

IR Presentation 2018

2018 Results & Q1 of 2019 Guidance



February 2019
OE Solutions IR

Disclaimer

This material has been prepared by OE Solutions, Co., Ltd for the purpose of providing information to investors and is prohibited from taking, copying or redistributing to others.

Please note that the access or receipt of this material will be regarded as consent for compliance with these restrictions and that violations of these restrictions may constitute violations of applicable securities transaction laws.

The "predictive information" contained in this material is information that has not gone through individual verification. This relates to future events, not past events, such as the Company's anticipated future business and financial performance, and includes words such as 'expected', 'predict', 'planned' and '(E).

As the "forecast information" above is influenced by future changes in the management environment and implies in essence uncertainty, the actual future performance may differ materially from what is stated or implied in the "forecast information" due to such uncertainties.

Also, please note that future prospects are prepared based on the current market conditions and the company's management direction, and can be changed according to changes in market environment and strategy changes, and can be changed without notice.

Please note that the Company and its executives will not be held liable for any damages caused by the use of this material (including any facts and other cases).

This is to inform you that you do not constitute a right to sell the shares and that no part of the document is the basis or basis for any related contracts and agreements or investment decisions.

Table of Contents

1. 2018 Result Review
2. 5G(NR) Mobile Network Business
3. OE Solutions Strategic Product
4. Q1 of 2019 Guidance
5. Appendix

2018 Result Review



Financial Results

2018 Revenue 81.5 billion won

YoY 6.4% ↑, QoQ 17.8% ↑

Increase in sales and profitability due to increased Smart Transceiver and sales of 5G(NR) products in domestic(Q4)

(Unit : million KRW)

구분	2017	2018	YoY	Q3 2018	Q4 2018	QoQ
Revenue (Sales)	76,594	81,504	6.4%	20,939	24,657	17.8%
Gross profit	22,620	27,398	21.1%	8,381	9,328	11.3%
Selling general administrative expenses	24,538	27,164	10.7%	7,340	7,634	4.0%
Operating income(loss)	(1,917)	234	N/A	1,041	1,695	N/A
Profit (loss) before tax	(3,788)	1,908	N/A	1,113	1,935	N/A
Net income	(1,786)	2,590	N/A	1,067	1,878	N/A

