Continuous Growth with Sustainable Superior Profits

Anritsu Corporation
November, 2019

TSE code : 6754
https://www.anritsu.com
Cautionary Statement

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You also should not place reliance on any obligation of Anritsu to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Anritsu disclaims any such obligation.
Agenda

I. Mid term Business Plan GLP2020 and Business Strategy
   1. Basic Policy of Management Strategy
   2. Outline of our business segments
   3. Basic Policy of medium and long term business strategy
   4. Set out for Beyond2020

II. T&M business segment
   1. T&M: Profit structure improvement targets
   2. T&M: Mobile market trends and Business opportunity
   3. Industrial Test Solutions
   4. Network Reshaping Test Solutions

III. PQA Business segment

IV-1. Financial Strategy
IV-2. Shareholder Return Policy
IV-3. Corporate Philosophy and Sustainability Policy
IV-4. Corporate Governance System

V. Financial Results for the 2nd quarter of the Fiscal Year ending March 31, 2020
Ⅰ．Mid term Business Plan GLP2020 and Business Strategy
I -1. Basic Policy of Management Strategy

☑ Prosecute the policy “Continuous profitable growth”
☑ Make our best to accomplish 2020VISION/ GLP2020

* GLP2020 Plan = FY2018~FY2020
I -2. Outline of our business segments

- **T&M**: Test & Measurement
  - Evolution and advances of networked society
  - Mobile: 5G, LTE
  - Network Infrastructure: Wired, Wireless NW
  - Electronics: Electronics parts, Wireless Equipment

- **PQA**: Products Quality Assurance
  - Food Safety and security
  - X-ray inspection systems
  - Metal Detector
  - Checkweighers

- **Others**
  - IP network equipment
  - Opt. devices

(Revenue by business segment)
99.7 Billion Yen consolidated revenue in FY2018

<table>
<thead>
<tr>
<th>T&amp;M</th>
<th>68%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile</td>
<td>53%</td>
</tr>
<tr>
<td>Network Infrastructure</td>
<td>26%</td>
</tr>
<tr>
<td>Electronics</td>
<td>21%</td>
</tr>
<tr>
<td>PQA</td>
<td>23%</td>
</tr>
<tr>
<td>Others</td>
<td>9%</td>
</tr>
</tbody>
</table>

(Sales of T&M business by region in FY2018)

<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>19%</td>
</tr>
<tr>
<td>Asia &amp; Pacific</td>
<td>33%</td>
</tr>
<tr>
<td>Americas</td>
<td>32%</td>
</tr>
<tr>
<td>EMEA</td>
<td>16%</td>
</tr>
</tbody>
</table>

T&M: Test & Measurement   PQA: Products Quality Assurance
### I -2-1. Outline of our business segments <T&M>

<table>
<thead>
<tr>
<th></th>
<th>R&amp;D</th>
<th>Manufacturing</th>
<th>Installation/Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireline Communication</td>
<td></td>
<td>Network Infrastructure (26%)</td>
<td></td>
</tr>
<tr>
<td>Wireless Communication</td>
<td>Mobile (53%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Purpose</td>
<td></td>
<td>Electronics (21%)*</td>
<td>*Electronics components etc.</td>
</tr>
</tbody>
</table>

*Electronics components etc.*
I - 3. Basic Policy of medium and long term business strategy

Capture growth drivers without fail, and realize “continuous profitable growth”

<table>
<thead>
<tr>
<th></th>
<th>Market average annual growth rate (estimated by Anritsu)</th>
<th>Vision/growth driver</th>
<th>Medium &amp; long –term guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;M</td>
<td>3-5%</td>
<td>Become a leading company supporting 5G/IoT society</td>
<td>Sales growth rate: ≥7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) 5G, LTE-Advanced</td>
<td>Operating margin: ≥20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) IoT/Automotive, Connectivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) IP Data traffic/Cloud Services</td>
<td></td>
</tr>
<tr>
<td>PQA</td>
<td>3-5%</td>
<td>Become a world-class partner in quality assurance solution</td>
<td>Sales growth rate: ≥7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expansion from contaminant inspection into the quality assurance market</td>
<td>Operating margin: ≥12%</td>
</tr>
<tr>
<td>Consolidated</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>ROE</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

- Medium & long –term guideline:
  - Sales growth rate: ≥7%
  - Operating margin: ≥20%
### GLP2020

<table>
<thead>
<tr>
<th>Indicators</th>
<th>FY2018 (Initial Plan)</th>
<th>FY2018 (Act)</th>
<th>FY2019(*)</th>
<th>FY2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>92.0 B Yen</td>
<td>99.7 B Yen</td>
<td>103.0 B Yen</td>
<td>105.0 B Yen</td>
</tr>
<tr>
<td>OP. profit</td>
<td>6.6 B Yen</td>
<td>11.2 B Yen</td>
<td>11.5 B Yen</td>
<td>14.5 B Yen</td>
</tr>
<tr>
<td>Op. margin</td>
<td>7 %</td>
<td>11%</td>
<td>11%</td>
<td>14 %</td>
</tr>
<tr>
<td>Profit</td>
<td>5.0 B Yen</td>
<td>9.0 B Yen</td>
<td>8.5 B Yen</td>
<td>11.0 B Yen</td>
</tr>
<tr>
<td>ROE</td>
<td>7%</td>
<td>11%</td>
<td>10%</td>
<td>12%</td>
</tr>
</tbody>
</table>

