

# First Half Results for Fiscal Year 2019 (Ended March 31, 2019)

**Nihon Dempa Kogyo Co., Ltd.**

**November 13, 2018**

**[Note]**

Statements made in this presentation with respect to our current plans, estimates, strategies and beliefs and other statements that are not historical facts are forward-looking statements about our future performance. These statements are based on management's assumptions and beliefs in light of information currently available to it. We caution that a number of important risks and uncertainties could cause actual results to differ materially from those discussed in the forward-looking statements, and therefore you should not place undue reliance on them. You also should not rely on the belief that it is our obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Risks and uncertainties that might affect us include, but are not limited to, fluctuation of currency exchange rates, overall supply and customer demand in the industry, product development and production capacities, performance of affiliated companies, and other risks and uncertainties.

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**Presented by Hiromi Kato,  
Director and Executive Vice President**

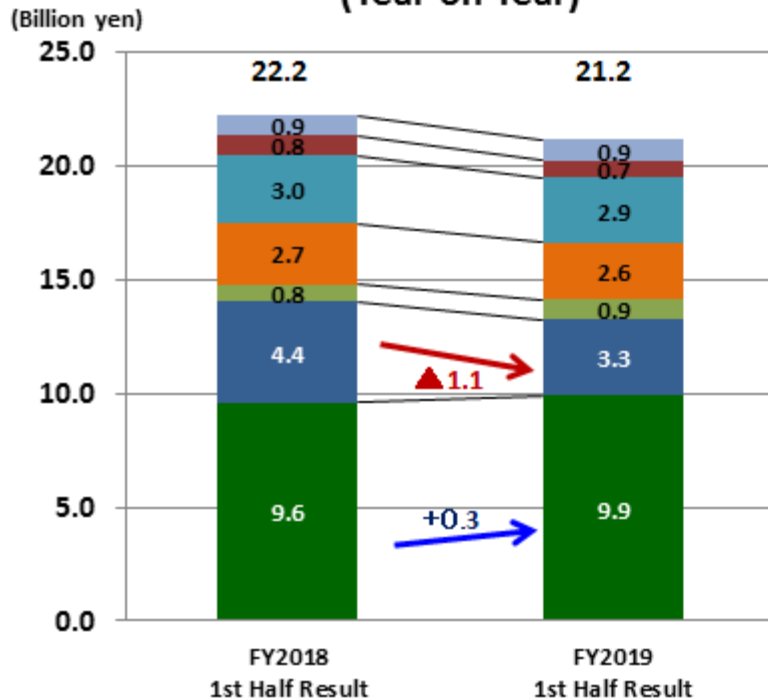
# Summary of Performance in 1st Half of FY2019

(Million yen)

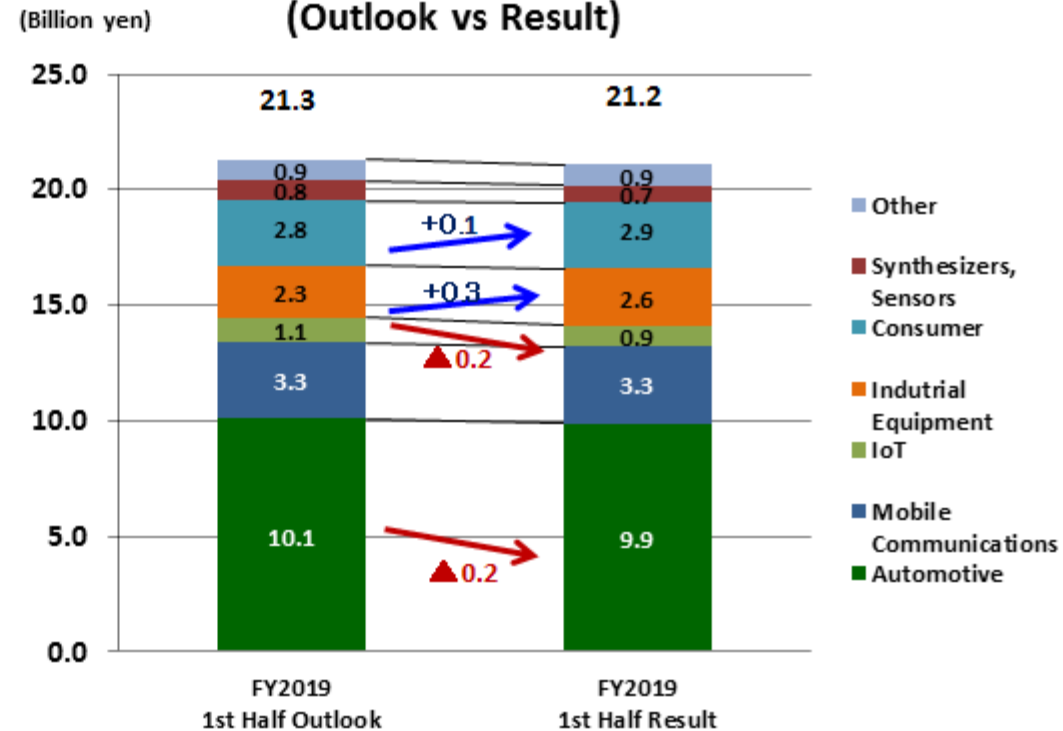
	①	②	③	③-①	③-②
	FY2018 1st Half Result	FY2019 1st Half Outlook as of May 11	FY2019 1st Half Result	Change YoY	Change from Outlook as of May 11
Net Sales/ Loss	22,241	21,300	21,218	▲ 1,023	▲ 82
Operating Income/ Loss	▲ 396	▲ 500	▲ 494	▲ 98	6
Income/ Loss before Tax	▲ 408	▲ 600	▲ 715	▲ 307	▲ 115
Net Income/ Loss	▲ 546	▲ 650	▲ 753	▲ 207	▲ 103
Exchange Rate (against U.S. dollar)	¥111.42	¥105.00	¥110.07	¥▲1.35	¥5.07