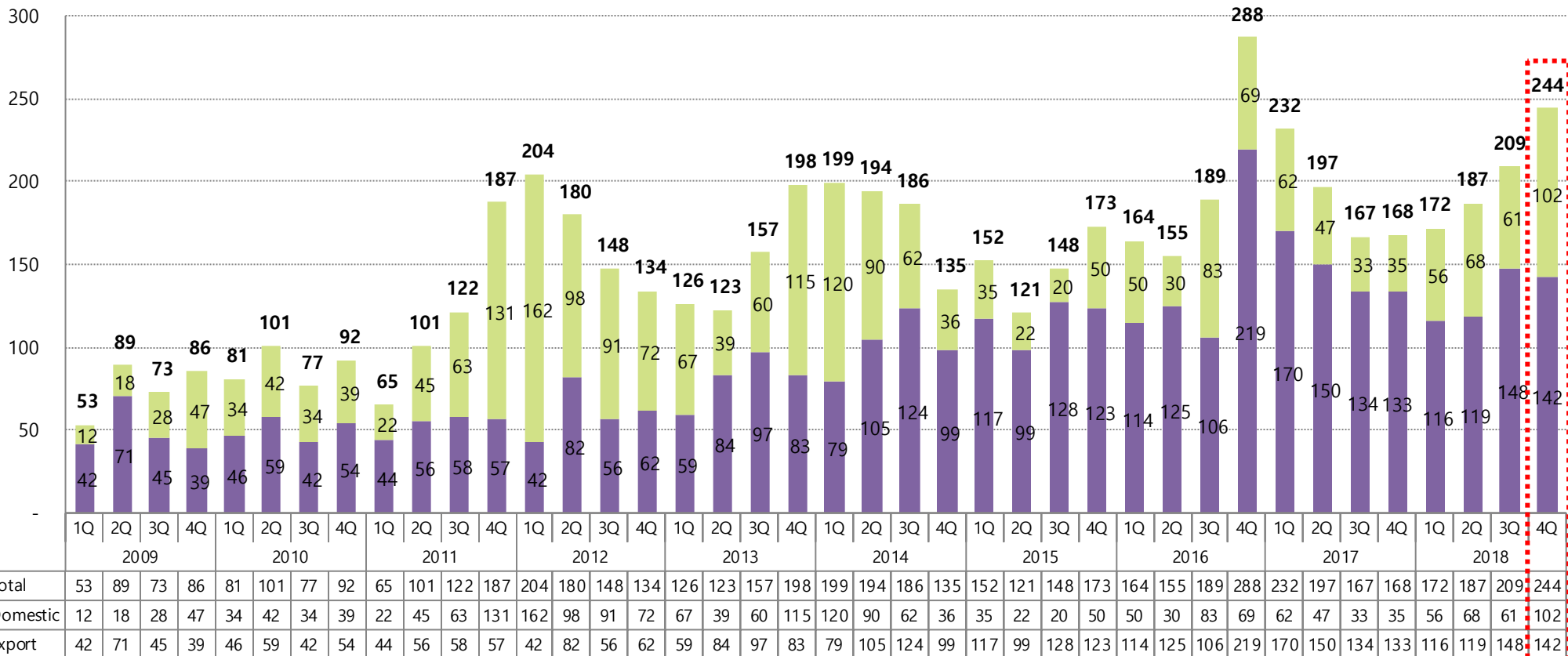
※ Based on consolidated

Quarterly Revenue trends

Overseas exports have driven sales growth over the past decade

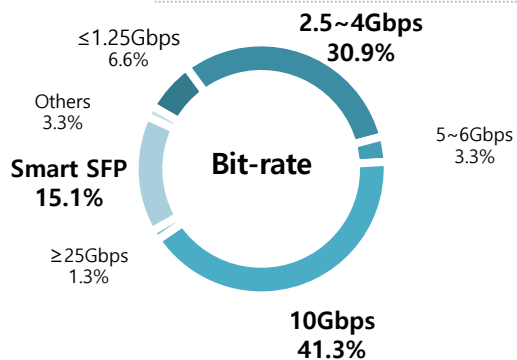
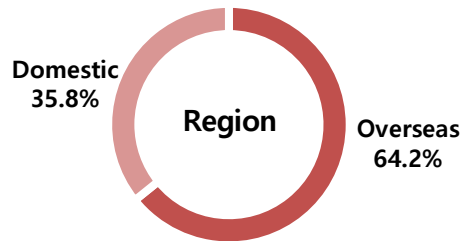
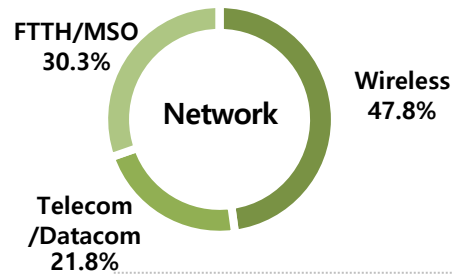
Expected increase in domestic sales ratio from Q4 of 2018 to 2022 due to investment in 5G Mobile network infrastructure

(Unit: 100 million KRW)



※ Based on separate standard

Smart Transceiver YoY 129.7% ↑
Domestic 5G(NR) Target 10Gbps YoY 19.8% ↑



(Unit: 100 million KRW)

	2017	2018	YoY (%)
Network			
• Wireless	391.7	389.5	-0.6%
• Telecom/Datacom	145.6	177.6	22.0%
• FTTH/MSO	228	247	8.3%
Region			
• Domestic	177.3	291.3	64.3%
• Overseas	588	522.8	-11.1%
Overseas sales ratio	76.8%	64.2%	
Bit-rate			
• ≤ 1.25Gbps	69.3	53.6	-22.7%
• 2.5~4Gbps	229.9	251.7	9.5%
• 5~6Gbps	101.6	26.6	-73.8%
• 10Gbps	280.9	336.5	19.8%
• ≥25Gbps		10.7	
• Smart SFP	53.6	123.1	129.7%
• Others	30	11.9	-60.3%
Total	765.3	814.1	6.4%

※ Based on separate standard

5G(NR) Mobile Network Business

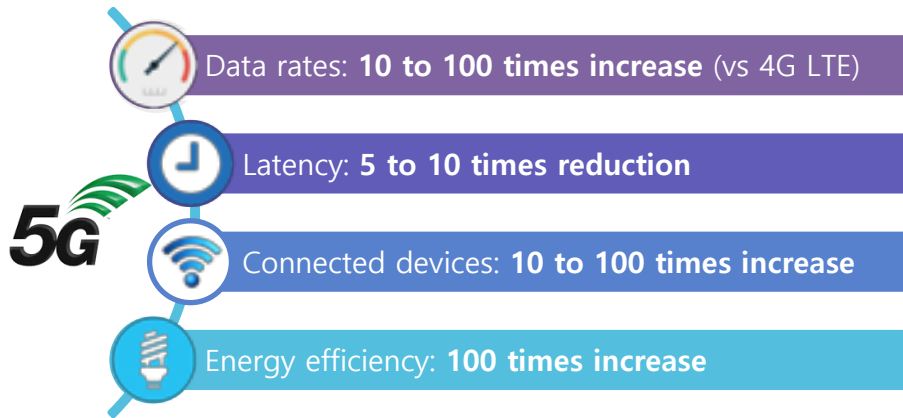


5G(NR) Mobile Network Business

Revenue Growth due to building domestic 5G infrastructure in 2019

Expected to expand market in 2H with overseas (Japan, North America) 5G infra

5G Mobile Network



* Compared with 4G LTE (Source: Commscope)