#### T&M

<table>
<thead>
<tr>
<th></th>
<th>Revenue</th>
<th>OP. profit</th>
<th>Op. margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>60.0 B Yen</td>
<td>3.5 B Yen</td>
<td>6%</td>
</tr>
<tr>
<td>OP. profit</td>
<td>9.4 B Yen</td>
<td>9.5 B Yen</td>
<td>14%</td>
</tr>
<tr>
<td>Op. margin</td>
<td>6%</td>
<td>13%</td>
<td>14%</td>
</tr>
</tbody>
</table>

#### PQA

<table>
<thead>
<tr>
<th></th>
<th>Revenue</th>
<th>OP. profit</th>
<th>Op. margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>23.5 B Yen</td>
<td>2.0 B Yen</td>
<td>9%</td>
</tr>
<tr>
<td>OP. profit</td>
<td>23.1 B Yen</td>
<td>1.6 B Yen</td>
<td>7%</td>
</tr>
<tr>
<td>Op. margin</td>
<td>9%</td>
<td>8%</td>
<td>12%</td>
</tr>
</tbody>
</table>

*Anritsu group announced the revised FY2019 Forecast on October 30th, 2019.

(Note) Exchange rate for GLP2020: 1USD=105Yen, 1Euro=125Yen)
I - 3-2. GLP2020 : Revenue and Op. profit Plan (2/2)

(Note) Anritsu group announced the revised FY2019 Forecast on October 30th, 2019.

<table>
<thead>
<tr>
<th>GLP plan</th>
<th>GLP2012</th>
<th>GLP2014</th>
<th>GLP2017</th>
<th>GLP2020</th>
<th>GLP2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Op. margin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>consolidated</td>
<td>9%</td>
<td>15%</td>
<td>17%</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td>T&amp;M</td>
<td>9%</td>
<td>20%</td>
<td>21%</td>
<td>17%</td>
<td>12%</td>
</tr>
<tr>
<td>PQA</td>
<td>5%</td>
<td>4%</td>
<td>6%</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>FY202X Target</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I - 3 - 3. GLP2020 Progress Status in T&M Business

FY2019 Initiatives

Capture growth opportunities by focusing on boosting competitiveness in 5G business
- Enhance global development framework and customer support system
- Promote conformance test system business

(Note) Anritsu group announced the revised FY2019 Forecast on October 30th, 2019. Numbers in "( )" are former FY2019 Forecast, announced on April 25th, 2019.
GLP2020 Progress Status in PQA Business

FY2018
- Actual
  - 23.1 B Yen
  - Op. Margin: 7%

FY2019
- Plan
  - 24.5 B Yen
  - Op. Margin: 8%

GLP2020
- FY202X
  - 30.0 B Yen
  - Op. Margin: ≥12%

FY2019 Initiatives
- Strengthen sales bases in Americas and Europe
- Promote shift to platform solutions
I - 4. Set out for Beyond2020

- **Sustainable growth** in 2020 and beyond
- Become a highly profitable company. Operating margin of 18%.
- A company that regularly earns over **100.0 billion yen**.
Ⅱ. T&M business segment
Cost structure improvement measures

- Introduction of high value added solutions (professional services, software)
- Thorough enforcement of development ROI & ROIC management (*1)
- SG&A expenses: Organizational structure and optimal allocation of human resources in response to changes in customer trends

*1: KPI target index for R&D investments is an R&D ROI (gross profit / R&D investment value) of 4.0 times or higher.
T&M: Mobile market trends and Business opportunity

- Manufacturing of 3G smartphone
- Development of LTE

- New market
  - IoT/Automotive
  - Utilization of 5G in the new field

- 5G Development
  - Accelerated investment in 5G (NSA-NR) development
  - Investment in 5G (SA-NR) development: China

- 5G Manufacturing
  - 5G (Sub6GHz) manufacturing market

- LTE-Advanced Pro
  - Investment towards Gigabit LTE development

- IP Data traffic/Cloud Services
  - High speed and increasing capacity of the data center
  - Investment in small cell

Timeframe:
- 2008
- 2012
- 2018
- 2019
- 2020
- 2024
### 2-2-1. Roadmap of 5G

<table>
<thead>
<tr>
<th>CY2018</th>
<th>CY2019</th>
<th>CY2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>3GPP Rel.15 NSA/SA specifications (Phase1 Ultrahigh speed)</td>
<td>★ WRC-19</td>
<td>★ Rel.16 (Phase2 Extended use cases such as ultra-low latency, multiple simultaneous connections)</td>
</tr>
<tr>
<td>Rel.15 Commercial chip development</td>
<td></td>
<td>Rel.16 Chip development</td>
</tr>
<tr>
<td>Pilot device development</td>
<td>Expand commercial device development</td>
<td>Rel.16 Device development</td>
</tr>
<tr>
<td>Launch of 5G services by major business operators in various countries</td>
<td>Expand 5G services</td>
<td></td>
</tr>
</tbody>
</table>