# 1st Half of FY2019 : Net Sales Result

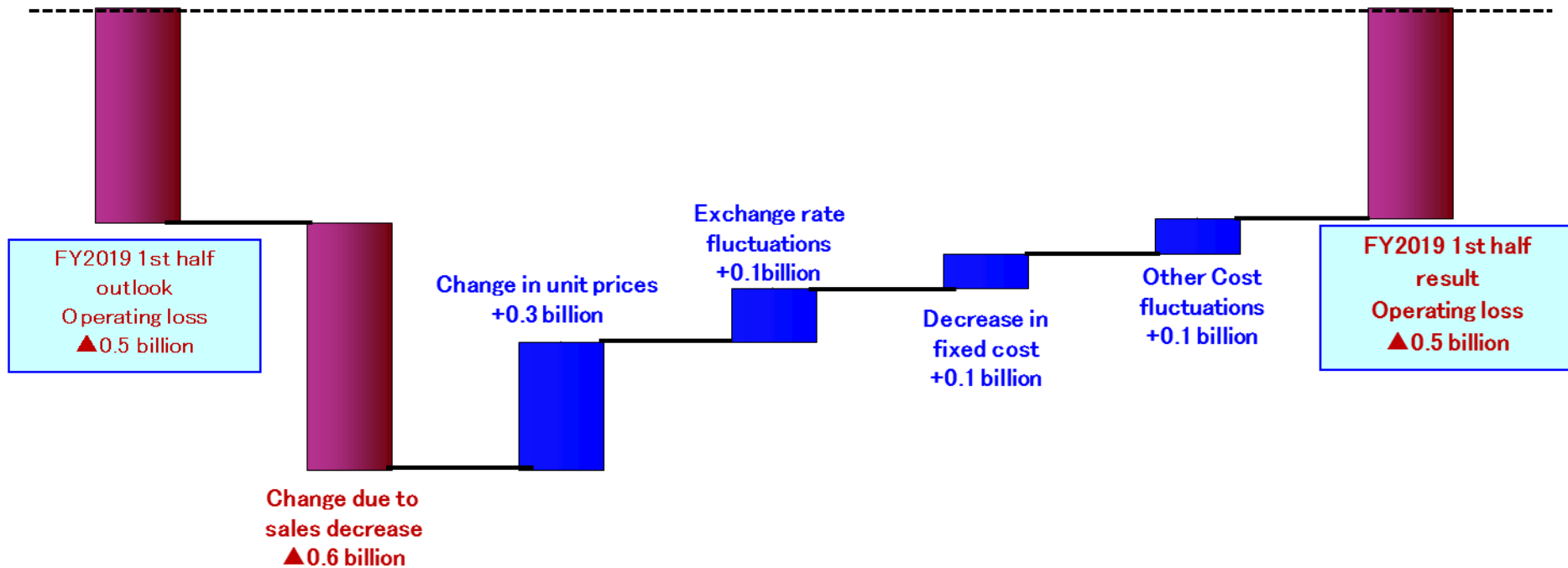
## Net Sales for the 1st Half of FY2019 (Year on Year)