Market Environment and Business Outlook

• Domestic

- 5G Infrastructure is under construction with commercialization target in March 2019.
- 5G products 4Q2018 sales of approximately KRW 4.2bn, started orders from 3Q2018.
- Publicly announced sales contract of 27.3 billion won(KRW) with Samsung Electronics on Dec. 21, 2018
- Expecting revenue of KRW27.3bn+@ with 5G products only in 1Q2019.
- Investment in Nationwide Network will be made by 4Q 2018 to 2022 with 3.5GHz/28GHz frequencies.

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

• Overseas

- North American operators such as Verizon, AT&T and Japanese operators such as NTT Docomo, KDDI are also competing for the 5G market.
- Overseas major countries exclude Huawei equipment for 5G project. It expects OES main customers in USA, Europe and Japan to get more opportunities from their customers.
- Expecting 5G Infra construction at 2H2019(for 2020 Tokyo Olympic) in Japan and at 2H2019 or early of 2020 in North America.

→ In order to respond to 5G operators in North America and Japan, OES is in the process of vendor registration and approval test of 10G/25G optical transceiver for 5G to major customers such as NOKIA, Samsung, Fujitsu and NEC.

5G(NR) Mobile Network Business



삼성전자

2018

2019

2020

2021



KOREA

3.5GHz

KT
SKT
LG U+

28GHz

KT
SKT
LG U+

Near 28GHz

KT
SKT
LG U+

Over 28GHz

KT
SKT
LG U+



JAPAN

DoCoMo
KDDI
Softbank

DoCoMo
KDDI
Softbank

DoCoMo
KDDI
Softbank



USA

Verizon
AT&T
Sprint

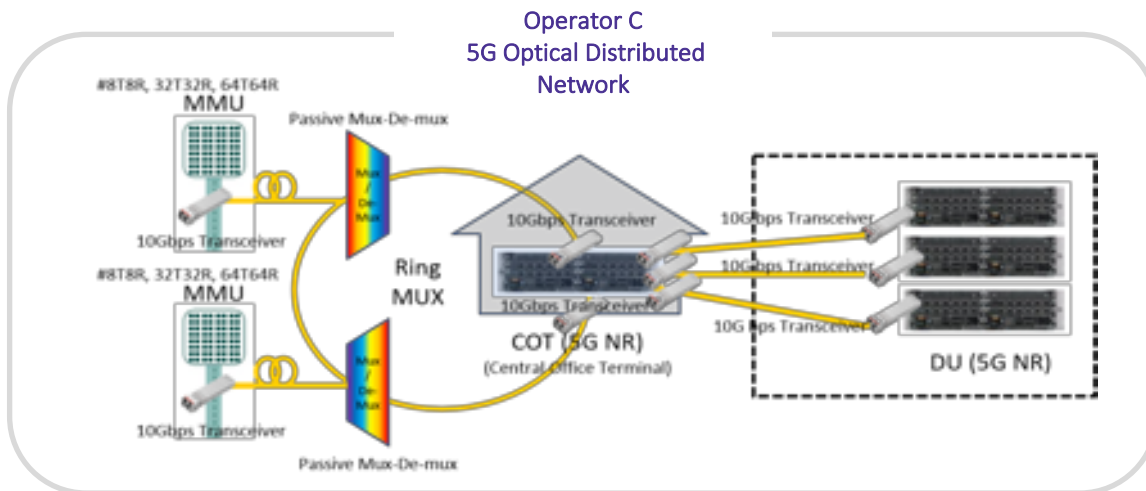
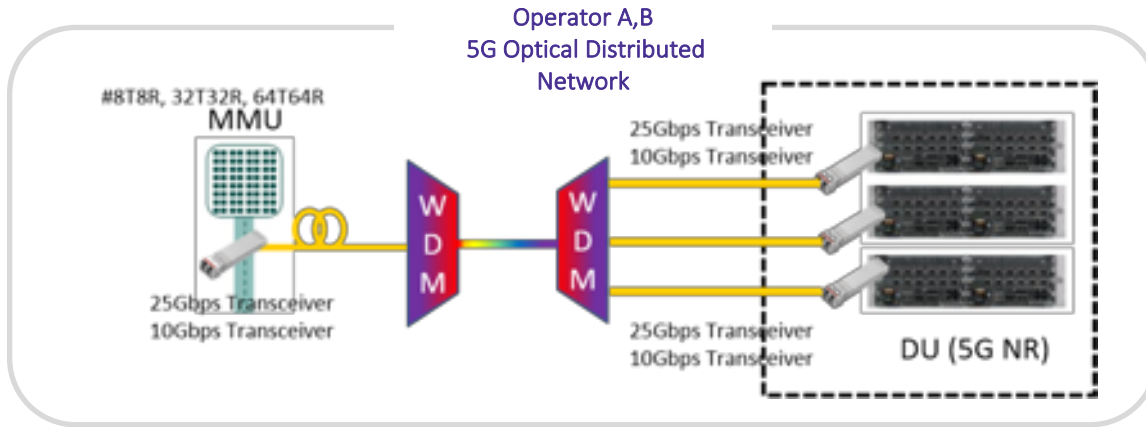
Verizon
AT&T
Sprint