**Legend**
- P. Trial, Pre service, Pre commercial
- C. Commercial

- NSA + Millimeter wave (C) *Introduce Sub6 in the future
- NSA + Sub6 (C) *Introduce Millimeter wave in the future
- SA & NSA + Sub6 (P)
- NSA + Sub6 (C)
- NSA + Sub6 (C)
- NSA + Sub6 (C)
- NSA + Sub6 (P) & Millimeter wave (P)
- NSA + Sub6 & Millimeter wave (C)
- NSA + Sub6 (C)
- NSA + Sub6 (C)
- NSA + Sub6 (C)
- NSA + Sub6 (C)

**5G related events**
- 5G frequency assignment
- Rugby World Cup
- MWC20
- Tokyo Olympics • Paralympic
## 2-2. Current status and outlook for major 5G vendors and operators

<table>
<thead>
<tr>
<th>Chipset</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>3GPP Release 15</td>
<td>Qualcomm (America)</td>
<td>MediaTek (Taiwan)</td>
<td>Samsung (Korea)</td>
<td>Intel (America)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>3GPP Release 16</td>
<td>Samsung (Korea)</td>
<td>LG (Korea)</td>
<td>Motorola (America)</td>
<td>Huawei (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operators</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verizon (America)</td>
<td>CMCC (China)</td>
<td>AT&amp;T (America)</td>
<td>Docomo, KDDI, SoftBank (Japan)</td>
<td>KT, SKT, LGU+ (Korea)</td>
</tr>
</tbody>
</table>

We expect full-scale commercial service to begin in 2020 or later.

*Created by Anritsu, with reference to materials from “Public Meeting for Exchanging Opinions on Radio Policy (58th Meeting),” issued by the Ministry of Internal Affairs and Communications (September 21, 2018), as well as other publicly available information.*
II -2-3. 5G terminal development/manufacturing process and test solutions

Verification of Core Technologies at Chipset Vendors

- Protocol
- Baseband Chipset / RF Front End

Evaluation of Functions & Performance at UE Vendors

- Evaluation of Functions & Performance

Conformance Test at UE Vendors & Test Houses

- Conformance Test (CT)

Acceptance Test at Carriers & Test Houses

- Carrier Acceptance Test (CAT)

Mass Production Test at UE Vendors & EMS

- RF Calibration & Inspection

MT8000A
Radio Communication Test Station

ME7873NR/ME7834NR
5G NR Conformance Test and Carrier Acceptance Test System

MT8870A
Universal Wireless Test Set
II -2-4. 5G Test Solutions  Conformance Test

An organization that mainly runs device conformance tests in Europe and Asia

Carrier Acceptance Test (CAT) for each telecommunications carrier
- DOCOMO
- AT&T
- Verizon
- CMCC etc.

An organization that runs device conformance tests in Americas
## 2-5. Mobile R&D business and solutions (The case of LTE)

<table>
<thead>
<tr>
<th></th>
<th>Platform(Core) Development</th>
<th>Conformance test</th>
<th>Operator Acceptance test</th>
<th>Smartphone Commercial test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uses</strong></td>
<td>Comm. standard development</td>
<td>Conformance test</td>
<td></td>
<td>Application development</td>
</tr>
<tr>
<td></td>
<td>Chipset development</td>
<td>Interoperability test</td>
<td>Comm. Carrier acceptance test</td>
<td>UE operation test</td>
</tr>
<tr>
<td><strong>Main customers</strong></td>
<td>Chipset vendor</td>
<td>Chipset vendor, UE vendor</td>
<td>Com Carrier, Test house, UE vendor</td>
<td>UE vendor</td>
</tr>
<tr>
<td></td>
<td>UE vendor</td>
<td>Communication Carrier</td>
<td></td>
<td>Applications developer</td>
</tr>
<tr>
<td><strong>Main theme</strong></td>
<td>• FDD / TDD-LTE, LTE-Advanced, LTE-Advanced PRO</td>
<td></td>
<td></td>
<td>Improve data throughput</td>
</tr>
<tr>
<td></td>
<td>• CA (Carrier aggregation), VoLTE (Voice over LTE)</td>
<td></td>
<td></td>
<td>Battery consumption etc.</td>
</tr>
<tr>
<td></td>
<td>• MIMO (Multi Input Multi Output)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Chipset unification of 3G/LTE and SRW (Short Range Wireless)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test solutions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Main Competitors</strong></td>
<td>Anritsu : No.1 position</td>
<td>Rohde &amp; Schwarz, Keysight(Agilent, Anite), Spirent</td>
<td>Rohde &amp; Schwarz, Keysight</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rohde &amp; Schwarz</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Ⅱ -2-6. Evolution of mobile communication

Supporting evolution of mobile communication system

Max. communication speed increased about 10 thousands times over the past 30 years

(From materials of the Ministry of Internal Affairs and Communications)
Ⅱ-2-7. Contributing to the establishment of 5G network infrastructure

Features of 5G:

- **1/10×Latency**
- **100×Peak Data Rate**
- **100×Capacity**

**Smart Devices**

- R&D and Manufacturing Solution for IoT Device/Module

**Mobile Networks**

- Support for Mobile Network by Widespread products ranging from RF to optical
- 5G New RAT
- C-RAN
- CPRI
- LTE-A
- Small Cell
- NB-IoT