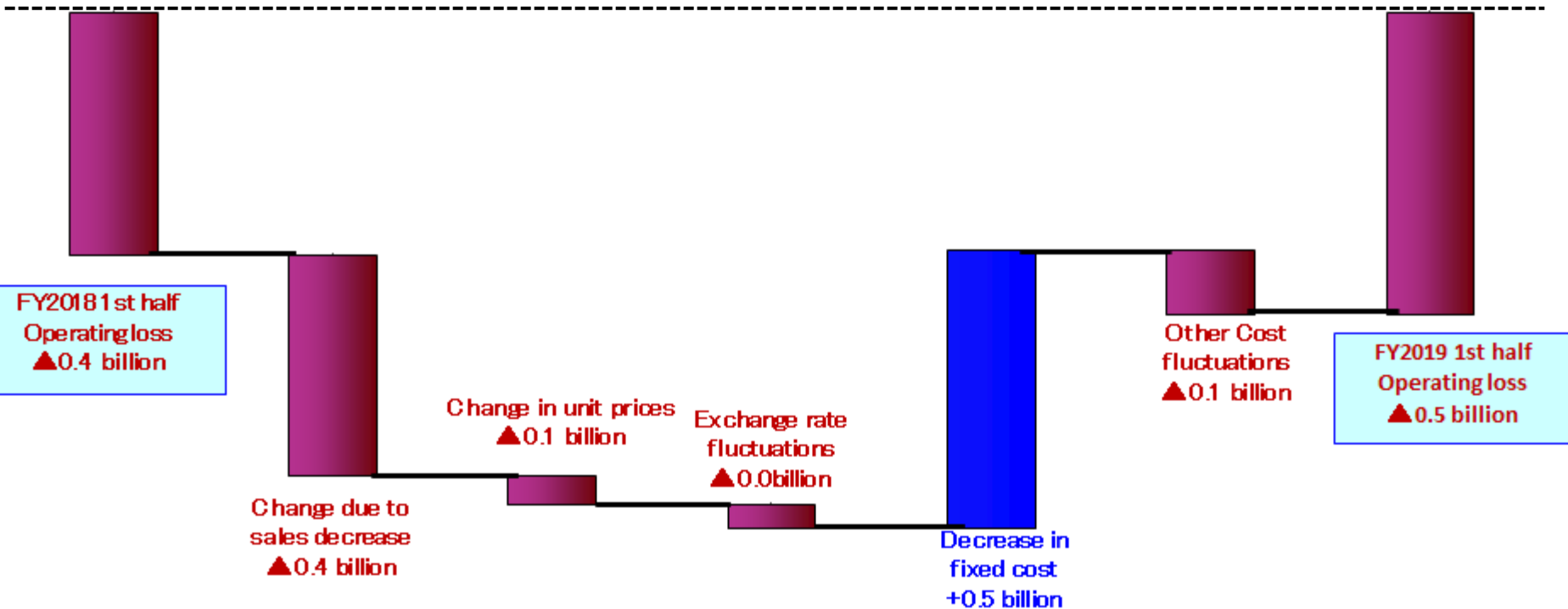
## Net sales for the 1st Half of FY2019 (Outlook vs Result)