Verizon
AT&T
Sprint

5G(NR) Mobile Network Business

Optical Transceiver required for 5G(NR) Network deployment

Domestic 5G(NR) Network architecture



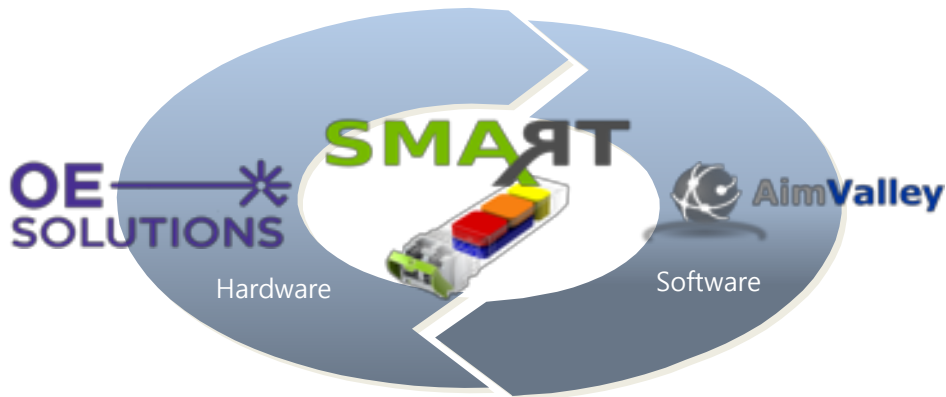
OE Solutions Strategic Product



Unique Products-Smart Transceivers

World's First Leading Technology Smart Transceiver

Smart Transceiver



Product Introduce



Smart Transceiver ?

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

OE Solutions/AimValley

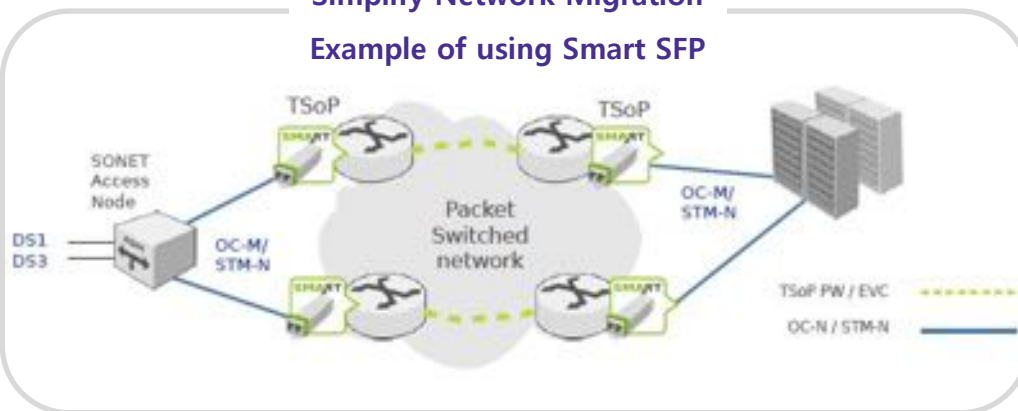
World's First Leading Technology

Major Customers

→ Ciena, CISCO, NOKIA etc.

Simplify Network Migration

Example of using Smart SFP

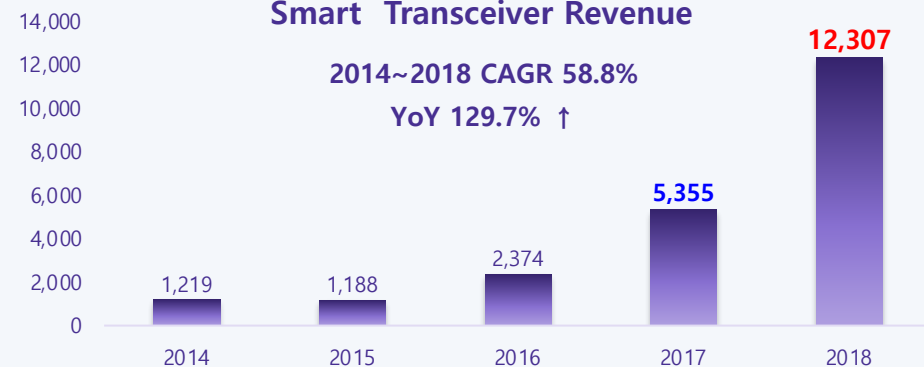


(Unit: million KRX)

Smart Transceiver Revenue

2014~2018 CAGR 58.8%

YoY 129.7% ↑



Domestic 10G Internet Service Turn-On

10Giga Internet



Internet service providers



- 10G Internet: Next-generation Internet service that supports data transmission of 10Gbps to a subscriber using fiber or cable

Market Environment

Demand of 10G Internet is expected to increase according to expansion of UHD(4K/8K) TV and contents and advanced network.