**Fixed Networks**

- Support for high-speed 100G/400G communications
- 100G/400G
- SDH/WDM
- OTN
- Ethernet
- SDN/NFV
- BTS Master
- New HH SPA

**Cloud**

- Continued world leader in bit error rate test
- 40G/100G
- Data Center
- Internet
- PCI-E
- AOC

**IoT Device / Module Measurement**

- Spectrum Analyzer
- Signal analyzer
- BTS Master
- OTDR

**Signal Quality Analyzer**

- 40G/100G Analyzer

**Big Data Analytics**

- BERTWave Series
- eoSight Big Data Analytics
II -2-8. 5G will become the infrastructure of social innovation

From now on it is necessary to establish "business strategy", includes making business partners

(Ministry of Internal Affairs and Communication)
Millimeter waves are used in cities where small cells can be arranged in mesh networks.
II-2-10. 5G and LTE coexist and interwork

5G = LTE Enhancements + Next-Generation Wireless Technologies

5G Network:
- Small Cell
- Macro Cell
- Data Signal
- Control Signal

LTE Network:
- Small Cell
- Data Signal
- Control Signal

Frequency bands:
- 40GHz
- 30GHz
- 28GHz
- 20GHz
- 10GHz
- Sub-6GHz
- 6GHz
- 3GHz
- 1GHz
- 400MHz

Roadmap of LTE:
- 2015: LTE-Advanced Rel 12 & 13
- 2016 ~ 2020: LTE Enhancement Rel 14 & 15

New RAT: New Radio Access Technology

New RAT (higher performance, wide-area)
II -2-11. 5G Band Allocations in the World

**SubGHz**
- 600/700 MHz

**Sub6GHz**
- 3.1～4.2 GHz
- 4.4～4.99 GHz

**Millimeter Wave**
- 26/28 GHz
- 38/42 GHz

*Created based on public disclosure information.*
II -2-12. Solutions for 5G chipset/device development

We have begun shipments of the Radio Communication Test Station MT8000A for development of chipsets, devices, etc. for the 5G market.
Ⅱ-2-13. Role of MT8000A

Real-world environment

5G base station

Mobile network

5G smartphone

Test environment

5G smartphone under performance testing

MT8000A

Emulates a base station to connect to smartphone and conduct performance testing

Enables a variety of simulations, including handling of errors which cannot be checked with a base station connection, and handover from one base station to another
ÍI -2-14. High-frequency (millimeter wave) measurement technology

**For low-frequency**

Accurate measurements are possible with a cable connection.

**For high-frequency (millimeter wave)**

Accurate measurements are possible with Over The Air (OTA) using chamber.
Introducing 5G utilizing the LTE core network.

**NSA-NR Network Configuration**

**NSA-NR Test Environment**

![Diagram showing NSA-NR Network Configuration and Test Environment](image-url)
Ⅱ-2-16. Anritsu’s Solution for 5G base stations and terminals

Signal analyzer that realizes millimeter-wave measurement solutions required for R&D and manufacture of 5G base stations and terminals at unprecedented low prices

Frequency range: 9 kHz~32 GHz/44.5 GHz
Analysis bandwidth: 255 MHz (standard), 510 MHz (option), 1GHz (option)

Conventional Signal Analyzer for LTE

- Frequency is mainly 6GHz or less
- Analysis bandwidth is 20MHz to several hundred MHz

Signal Analyzer for 5G

- Covers frequency up to 44.5GHz
- Coverage of analysis bandwidth is up to 1GHz
- Low price enables installation for commercial development and manufacture
- 2-17. 5G Test Solutions  Base-Station Installation and Maintenance

5G NR Base-Station Field Performance Measurements and Coverage Mapping

Field Master Pro MS2090A
- Frequency Range: 9 kHz to 9/14/20/26.5/32/43.5/54 GHz
- Supports RF measurements of GSM, LTE, and 5G base stations, as well as 5G demods.
- TX spurious up to 54 GHz

Usage: 5G NR Base Station Measurement
3GPP TS 38.104 V15 gNB Base Station Performance Evaluation
- Frequency error
- Occupied bandwidth
- Time offset
- Adjacent channel leakage ratio
- Cell/Sector ID
- Tx spurious up to 12.75 GHz
- Modulation quality
- EIRP
- Unwanted emissions
- Synchronization Signal Block (SSB)
- FR1 & FR2
- Up to 64 beams supported

Usage: 5G Coverage Mapping
Plot indoor and outdoor coverage maps from 5G NR gNB. Displayed measurements include channel power, EIRP, and RSRP.
2-18. Acquisition of Azimuth Systems, Inc.

- Company Name: Azimuth Systems, Inc.
- Headquarters: Boston, USA
- Business model: Development and sales of channel emulators, etc.
- Main customers: Operators, chipset vendors, network equipment vendors, UE vendors, etc. in the Americas, EMEA, Asia, and Japan

**Real-world environment**

Base station → Signal → (1) Reflection from obstacles → Fading (Fluctuating signal strength) → Communication device

**In the lab (e.g., communication device testing)**

Base station simulator → Channel Emulator → Communication device (device under test)

Fading (Fluctuating signal strength)
II -2-19. Food chain and players in mobile telecom market

Operators
- AT&T
- Verizon
- T-Mobile
- Orange
- BT
- Deutsche Telekom
- China Mobile
- China Unicom
- China Telecom
- NTT DoCoMo
- KDDI
- Softbank + Sprint
- SK Telecom
- KT
- LG Uplus
- etc.