# 1st Half of FY2019 : Profit Result (Outlook vs Result)

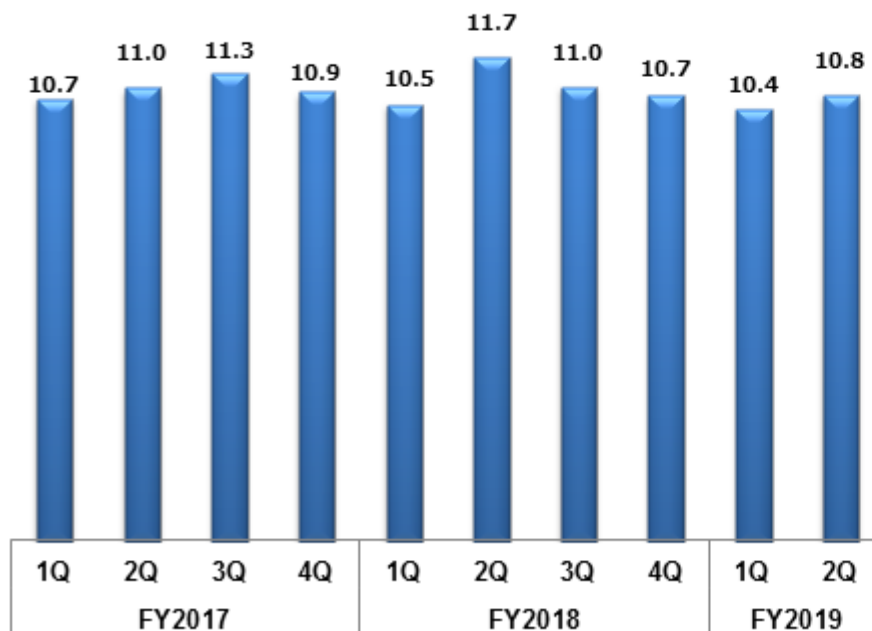


# 1st Half of FY2019 : Profit Result (Year on Year)

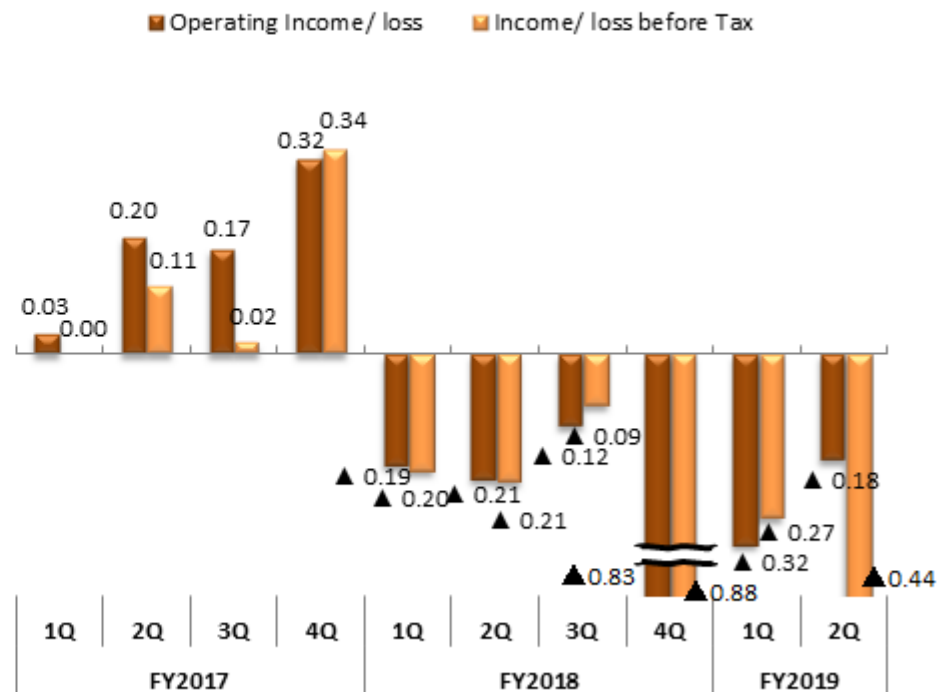


# Quarterly Result

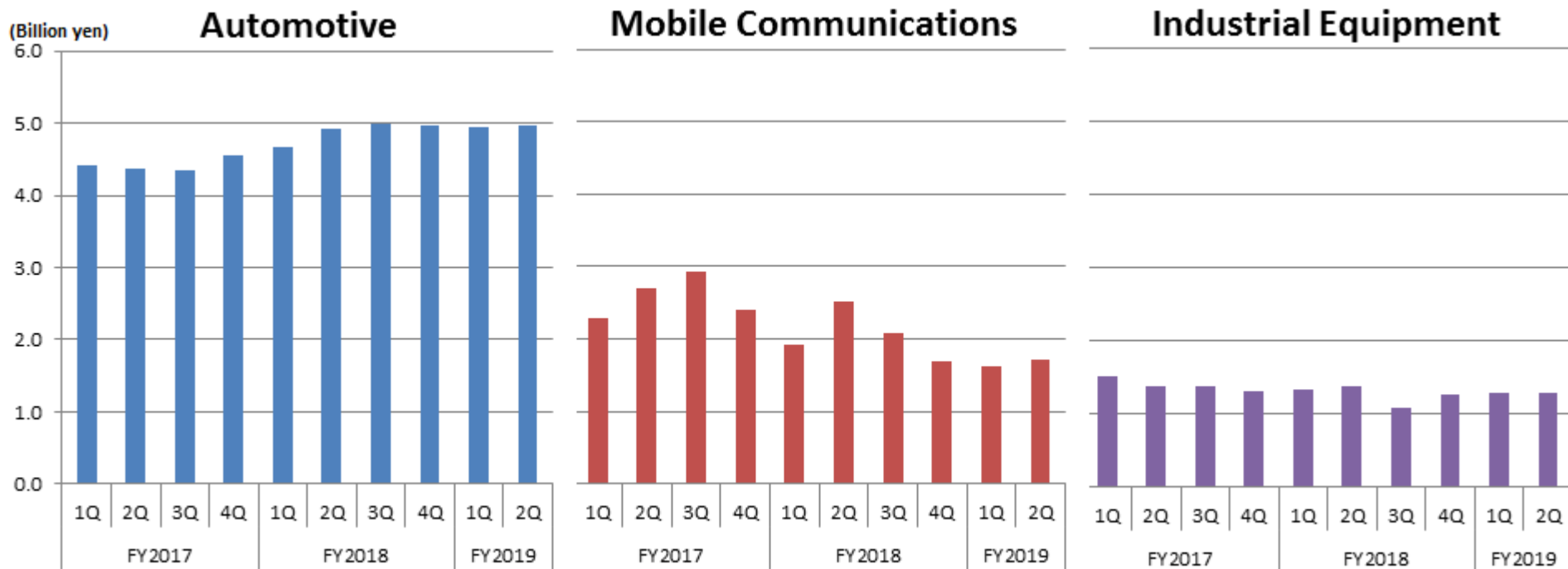
## Net Sales (Billion yen)



