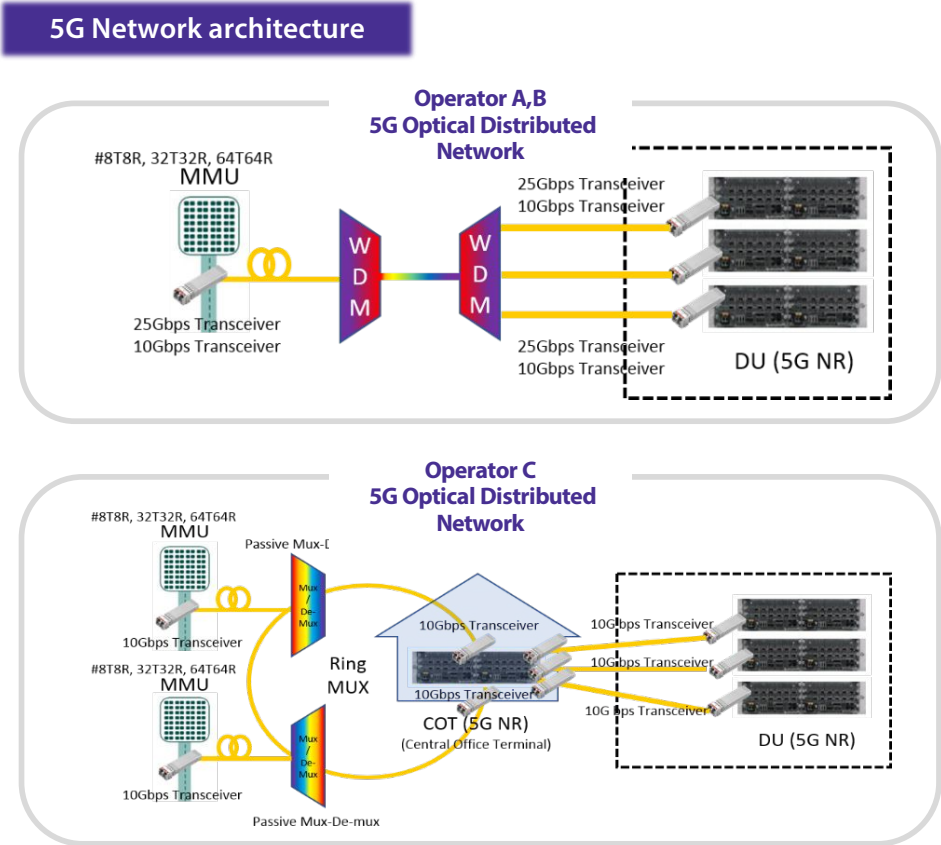
→ OES is in the process of qualifying 10G/25G optical transceivers for 5G with major customers, such as NOKIA, Samsung, Fujitsu and NEC, to serve overseas markets.

5G(NR) Coverage map in Korea



5G(NR) Mobile Network Business

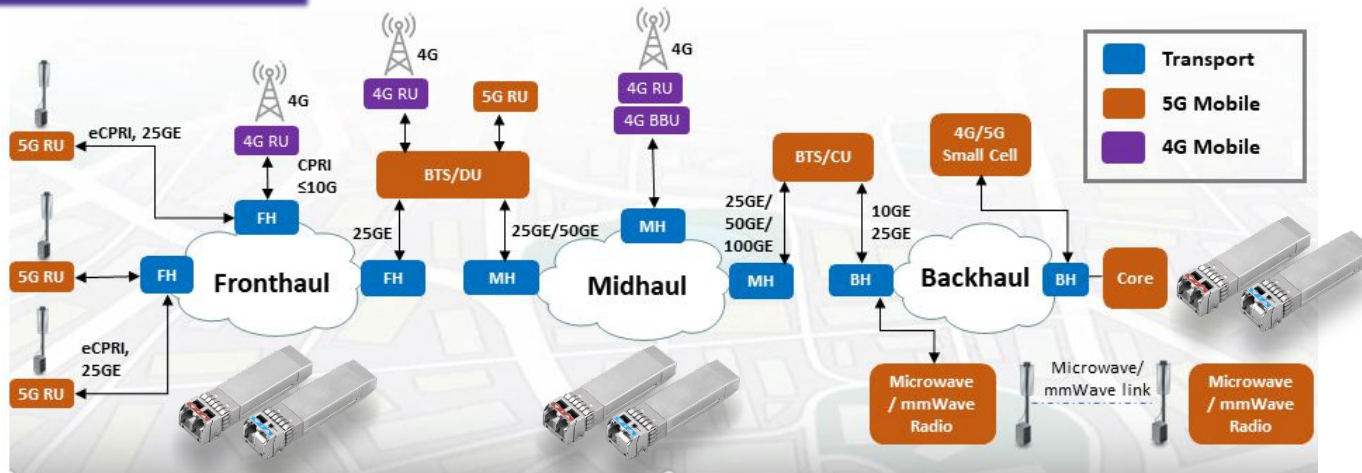
Optical Transceivers for 5G(NR) Network deployment