Chipset vendors
- Qualcomm, Intel, Samsung, MediaTek, Hisilicon, Spreadtrum, Broadcom, Marvell, Realtek, Altair, Sequans etc.

Test houses
- SGS, 7 layers, Cetecom, TMC, Canvas M, TechMahindra etc.

Smartphone & Tablet vendors
- America: Apple, Amazon, Google, Microsoft, Nokia
- Asia: Huawei, OPPO, VIVO, Xiaomi, enovo, TCL, ZTE, Coolpad, Samsung, LG, HTC, Micromax
- Japan: Sony, Fujitsu etc.

EMS
- Foxconn, Asus, BYD, Quanta, HEG etc.

Application providers
- Ericsson, ZTE, Huawei, NOKIA, Samsung, Fujitsu, NEC etc.

Base stations
- Ericsson, ZTE, Huawei, NOKIA, Samsung, Fujitsu, NEC etc.

For R&D

For production

Own factories
### 2-20. Roadmap of LTE service

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LTE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LTE-Advanced</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LTE-Advanced Pro</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Service implementation trends of operators

- **Gigabit LTE**
  - 2CA: 150M bps
  - 3CA: 300M bps
  - 4CA: 450M bps
  - 5CA: 600M bps
  - 6CA: Gigabit LTE (1Gbps, 1.2Gbps)

**CA (Carrier Aggregation)**

- **DL4 x4MIMO**
- **LAA***

*LAA---Licensed-Assisted Access (using unlicensed band)*

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II-3. Industrial Test Solutions

Expand Earnings Opportunities by Supporting the Creation of New Markets and Various Industrial Fields through the Utilization of 5G

- Smart meter
- Home security
- Industrial Equipment

- 5G
  - LTE Advanced
  - LPWA
  - Multiple concurrent connections
    - Connect all the terminals and sensors around us to the internet
  - Ultra high speed
    - Download a movie of 2 hours in 3 seconds
  - Ultra low latency
    - Operate a remote robot in real time precisely
  - Advancement of automated driving
  - Remote control operation

- Units

- High Speed, Low Latency

Anritsu envision: ensure
II-3-1. Manufacturing solutions for Smart phone

**Current features**

1. Huawei, Vivo, Oppo
   The rise of China vendors and intensifying competition (נים)
2. The growth of the manufacturing market in India

**Solutions for 2G / 3G / LTE & Connectivity**

MT8870A
Universal
Wireless Test Set

**Smartphone Shipment Market Share in China by Vendor**

*Source: Gartner "Market Share: PCs, Ultramobiles and Mobile Phones, All Countries, 2Q18 Update" 24 Aug. 2018
Smartphone = Basic Phone, Premium Phone, Utility Phone
OS=Excluding WindowsRT and Proprietary
Graph created by Anritsu based on Gartner research

**Main Competitors**

Rohde & Schwarz, Keysight

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### II -3-2. R&D solutions for Smart Devices for IoT

#### B -1

**Wireless systems for achieving IoT**

- **Communication distance**
  - > km: LPWA
  - 100m: SIGFOX, LoRaWAN
  - 10m: NFC, Zigbee, Z-Wave
  - 1m: Bluetooth

- **Transmission rate**
  - 0.01 Mbps: SIGFOX, LoRaWAN, NB-IoT
  - 1 Mbps: Cat.M, Wi-SUN
  - 10 Mbps: Cat.1, Wi-Fi
  - 100 Mbps: 3G, LTE, 5G

**R&D Solutions for Cellular IoT**

- MT8821C Chipset
- MD8430A Signalling Tester
- SiP (System in Package)

**Main Competitors**

Rohde & Schwarz, Keysight
Ⅱ-3-3. Manufacturing solutions for Smart Devices for IoT

**Main Competitors**
Teradyne, National Instruments, Rohde & Schwarz, Keysight

**The growth of Connectivity & Module markets for IoT**

For WLAN / Bluetooth

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of IoT Devices (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8.7</td>
</tr>
<tr>
<td>2013</td>
<td>11.2</td>
</tr>
<tr>
<td>2014</td>
<td>14.2</td>
</tr>
<tr>
<td>2015</td>
<td>18.2</td>
</tr>
<tr>
<td>2016</td>
<td>22.9</td>
</tr>
<tr>
<td>2017</td>
<td>28.4</td>
</tr>
<tr>
<td>2018</td>
<td>34.8</td>
</tr>
<tr>
<td>2019</td>
<td>42.1</td>
</tr>
<tr>
<td>2020</td>
<td>50.1</td>
</tr>
</tbody>
</table>

*Source: World Economic Forum*

*SiP (System in Package)*

MT8862C **Wireless Connectivity Test Set**

MT8870A **Universal Wireless Test Set**

---

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### Adoption of new technologies in the automotive market and Anritsu’s initiatives