## Profit (Billion yen)



# Sales Trends in Main Applications



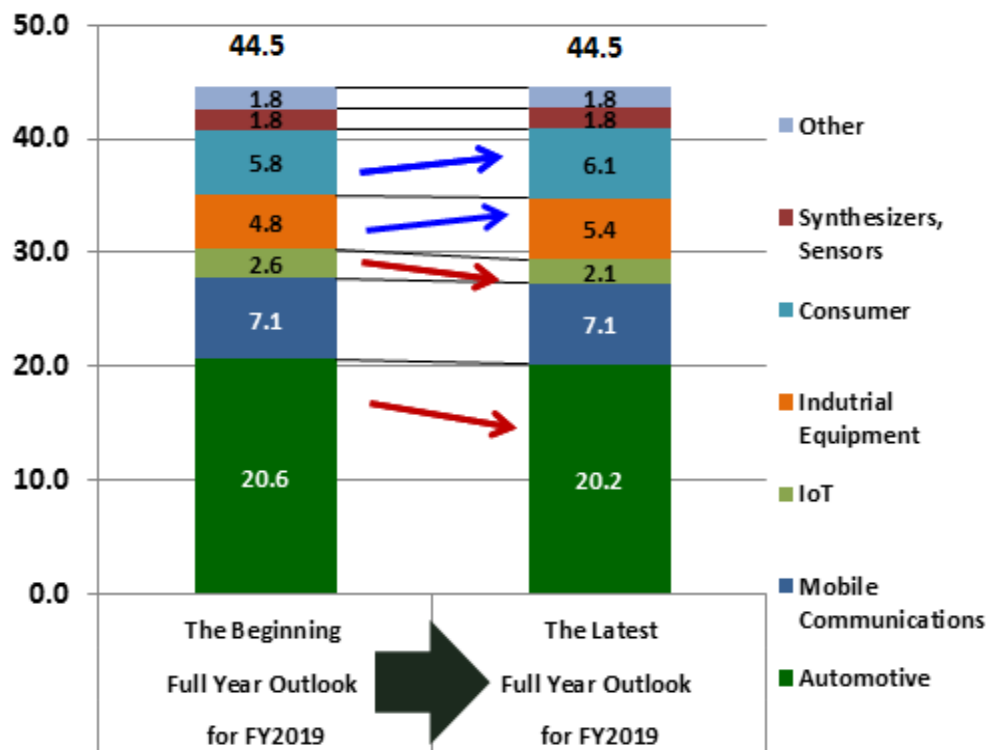


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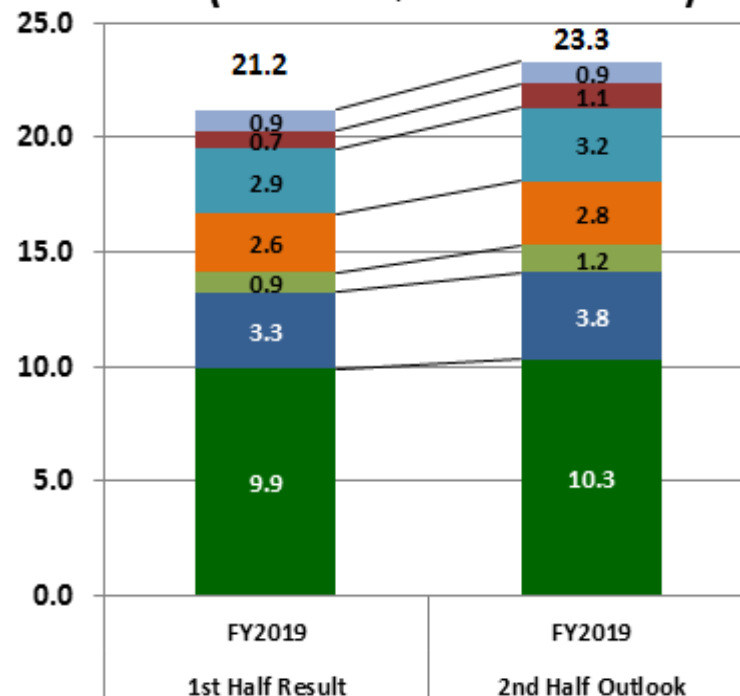
1. FY2018 First Half Results
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# FY2019 Full Year Outlook (Net Sales)

(Billion yen) Net Sales Outlook for FY 2019 (Full Year)



(Billion yen) Net Sales Outlook for FY2019 (1st Half → 2nd Half Year)



(Billion yen)

	FY2019 1st Half Result	FY2019 2nd Half Outlook	FY2019 Full Year Outlook
Net Sales	21.2	23.3	44.5
Operating Income/ Loss	▲ 0.5	1.0	0.5

# FY2019 Full Year Outlook



Million Yen	FY2019 1st Half Result	FY2019 2nd Half Outlook	FY2019 Full Year Outlook
Net Sales	21,218	23,282	44,500
Operating Income/ Loss	▲494	994	500
Income/ Loss before Tax	▲715	1,015	300
Net Income/ Loss	▲753	953	200
Capital Investment	1,300	1,600	2,900
R&D Expenses	940	960	1,900
Exchange Rate (against the U.S.dollar)	110.07	110.00	110.00

## <Reference>

Influence on net sales (annual): ¥1 fluctuation ⇒ approx. ¥200 million

Influence on operating income (annual): ¥1 fluctuation ⇒ approx. ¥50 million