5G(NR) Mobile Network Business

5G Network Fronthaul/Midhaul/Backhaul Transceiver All Line up Midhaul Target New product 50Gbps PAM4 Transceiver

5G Network architecture



Fronthaul
(DU RU)

Mass Product
10G/25G Transceiver
Market : Korea / Global

Midhaul
(CU DU)

New Product
50G PAM4 Transceiver
Market : China / Global

Backhaul
(CU Core)

Development 100G/200G/400G
Transceiver
Market : Global

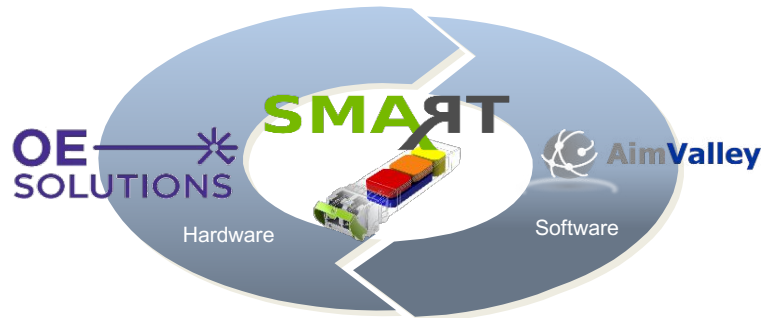
OE Solutions Strategic Product



Unique Products-Smart Transceivers

World's First Leading Technology Smart Transceiver

Smart Transceiver



Product Features



Smart Transceivers

The Network system features in the transceiver enable network migration at low cost and high efficiency.

OE Solutions/AimValley

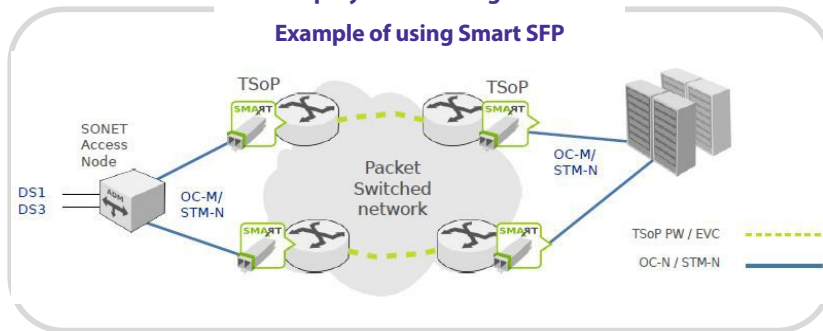
World's First Leading Technology

Major Customers

→ Ciena, CISCO, Nokia, Juniper, etc.

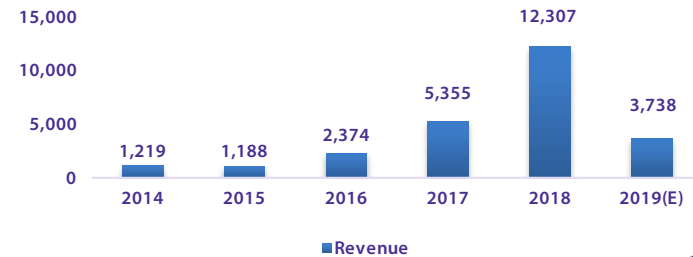
Simplify Network Migration

Example of using Smart SFP



Smart Transceiver Revenue

(Unit: million KRX)