<table>
<thead>
<tr>
<th>Year</th>
<th>Advancement of automated driving</th>
<th>Mobile communication/connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Level 1</td>
<td>Mobile network simulator</td>
</tr>
<tr>
<td>2016</td>
<td>Level 2</td>
<td>Wireless communication</td>
</tr>
<tr>
<td>2017</td>
<td>Level 3</td>
<td>RF performance test</td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td>V2X communication quality</td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td>assessment</td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Telematics/eCall**
  - Spread of 4G telematics
  - Mandatory deployment of eCall
  - Active verification testing of V2X

- **79GHz high resolution automotive radar**
- **V2X (802.11p)**
  - Vehicle-to-vehicle/road-to-vehicle communications

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II -3-5. Food chain and players in Automotive market

Safety, Emergency, Comfort, Infotainment, Diagnostic

**Car Vendors**
- Autonomous car
- ADAS (Advanced Driver Assistance System)
- Telematics (Telecommunication + Informatics)
- ITS C-ITS (Intelligent Transport Systems)

**Dashboard Vendors**
- Transceiver module (Cellular + V2X + Connectivity + Antenna + etc.)
- Rader module
- Antenna
- Satellite receiver
- Tuner

**Module Vendors**
- Cellular module, Connectivity module, V2X module, Rader, Antenna, Connector, Cable, etc

**Chipset Vendors**
- Semiconductors for communication
II - 4. Network Reshaping Test Solutions

Further evolution towards 5G/IoT

Main Competitors
Viavi (formerly known as JDSU)

Current LTE Network + 5G Network

Reshaping the Future of Network Test Solution

Wireless
Integration
Optical
Transport (CPRI)
Optimization

MT8220T BTS Master

[ Cloud Solution ]
II -4-1. Test Solutions for support of Cloud Service expanding

Data traffic extending explosively

Global Data Center Traffic Growth
Source: Cisco Global Index 2015-2020

- Expansion of Data Center
- Higher-speed
- Larger-capacity
- Conversion to fiber optics

DCI
High speed communication
10G/40GbitE→100G/200/400GbitE

Main Competitors
Keysight

Equipment (Router, Switch) vendors in Data Center

Optical module vendors

Optical device vendors

Manufacturing, I&M
Ⅲ. PQA Business segment
General examples of food production process

- Contamination
- Variation in the amount of contents
- Breaks and chips
- Defective packaging (sealing)
- Printing error/Print blur

Major customers

Mondelez, Nestle, Kraft Heinz, Nippon Ham Group, Glico Group, Nissui Group, etc.
Ⅲ - 2-1. The growing PQA business < PQA >

### Market Major initiatives

<table>
<thead>
<tr>
<th>Market</th>
<th>Major initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America, EMEA, Asia</td>
<td>Develop market with X-ray inspection systems as a key solution</td>
</tr>
<tr>
<td>Japan</td>
<td>Improve market share through quality assurance solutions with high added value in response to cutting-edge needs</td>
</tr>
</tbody>
</table>

### Main Competitors

Mettler-Toledo, Ishida, Marel

![Graph showing revenue and operating margin from FY10 to FY202x](graph.png)
Ⅲ -2-2. PQA Business: Current Status of the PQA Market and Outlook

- **EMEA**: More stringent quality assurance for the retail industry
  - 2017: EMEA 40%
  - 2020: Americas 30%
  - Japan: 15%
  - Asia: 15%

- **Americas**: Penetration of the X-ray inspection market
  - 2017: Americas 30%
  - 2020: Japan: 15%

- **Asia**: Expansion of demand for processed food
  - Rising personnel expenses
  - 2017: Asia 15%
  - 2020: Japan: 15%

- **Japan**: Automation and labor saving for production lines in response to a manpower shortage
  - 2017: Japan: 15%
  - 2020: Japan: 15%

Global market size of 200 billion yen (estimated by Anritsu in 2017)
Average growth rate of 4% expected by 2020
**IV-1. Financial Strategy**

**<Target>**

- Ratio of net assets to total assets: \( \geq 60\% \)
- D/E ratio: \( \leq 30\% \)

*Note: The chart illustrates the financial ratios from 2011.3 to 2019.3, with specific ratios and trends indicated for each year.*
IV-1-1. GLP2020 : Financial strategy

**Basic policy**

Improve corporate value KPI (ACE & ROE) through growth investment (including M&As) with a return of more than 7% of equity cost and capital efficiency improvements

* ACE (Anritsu Capital-cost Evaluation): Operating income after tax-Capital Cost (WACC, 5%)

Goal : ROE ≥ 15%

- ACE (B Yen)
- ROE (%)
IV-2. Shareholder Return Policy

**Dividend Policy**

Distribute profits in accordance with its consolidated performance (Net profit) and by taking into account the total return.

1. Take the basic approach of raising dividends on equity (DOE) in accordance with the increase in consolidated profits for the fiscal year.

2. Aim at a consolidated dividend payout ratio of 30 percent or more.

3. Flexibly provide shareholder returns taking into account the total return ratio.
### IV- 2- 1. Dividend forecast

#### Annual dividend

<table>
<thead>
<tr>
<th>FY2019 (Forecast)</th>
<th>Dividend per share</th>
<th>Profit</th>
<th>Payout ratio</th>
<th>DOE</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>22 yen</td>
<td>8.5 B yen</td>
<td>35.6%</td>
<td>3.6%</td>
<td>10.0%</td>
</tr>
<tr>
<td>FY2018</td>
<td>22 yen</td>
<td>9.0 B yen</td>
<td>33.7%</td>
<td>3.7%</td>
<td>10.9%</td>
</tr>
</tbody>
</table>

![Graph showing dividend forecast from 2014/3 to 2020/3 (forecast)](image-url)
IV-3. Corporate Philosophy and Sustainability Policy

Company Philosophy
Contribute to the development of a safe, secure, and prosperous global society by offering Original & High Level products and services with sincerity, harmony, and enthusiasm.