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# Strengthen Upstream Process

High-quality synthetic quartz crystal

Ultra-miniature processing technology

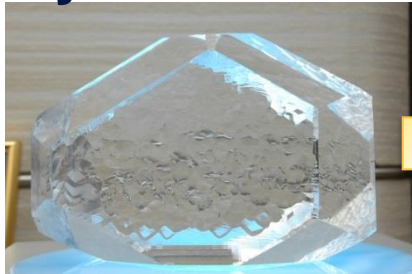
Customer Needs

Miniaturization  
Higher frequency  
Lower phase noise

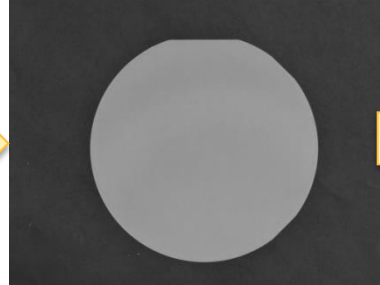
Market

Automotive · ADAS  
Base stations · Network · 5G  
Mobile communications · IoT · Wearable

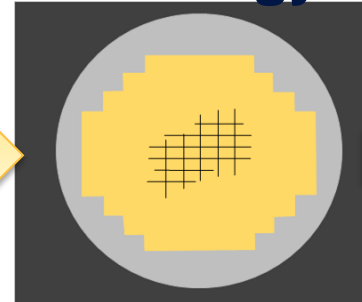
**High-quality synthetic quartz crystal**



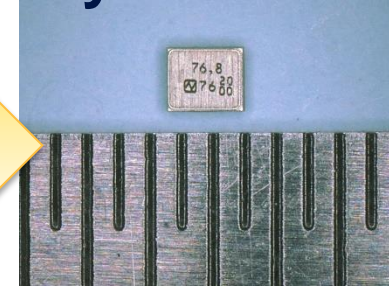
**Parallel plane wafer**



**Ultra-miniature processing technology**



**Ultra-compact crystal unit**



Quality of crystal products depends on synthetic quartz crystal

Started mass-production with larger wafer

**Mass-produce “Stable characteristics,” “High quality,” and “Ultra-compact” crystal blank**

# Product Lineup for 5G (for 5G base stations)



## For Macro Base Stations/ CU(Center unit)



- High quality oscillators as reference clock are required
- Holdover :  $\pm 1.5\mu\text{sec}/8\text{h}$
- ◆ 26×26mm OCXO