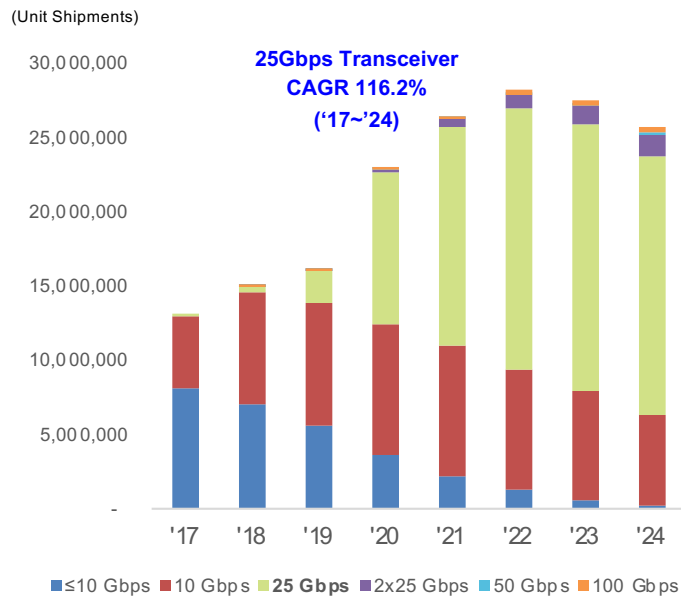


LD Chip & Strategic Transceivers

5G deployments expected to increase demand for 25G laser chips and transceivers

Chip production is mid- to long-term strategy for supplier differentiation

Wireless Fronthaul Optics Forecast



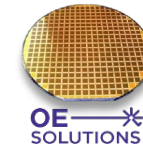
Shipments of optical transceivers used in wireless infrastructure (Historical Data and Forecast)

(Source: LightCounting 2019)

LD Chip

25G Laser Diode Chip

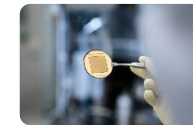
- Mass production scheduled for the 2020
- 25G/100G will start using in-house laser chips
- LD Chip sales for China 5G and data center applications



• Transceiver profitability and competitive advantage through In-house technology

• Business diversification (Transceiver, Chip)

• Chip business expect high margin



Transceiver

25G/50G/100G Transceiver





Q4 of 19 Guidance



Q4 of 19 Guidance

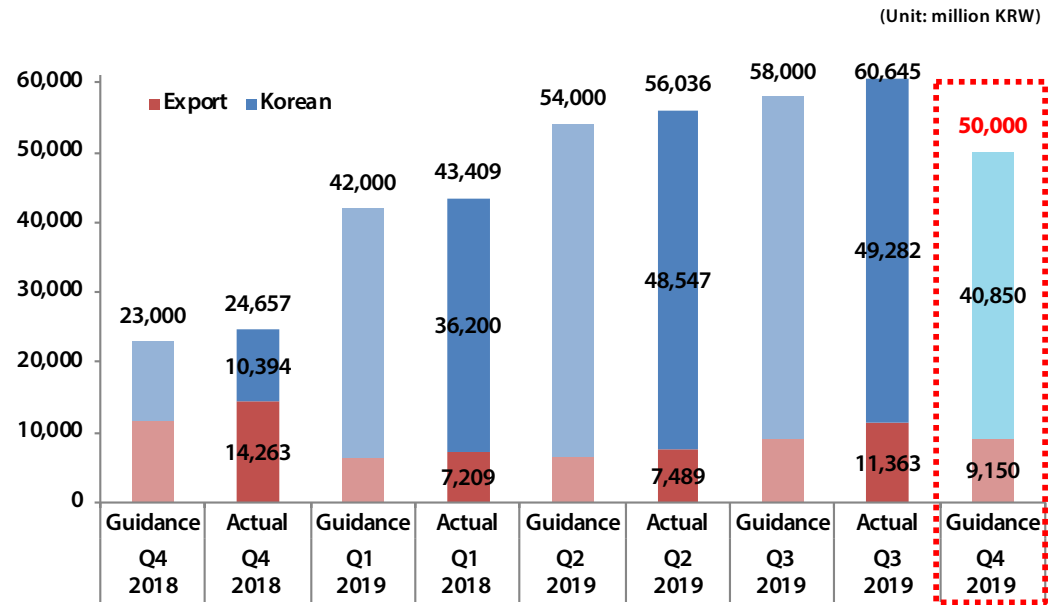
4Q **YoY Revenue** is expected to rise **117.4%**, to **50B KRW**.
 A temporary decrease in domestic 5G infrastructure investment
 In 2020, domestic and overseas 5G market is expected to be activated.