Company Vision
Achieve continuous growth with sustainable superior profits through innovation, using all knowledge of all parties and contribute to the sustainability of society.

Sustainability Policy
1. We will contribute to building a safe, secure, and comfortable society through our business activities, based on our long-term vision.
2. We will maintain harmony with the global socio-economy and society through ethical company activities.
3. We will contribute to the preservation of the global environment by promoting environmental management for the coexistence of people and nature.
4. We will build strong partnerships by promoting communication with all stakeholders.
Ⅳ-3-1. Set sustainability management as our axis
IV-3-2. Sustainability Goals (SDGs)

**Social Issues We Address through Our Business Activities**

**Anritsu Group**
Contribute to the promotion of innovations and an industrial structure that builds a sustainable society, and creation of safe and secure infrastructure

**T&M**
Contribute to building a sustainable society through the maintenance of a robust network linking all things related to safety and security

**PQA business**
Contribute to realizing a sustainable society and in which everyone can live with a sense of safety and security and in which food loss is minimized by enhancing Products Quality Assurance for food and pharmaceuticals

**Challenges to meet the needs of society (ESG)**

**Maintaining Harmony with the Global Socio-Economy**
Together with diverse Human resources, we seek to contribute to the creation of workplaces where each individual can achieve personal growth and experience job satisfaction.

**Expanding and Strengthening Governance**
Ensuring ethical corporate activities through risk management and fair, quick, and effective decision making

**Promoting Global Environmental Protection**
Contributing to the creation of a society with sustainable consumption and sustainable corporate production practices.

**The Creation of Shared Value through the Promotion of Communication**
Contributing to the creation of shared value with collaboration among all stakeholders
IV-4. Corporate Governance System
For improving competitiveness and continuously enhancing corporate value
V. Financial Results for the 2nd quarter of the Fiscal Year ending March 31, 2020

Note: The announced on October 30
### V -1. Consolidated performance - Financial results -

#### Year-on-year growth in revenue and profit

<table>
<thead>
<tr>
<th>International Financial Reporting Standards (IFRS)</th>
<th>FY2018 (Apr. to Sep.)</th>
<th>FY2019 (Apr. to Sep.)</th>
<th>YoY</th>
<th>YoY (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order Intake</td>
<td>47.9</td>
<td>53.6</td>
<td>5.7</td>
<td>12%</td>
</tr>
<tr>
<td>Revenue</td>
<td>44.3</td>
<td>49.8</td>
<td>5.5</td>
<td>12%</td>
</tr>
<tr>
<td>Operating profit (loss)</td>
<td>3.5</td>
<td>6.6</td>
<td>3.1</td>
<td>90%</td>
</tr>
<tr>
<td>Profit (loss) before tax</td>
<td>3.7</td>
<td>6.4</td>
<td>2.7</td>
<td>73%</td>
</tr>
<tr>
<td>Profit (loss)</td>
<td>3.1</td>
<td>4.7</td>
<td>1.6</td>
<td>49%</td>
</tr>
<tr>
<td>Comprehensive income</td>
<td>4.4</td>
<td>3.4</td>
<td>(1.0)</td>
<td>-23%</td>
</tr>
</tbody>
</table>

Note: Numbers are rounded off to the first decimal place in each column.
## V -2. Consolidated performance - Results by business segment -

T&M: Steady development demand for 5G

<table>
<thead>
<tr>
<th>International Financial Reporting Standards (IFRS)</th>
<th>FY2018 (Apr. to Sep.)</th>
<th>FY2019 (Apr. to Sep.)</th>
<th>YoY</th>
<th>YoY (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T&amp;M</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>29.2</td>
<td>35.2</td>
<td>6.0</td>
<td>21%</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>2.5</td>
<td>5.9</td>
<td>3.4</td>
<td>132%</td>
</tr>
<tr>
<td><strong>PQA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>11.4</td>
<td>10.7</td>
<td>(0.7)</td>
<td>-6%</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>0.9</td>
<td>0.5</td>
<td>(0.4)</td>
<td>-46%</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>3.7</td>
<td>3.9</td>
<td>0.2</td>
<td>5%</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>0.4</td>
<td>0.7</td>
<td>0.3</td>
<td>52%</td>
</tr>
<tr>
<td><strong>Adjustment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>(0.3)</td>
<td>(0.4)</td>
<td>(0.1)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>44.3</td>
<td>49.8</td>
<td>5.5</td>
<td>12%</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>3.5</td>
<td>6.6</td>
<td>3.1</td>
<td>90%</td>
</tr>
</tbody>
</table>

Note1: Numbers are rounded off to the first decimal place in each column.

Note2: Adjustment includes elimination of inter-segment transactions and non distributed company-wide expenses of each business segment.