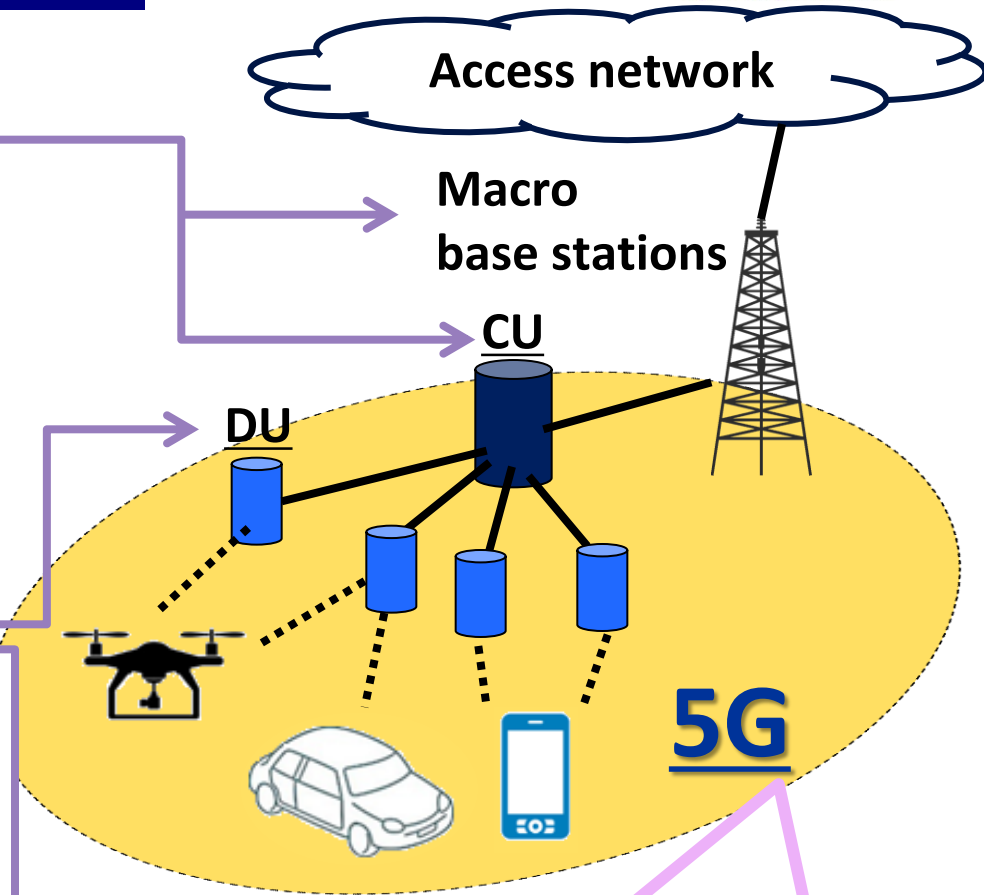
## For DU(Distributer unit)



- Low noise oscillators for Ethernet synchronization are required
- ◆ High quality TCXO  
(100ppb/ $-40^{\circ}\text{C}\sim 105^{\circ}\text{C}$ )



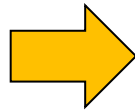
- Available for further higher quality
- ◆ 9×7mm OCXO  
(10ppb/ $-40^{\circ}\text{C}\sim 95^{\circ}\text{C}$ )



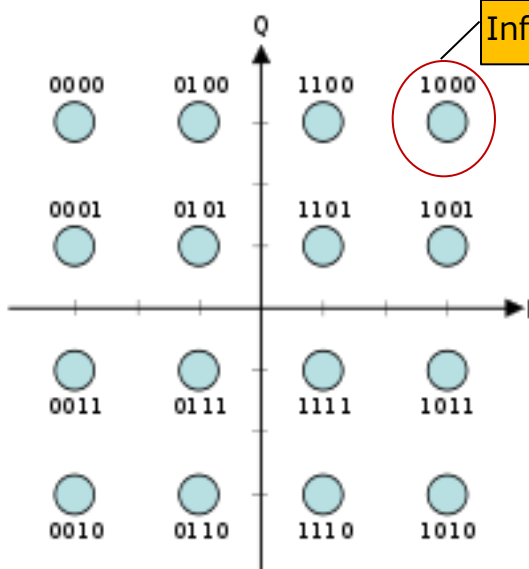
Very high speed  
Massive devices connection  
Very low latency