Domestic Market

Mainly KT **launched 10G Internet service in November 2018** and the nationwide 10G Internet coverage will reach 50% target by 2022.

Currently, OE Solutions is supplying optical transceivers **for KT 10G internet project as a sole vendor** from March 2018 and expecting expansion in the market.

Overseas Major Countries

Japan has started to commercialize 10G Internet with mainly KDDI and OES is the main supplier of 10G EPON products.

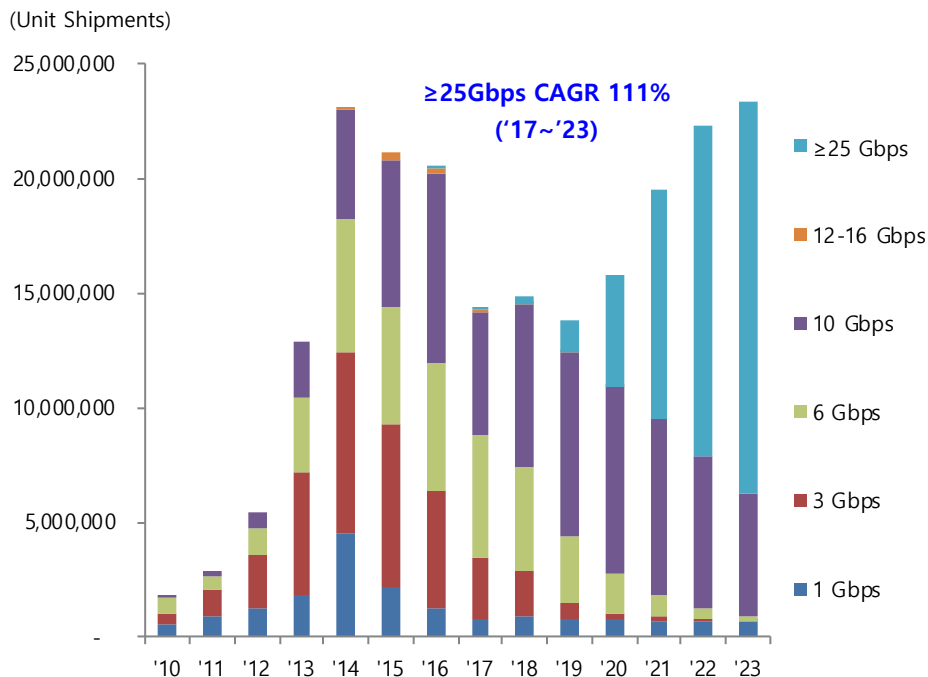
NTT is scheduled to commercialize 10G Internet and our samples are in the test.

North America is investing in establishing a 10G Internet network for MSOs and OE Solutions is supplying 10G optical transceivers.

LD Chip & Strategic Transceivers

Expect 5G Infra investment to increase demand for 25Gbps optics and 25G LD Chip

Wireless Fronthaul Optics Forecast



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

(Source: LightCounting 2018)

LD Chip

25G Laser Diode Chip

- Mass production scheduled for the second half of the year
Reliability Test in progress
- 25G LD Chip biz. In 2019
 - 25G/100G will be internalized as in-house transceivers
 - China 5G, Cloud Data center Market LD Chip sales



Transceiver profitability and competitive advantage through In-house capabilities



Transceiver

25G/40G/100G Transceiver



Q1 of 19 Guidance



Q1 of 19 Guidance

YoY 143.4% ↑, QoQ 70.3% ↑ Expected sales of 42 billion won
Revenue Growth due to building domestic 5G infrastructure in 2019