Quarterly Guidance

(Unit: million KRW)

	Q4 2018 Actual	Q1 2019 Actual	Q2 2019 Actual	Q3 2019 Actual	Q4 2019 Guidance
Revenue (Sales)	24,657	43,409	56,036	60,645	50,000
Domestic	10,394	36,200	48,547	49,282	40,850
Export	14,263	7,209	7,489	11,363	9,150

Quarterly Trends



※ Consolidated and forecast as of November 2019



Appendix

- Company Introduction
- Financials



About OE Solutions

Overview

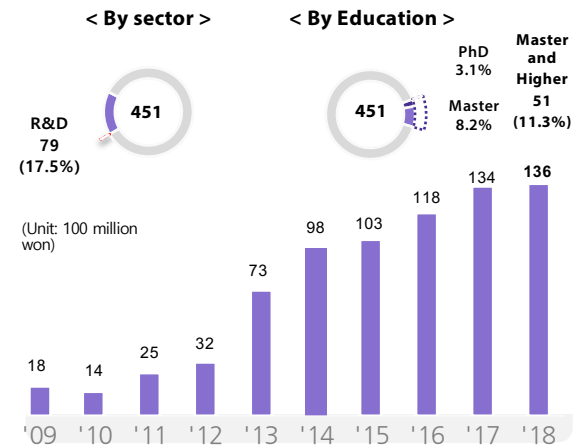
Name	OE Solutions, Co., Ltd	Date of Established	Aug.7, 2003
Number of Employees	451 (Korea: 430 / USA: 18 / Japan: 3)	Date of Listing	Feb.27, 2014(KOSDAQ code : 138080)
Product	Optical Transceiver	Homepage	www.oesolutions.com
Locations	Head Quarter : Gwangju, South Korea / US : Ridgefield Park, NJ, USA / JAPAN : Tokyo Japan		

(As of 2019.10.31)

Locations



R&D Engineer & Cost

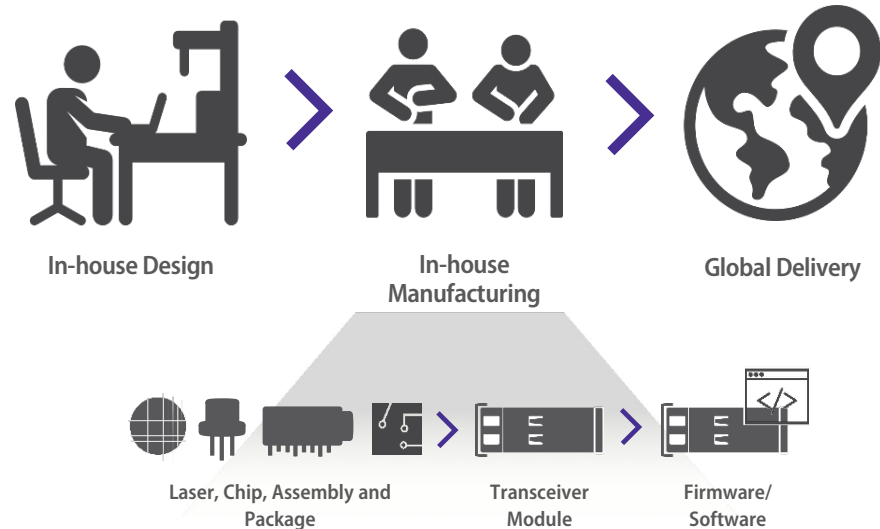


OE Solutions – A Global Supplier of Transceivers

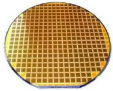











Leading Supplier of High-Reliability Optical Components for Challenging Deployment Environments