T&M: Test & Measurement       PQA : Products Quality Assurance
### V-3. Consolidated performance - Revenue and Op. profit by quarters -

2Q (July-Sep.) Operating margin: Consolidated 15%, T&M 18%, PQA 9%

<table>
<thead>
<tr>
<th></th>
<th>FY2018</th>
<th>FY2019</th>
<th>FY2018</th>
<th>FY2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Q</td>
<td>14.4</td>
<td>14.8</td>
<td>19.4</td>
<td>19.6</td>
</tr>
<tr>
<td>2Q</td>
<td>21.0</td>
<td>23.4</td>
<td>26.8</td>
<td>28.5</td>
</tr>
<tr>
<td>3Q</td>
<td>19.4</td>
<td>19.6</td>
<td>17.3</td>
<td>17.9</td>
</tr>
<tr>
<td>4Q</td>
<td>17.3</td>
<td>17.9</td>
<td>14.8</td>
<td>15.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>FY2018</th>
<th>FY2019</th>
<th>FY2018</th>
<th>FY2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Op. profit(loss)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1Q</td>
<td>1.6</td>
<td>0.1</td>
<td>1.9</td>
<td>0.2</td>
</tr>
<tr>
<td>2Q</td>
<td>4.2</td>
<td>3.5</td>
<td>4.0</td>
<td>3.6</td>
</tr>
<tr>
<td>3Q</td>
<td>1.5</td>
<td>0.7</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>4Q</td>
<td>2.7</td>
<td>2.8</td>
<td>2.9</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Note: Numbers are rounded off to the first decimal place in each column.
## V-4. Overview of operations by business segment

<table>
<thead>
<tr>
<th>Segment</th>
<th>FY2019 2Q (April to Sep., 2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T&amp;M</strong></td>
<td>Steady progress of 5G commercialization schedule</td>
</tr>
<tr>
<td><strong>Mobile</strong></td>
<td></td>
</tr>
<tr>
<td>LTE</td>
<td>Continued curbing and reduction of investment in LTE-A</td>
</tr>
<tr>
<td>5G</td>
<td>5G development demand remains steady</td>
</tr>
<tr>
<td><strong>Network Infrastructure</strong></td>
<td>Launch of 5G network infrastructure</td>
</tr>
<tr>
<td>Asia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expansion in investment from 5G pre-service in China</td>
</tr>
<tr>
<td>Americas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Launch of 5G service. Will pay close attention to the future area expansion.</td>
</tr>
<tr>
<td><strong>PQA</strong></td>
<td>Strong investment by food market for quality assurance, automation, and labor saving both in Japan and overseas</td>
</tr>
</tbody>
</table>

**T&M:** Test & Measurement  **PQA:** Products Quality Assurance
V-5. Transition of Order intake

- **T&M**: 16% growth year on year
- **PQA**: 3% growth year on year

Note: Numbers are rounded off to the first decimal place in each column.
V -6. Transition of Revenue by region

Revenue rose year on year in Asia and Japan, backed by strong 5G demand

Note : Numbers are rounded off to the first decimal place in each column.
V - 7. Cash Flow

Operating cash flow margin ratio was 17.4%

FY2019 2Q
Operating CF : 8.7 Bn. Yen
Investing CF : (1.1) Bn. Yen
Financing CF : (5.7) Bn. Yen

Free Cash Flow
Op. CF + Inv. CF : 7.6 Bn. Yen

Cash at the end of period
46.1 Bn. Yen

Interest-bearing debt (including lease liabilities)
14.7 Bn. Yen

Note: Numbers are rounded off to the first decimal place in each column.
## V - 8. Forecast for full year of FY2019 (Consolidated)

### Upward revision in revenue and profit forecast for T&M

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Full Year</td>
<td>YoY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Previous Forecast</td>
<td>Revised Forecast</td>
</tr>
<tr>
<td></td>
<td></td>
<td>YoY(%)</td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>99.7</td>
<td>102.0</td>
<td>103.0</td>
</tr>
<tr>
<td>Operating profit (loss)</td>
<td>11.2</td>
<td>10.0</td>
<td>11.5</td>
</tr>
<tr>
<td>Profit (loss) before tax</td>
<td>11.4</td>
<td>10.0</td>
<td>11.5</td>
</tr>
<tr>
<td>Profit (loss)</td>
<td>9.0</td>
<td>7.5</td>
<td>8.5</td>
</tr>
<tr>
<td>T&amp;M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>68.2</td>
<td>69.0</td>
<td>70.0</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>9.4</td>
<td>8.0</td>
<td>9.5</td>
</tr>
<tr>
<td>PQA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>23.1</td>
<td>24.5</td>
<td>24.5</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>1.6</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>8.4</td>
<td>8.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>1.1</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Adjustment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Op. profit (loss)</td>
<td>(0.9)</td>
<td>(0.9)</td>
<td>(0.9)</td>
</tr>
</tbody>
</table>

Note: Numbers are rounded off to the first decimal place in each column.

Reference: Exchange rate:
- FY2018 (Actual): 1USD=111 yen, 1EURO=128 yen
- FY2019 (Initially Forecast): 1USD=105 yen, 1EURO=125 yen
- FY2019 2H (Forecast): 1USD=105 yen, 1EURO=125 yen