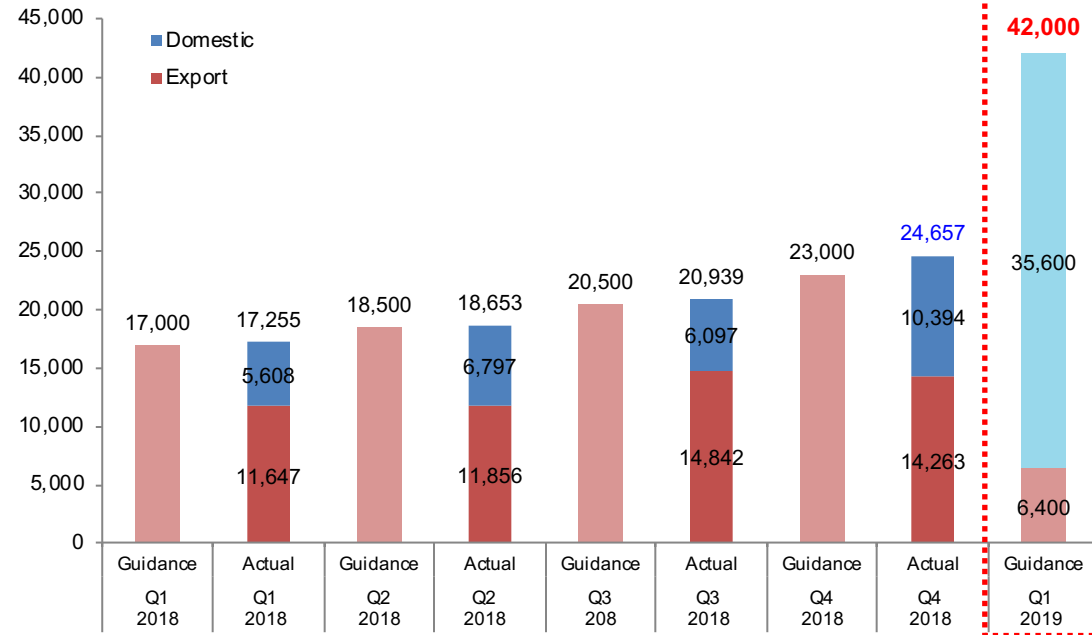
Quarterly Guidance

(Unit: million KRW)

	Q1 2018 Actual	Q2 2018 Actual	Q3 2018 Actual	Q4 2018 Actual	Q1 2019 Guidance
Revenue (Sales)	17,255	18,653	20,939	24,657	42,000
Domestic	5,608	6,797	6,097	10,394	35,600
Export	11,647	11,856	14,842	14,263	6,400

Quarterly Trends

(Unit: million KRW)



※ This is a consolidated basis and is based on our forecast as of February 2019.

Appendix

- Company Introduction
- Financials



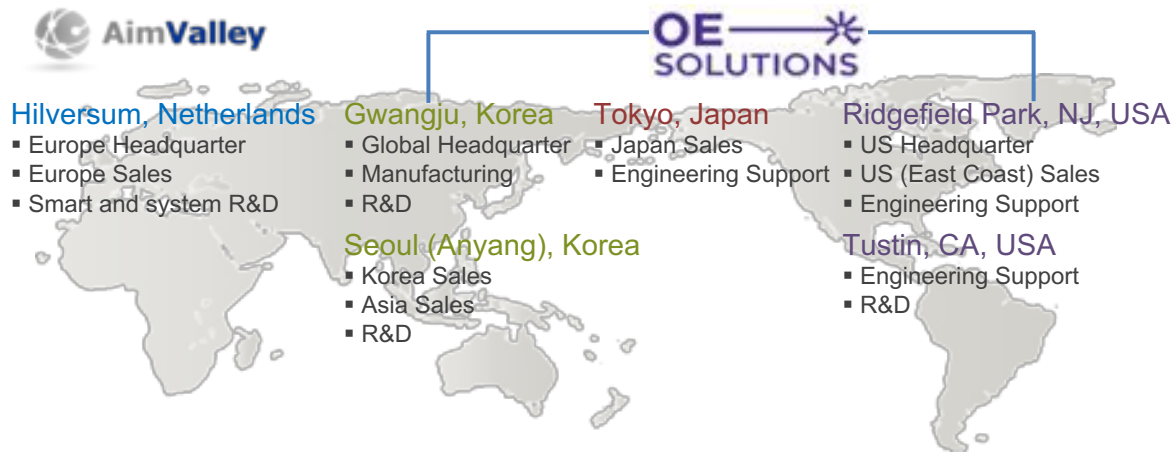
About OE Solutions

Overview

Name	OE Solutions, Co., Ltd	Date of Established	2003. 8. 7
Number of Employees	342 (Korea: 320 / USA: 18 / Japan: 4)	Date of Listing	2014. 2. 27 (KOSDAQ code : 138080)
Product	Optical Transceiver	Homepage	www.oesolutions.com
Locations	Head Quarter : Gwangju, South Korea / US : Ridgefield Park, NJ, USA / JAPAN : Tokyo Japan		

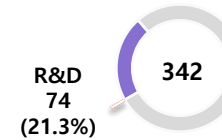
(As of 2019.01.31)