# Product Lineup for 5G (Low g oscillator)

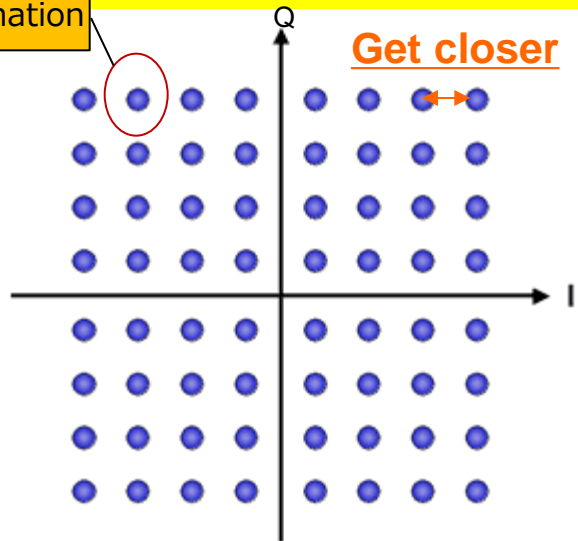
## 5G System



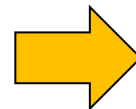
Amount of information carried in radio wave dramatically increases



16QAM



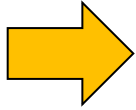
64QAM




In 5G,  
256QAM  
1024QAM



In 5G system, crystal devices become vulnerable to vibration/ shock = noise. Low g oscillator will relieve this influence.



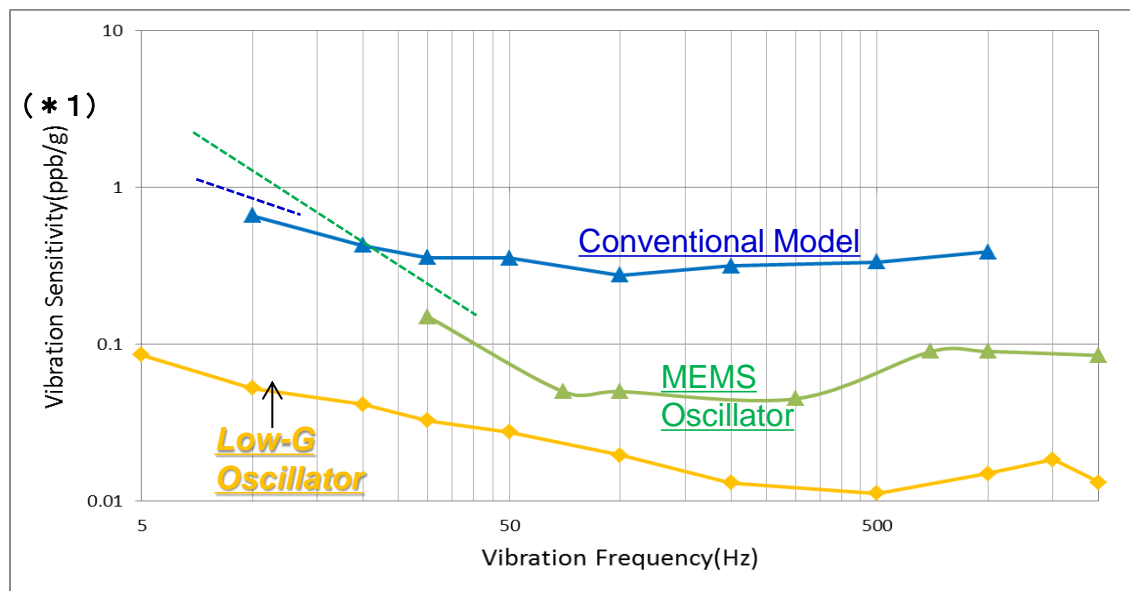
### Low g Oscillator



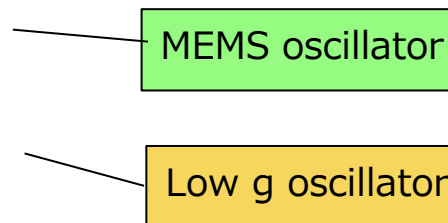
NT2016S      NT3225S

## Low g Oscillator

Clear superiority over the performance of MEMS oscillators



(\*1)  
Vibration Sensitivity:  
Amount of frequency change per 1G  
(acceleration of gravity).  
The smaller the figure is, the influence  
of the vibration reduce.



## 5G System

● Higher frequency ⇒ Increase frequency of crystal units  
from 38MHz to 76MHz

Differentiate ourselves by  
strengthening Ultra-  
miniature processing  
technology

Prevent deterioration of phase noise



**We look forward to your continuing support in the years ahead.**

**Thank you**

**For investor relations related inquiries,  
please contact:**

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