- ❑ 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



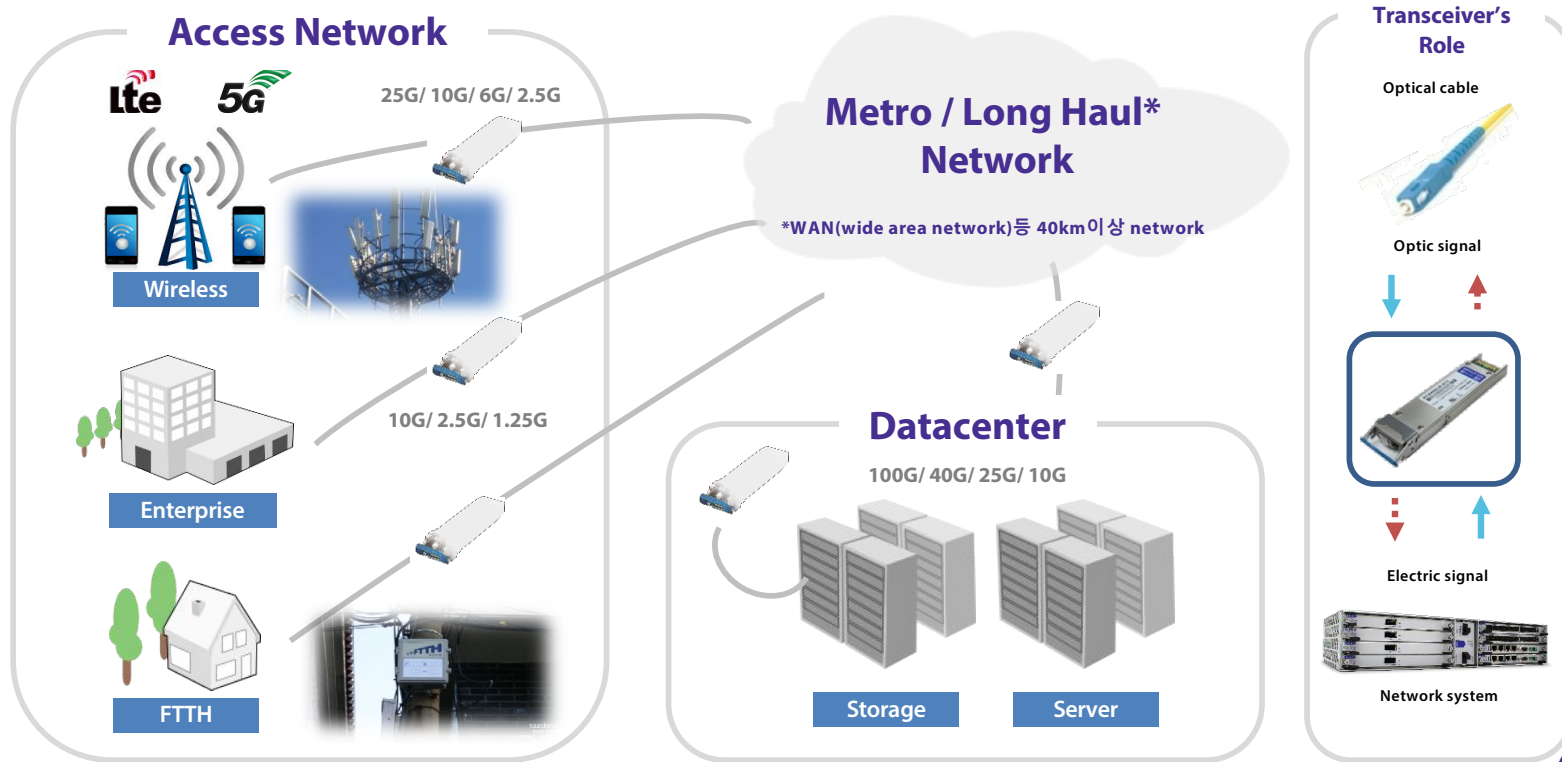
Vertical Integration

Manufacturing Process		Manufacturing Technology		
Chip		Laser Diode Photo Diode	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 (Tuning & Test)	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	