Locations

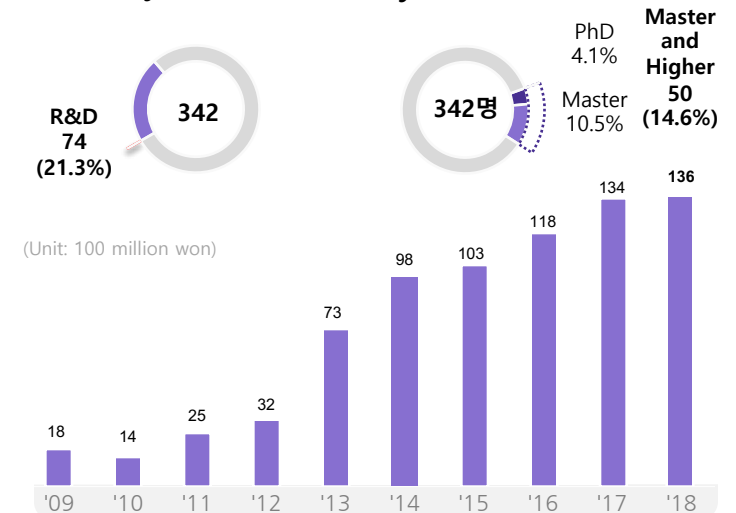


R&D Engineer & Cost

< By sector >



< By Education >

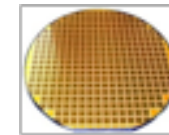


OE Solutions – A Global Supplier of Transceivers













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
- ❑ Vertically integrated production
- ❑ In-house production in Gwangju, S. Korea factory
- ❑ R&D sites in Korea, USA and the Netherlands



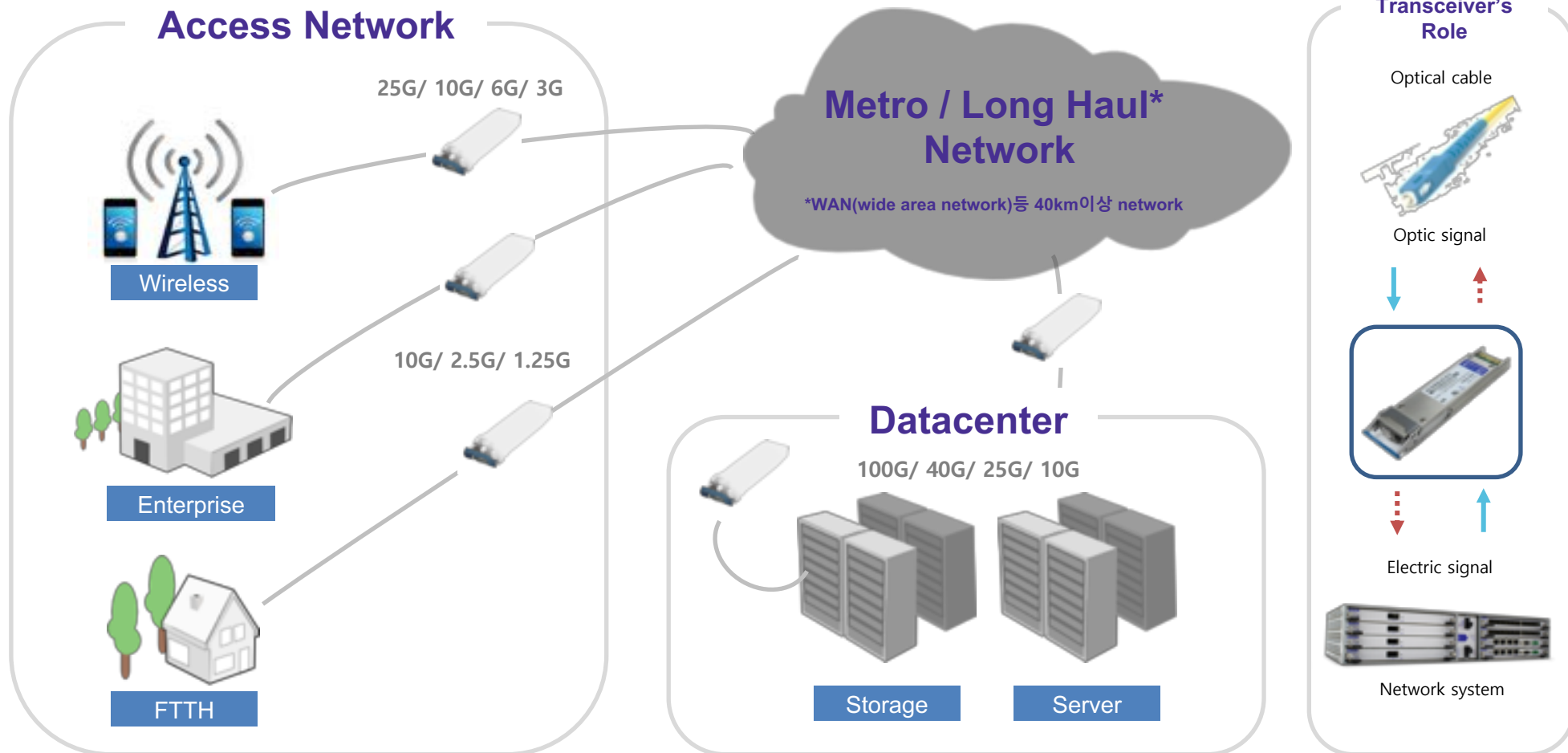
Vertical Integration

Manufacturing Process			Manufacturing Technology	
Chip		DML (2.5G/10G)	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	