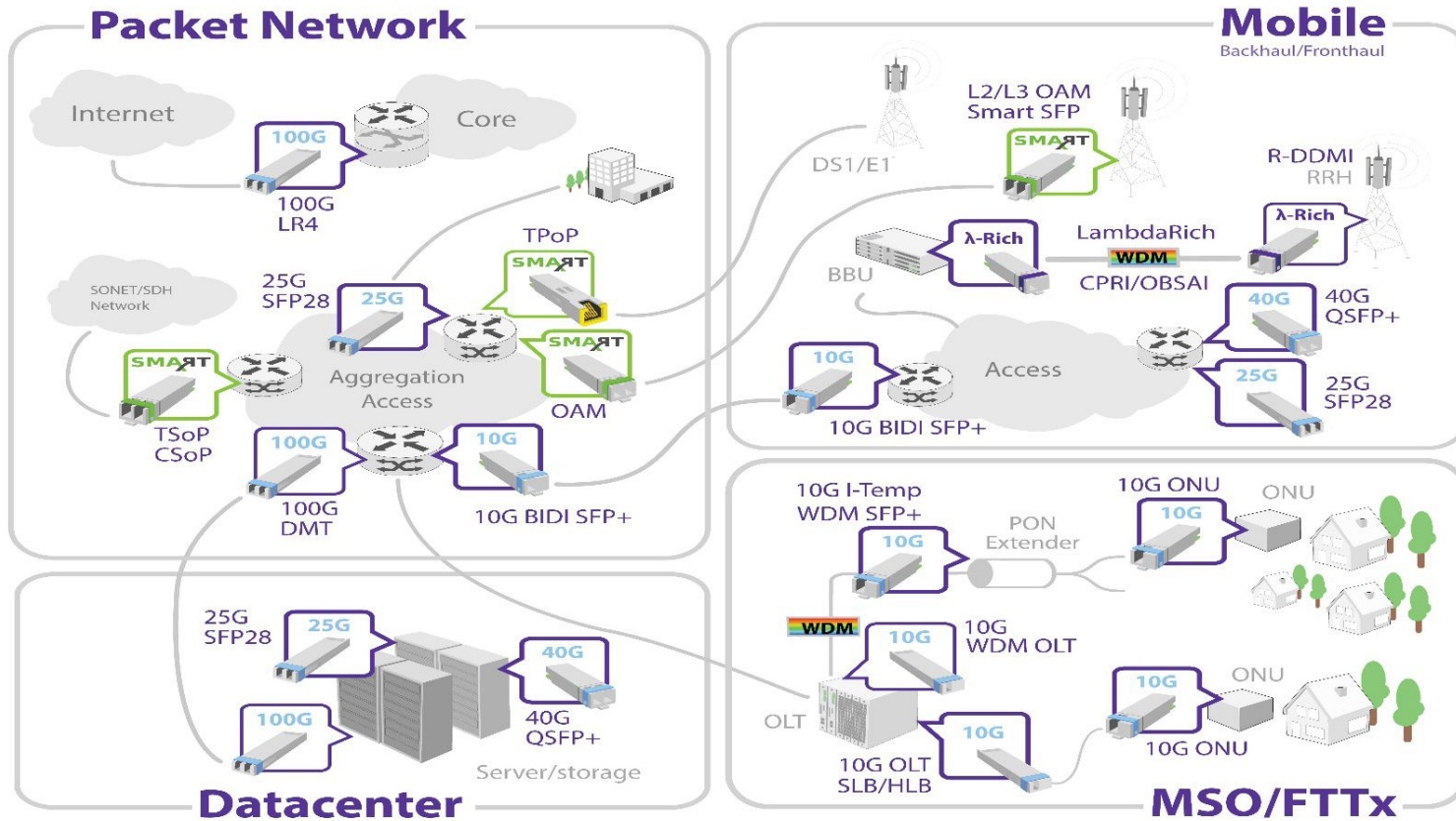
Transceiver Products Applications

The use of Transceiver in the Network

Transceiver required for network connections



Key Application Areas



Supplier to The World's Leading Network Equipment Manufacturers

Sales growth requires long-term product reliability, quality, customer response, etc.

NOKIA

SAMSUNG

Coriant

CISCO

JUNIPER
NETWORKS

infinera

ADTRAN

ciena

FUJITSU

ECI
THE ELASTIC NETWORK

ARRIS

NEC

ADVA
Optical Networking

Aviat
NETWORKS

harmonic

HUAWEI

ERICSSON

Condensed income statement

Consolidated

(Unit : million KRW)

	2016	2017	2018	2019		
				Q1	Q2	Q3
Revenue (Sales)	79,720	76,594	81,504	43,409	56,036	60,645
Cost of sales	53,089	53,974	54,106	26,684	32,370	33,569
Gross profit	26,631	22,620	27,398	16,725	23,666	27,075
Selling general administrative expenses	21,910	24,537	27,164	6,989	7,137	7,149
Operating income(loss)	4,721	(1,917)	234	9,735	16,530	19,926
Profit (loss) before tax	6,076	(3,788)	1,951	9,641	16,598	20,321
Net income	6,127	(1,786)	2,584	9,641	11,273	15,630

Separate standards

(Unit : million KRW)

	2016	2017	2018	2019		
				Q1	Q2	Q3
Revenue (Sales)	79,590	76,535	81,406	43,409	56,006	60,620
Cost of sales	52,965	53,914	54,117	26,684	32,370	33,561
Gross profit	26,625	22,621	27,289	16,724	23,636	27,059
Selling general administrative expenses	22,375	25,174	26,925	6,669	6,766	7,282
Operating income(loss)	4,250	(2,553)	364	10,056	16,871	19,776
Profit (loss) before tax	5,553	(4,514)	1,945	10,219	16,973	20,470
Net income	5,929	(2,338)	2,641	10,219	11,649	15,778

* K-IFRS

Condensed statement of financial position

Consolidated

(Unit : million KRW)

	2016	2017	2018	2019		
				Q1	Q2	Q3
Current assets	52,923	57,247	57,027	68,216	84,831	99,909
Cash and cash equivalents	9,270	21,923	11,703	17,264	19,199	14,988
Accounts receivable	22,998	14,626	18,696	22,195	31,770	27,610
Inventory asset	17,662	18,840	19,740	23,996	27,754	33,136
Non-current assets	37,005	38,809	42,125	41,392	41,070	45,596
Property, plant and equipment	30,011	29,597	30,476	29,966	30,346	30,127
Intangible assets	777	766	782	793	770	802
Total assets	89,928	96,056	99,152	109,608	125,902	145,506
Current liabilities	28,435	24,807	25,369	26,972	31,675	36,909
Short-term debt	20,000	20,000	19,400	19,400	19,400	19,000
Non-current liabilities	6,198	4,303	5,736	5,831	6,031	4,494
Total liabilities	34,633	29,110	31,105	32,803	37,706	41,402
Capital	2,590	3,870	3,870	3,870	3,870	3,870
Paid-in capital in excess of par value	13,900	26,969	26,969	26,969	26,969	26,969
Retained earnings	36,286	33,937	34,868	43,581	54,854	70,484
Total equity	55,295	66,946	68,047	76,806	88,195	104,103

Separate standards

(Unit : million KRW)

	2016	2017	2018	2019		
				Q1	Q2	Q3
Current assets	52,218	55,648	55,790	67,047	83,900	99,027
Cash and cash equivalents	8,358	20,662	10,227	15,805	16,413	11,958
Accounts receivable	23,083	14,254	18,299	22,283	33,658	28,221
Inventory asset	17,662	18,840	19,740	23,996	27,754	33,124
Non-current assets	37,044	38,923	41,993	41,507	40,786	45,421
Property, plant and equipment	29,624	29,306	30,119	29,614	29,593	29,402
Intangible assets	77	105	54	50	45	41
Total assets	89,262	94,572	97,783	108,554	124,685	144,448
Current liabilities	29,563	25,309	26,119	27,507	32,023	37,521
Short-term debt	20,000	20,000	19,400	19,400	19,400	19,000
Non-current liabilities	6,099	4,228	5,643	5,735	5,700	4,188
Total liabilities	35,662	29,538	31,761	33,242	37,724	41,709
Capital	2,590	3,870	3,870	3,870	3,870	3,870
Paid-in capital in excess of par value	13,900	26,969	26,969	26,969	26,969	26,969
Retained earnings	34,550	31,650	32,638	41,929	53,577	69,355
Total equity	53,600	65,034	66,022	75,312	86,961	102,739

Thank you.



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