Products Application

The use of Transceiver in the Network

Transceiver required for Network connection



Global Marketing channel

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



Condensed income statement

Consolidated financial statement

(Unit : million KRW)

	2015	2016	2017	2018
Revenue (Sales)	59,416	79,720	76,594	81,504
Cost of sales	39,686	53,089	53,974	54,106
Gross margin	19,730	26,631	22,620	27,398
Operating expenses	19,224	21,910	24,537	27,164
Operating income(loss)	506	4,721	(1,917)	234
Profit (loss) before tax	1,321	6,076	(3,788)	1,908
Net income	1,880	6,127	(1,786)	2,590

* K-IFRS

Separate financial statement

(Unit : million KRW)

	2015	2016	2017	2018
Revenue (Sales)	59,341	79,590	76,535	81,406
Cost of sales	39,692	52,965	53,914	54,117
Gross margin	19,649	26,625	22,621	27,289
Operating expenses	19,457	22,375	25,174	26,925
Operating income(loss)	192	4,250	(2,553)	364
Profit (loss) before tax	1,138	5,553	(4,514)	1,945
Net income	1,767	5,929	(2,337)	2,681

Condensed statement of financial position

Consolidated financial statement

(Unit : million KRW)

	2015	2016	2017	2018
Current assets	41,530	52,923	57,247	57,027
Cash and cash equivalents	15,128	9,270	21,923	11,404
Accounts receivable	11,858	22,998	14,626	18,638
Inventory asset	12,735	17,662	18,840	19,740
Non-current assets	33,128	37,005	38,809	42,140
Tangible assets	26,705	30,011	29,597	30,476
Intangible assets	732	777	766	782
Total assets	74,659	89,928	96,056	99,167
Current liabilities	18,634	28,435	24,807	25,369
Short-term debt	13,000	20,000	20,000	19,400
Non-current liabilities	6,549	6,198	4,303	5,736
Total liabilities	25,183	34,633	29,110	31,105
Capital	2,590	2,590	3,870	3,870
Premium on capital stock	13,900	13,900	26,969	26,969
Retained earnings	30,552	36,286	33,937	34,875
Total equity	49,476	55,295	66,946	68,062

Separate financial statement

(Unit : million KRW)

	2015	2016	2017	2018
Current assets	40,860	52,218	55,648	55,790
Cash and cash equivalents	14,414	8,358	20,662	10,227
Accounts receivable	11,839	23,083	14,254	18,299
Inventory asset	12,735	17,662	18,840	19,740
Non-current assets	32,782	37,044	38,923	42,033
Tangible assets	26,286	29,624	29,306	30,119
Intangible assets	121	77	105	54
Total assets	73,642	89,262	94,572	97,823
Current liabilities	19,095	29,563	25,309	26,119
Short-term debt	13,000	20,000	20,000	19,400
Non-current liabilities	6,452	6,099	4,228	5,642
Total liabilities	25,547	35,662	29,538	31,761
Capital	2,590	2,590	3,870	3,870
Premium on capital stock	13,900	13,900	26,969	26,969
Retained earnings	29,044	34,550	31,650	32,678
Total equity	48,095	53,600	65,034	66,062

* K-IFRS

Thank you.



Contact Us

OE Solutions Korea Headquarters

53, Cheomdanyeonsin-ro 30beon-gil,
Buk-Gu, Gwangju, Korea, 500-190

Tel: +82-62-960-5252

Fax: +82-62-960-5258

Email: sales@oesolutions.com

OE Solutions America U.S. Headquarters

65 Challenger Road Suite 240
Ridgefield Park, NJ 07660, USA

Tel: +1-201-568-1188

Fax: +1-201-568-1177

Email: sales@oesolutions.com

Website

www.oesolutions.com

OE Solutions Seoul (Anyang) Office

Unit B-#1619, Geumgang Penterium IT Tower, 282,
Hagui-ro, Dongan-gu, Anyang-si, Gyeonggi-do,
14056, Korea

Tel: +82-31-450-2800

Fax: +82-31-450-2815

Email: sales@oesolutions.com

OE Solutions Japan Japan Headquarters

3F Nagai Building, 1-24-2, Shinjuku, Shinjuku-ku,
Tokyo, 160-0022, Japan

Tel: +81-3-6274-8543

Fax: +81-3-6274-8549

Email: sales@oesolutions.com

