QRT Inc.

Quality

Reliability

Technology

Professional company in reliability test and failure analysis

www.qrtkr.com
Dear customer, How do you do?
I am Kim, Young-boo, CEO of QRT Inc.

Over the past few decades, the world electronics industry has grown very rapidly, particularly technology in the semiconductor field which is more widely applied for every new product.

In spite of this remarkable growth and development, the reliability evaluation and failure analysis technology service field, which is needed for securing quality of various components and parts including semiconductor, is so inadequate that many companies are currently experiencing a number of difficulties in several stages of business such as reliability evaluation of new products, mass production quality assurance and responding to customer claims.

Accordingly, our QRT Inc. has contributed to the reliability improvement and quality advancement of every industry related to electronic components including domestic and foreign mobile, display, automotive electric components and eco-friendly market on the basis of the quality evaluation technology and professional technology manpower, which has been developed as a core specialized field for over 30 years in SK Hynix Semiconductor, the country’s representative enterprise. So far, QRT Inc. has provided the reliability evaluation and failure analysis services to a lot of customers with cutting-edge technology and equipment, fast service, and these efforts have led to realizing customer satisfaction and opportunities for our company also to grow along with, so we heartily thank our customers, and these all results can be achieved by our customers’ constant interest and support.

We are building the diversified foundation of growth to jump up to be a valuable company giving greater satisfaction consistently also in the future, and trying to be a companion who can create a greater impression to customers by strengthening activities such as investing in new technology development and equipment, efficient management of organization, procuring and cultivating outstanding talents and personnel.

We, QRT Inc., will do always our best to achieve mutual progress through customers’ development and business success with the world’s highest quality and competitive service as an everlasting partner of our customers now and for ever.

Our customers are at the center of QRT Inc. A better future we will make based on our management philosophy of creating a community, with all our hearts, to pleasantly work with customers and will be always with our customers.

Please keep an eye with encouragement and support on QRT Inc. making constant efforts to jump up to a new look. Thank you.

VISION
Create success to customers with technology and devotion our future with challenge and innovation.
### Reliability Test

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Test</td>
<td>Early Life Failure Rate Test (ELFR)</td>
<td>Verification of durability and forecast of life time through operating and environmental acceleration tests, considering user environment</td>
</tr>
<tr>
<td></td>
<td>High Temperature Operating Life Test (HTOL)</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
<tr>
<td></td>
<td>Low Temperature Operating Life Test (LTOL)</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
<tr>
<td></td>
<td>High Temperature Gate Bias Test (HTGB)</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
<tr>
<td></td>
<td>High Temperature Forward Bias Test (HTFB)</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
<tr>
<td></td>
<td>High Temperature Reverse Bias Test (HTRB)</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
<tr>
<td></td>
<td>Non-volatile memory (Flash) Reliability Test</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
</tbody>
</table>

| Environment Test  | Moisture Sensitivity Classification (MSC) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Preconditioning Test | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | High/Low Temperature Storage Test (THS) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Temperature Humidity Bias Test (THB) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Temperature Humidity Storage Test (THS) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Temperature Cycle Test (TC) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Power Temperature Cycle Test (P/TC) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Liquid Thermal Shock Test (LTS) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Highly Accelerated Stress Test (HAST/UAHAST) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |
|                   | Pressure Cooker Test (PCT) | - Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc |

### Physical & Mechanical Test

<table>
<thead>
<tr>
<th>Vibration/Combined Environment</th>
<th>Vibration Test (VIB)</th>
<th>Combined Environmental Reliability Test (CERT)</th>
<th>High Accelerated Life Test (HALT)</th>
<th>Verification of durability in regard to vibration, complex environment (temperature, humidity &amp; vibration) and shock/drop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock/Drop</td>
<td>Mechanical Shock Test (MS)</td>
<td>Package/Box Drop Test (Drop)</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
<td></td>
</tr>
<tr>
<td>Board Level</td>
<td>Board Level Drop/Bending/Temperature Cycle/Vibration</td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Stress Test

<table>
<thead>
<tr>
<th>ESD/ESD/AC-EMI</th>
<th>IC ESD Test (HBM/MM/CDM)</th>
<th>Latch-up</th>
<th>System Level Gun ESD Test (Gun-ESD)</th>
<th>Electrical Overstress Test (EOS)</th>
<th>IC Level EM Test (IE-EMI)</th>
<th>Electrical Load Test for Automotive Application</th>
<th>Verification of compatibility for various electrical stress (from IC to end products of system)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Applicable Standards - International Standard for IEC, ISO, etc - Product Standard for JEDEC, AEC, MIL-STD, etc - OEM Requirements for automotive such as ES, GM, etc</td>
</tr>
</tbody>
</table>

### Integrated Analysis

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-destructive Analysis</td>
<td>X-Ray Analysis</td>
<td>Scanning Acoustic Analysis / SAT / SAM Electrical Characteristic Analysis (Curve Tracing)</td>
</tr>
<tr>
<td>Destructive Analysis Sample Preparation</td>
<td>Decapsulation / De-cap Chip Delayering Cross Section</td>
<td></td>
</tr>
<tr>
<td>Failure Analysis</td>
<td>Scanning Electron Microscope (SEM)</td>
<td>- Energy Dispersive Spectroscopy (EDS) - EMX (PHOTS/THMOS)</td>
</tr>
</tbody>
</table>

### FIB Analysis


### Material Analysis


### Organic Analysis

| Gas Chromatography (GC) | Gas Chromatography-Mass Spectrometry (GC-MS) | Fourier Transform Infrared Spectroscopy (FT-IR) | Ultraviolet Visible Spectroscopy (UV/Vis) |

### Inorganic Analysis

| Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) | Inductively Coupled Plasma Mass Spectrometry (ICP-MS) | X-Ray Fluorescence Spectrometry (XRF) | Ion Chromatography (IC) |

### Training & Consulting

| Training Consulting Factory Audit | Production and Process Management | Quality Guarantee and Reliability Establishment | Certification and Diagnosis of Quality Management System | Internal Audit/Leadership/Coaching |
Quality Certification for Automotive Electronic Components

Qualification Requirements for High Quality and Reliability of Automotive Electronic Components

OEM Components Qualification Specification ES95400 / ES95910 / ES90000 Series and etc

AEC-Q100 Integrated Circuits

AEC-Q101 Discrete Semiconductors

AEC-Q200 Passive Components

Main Automotive application components

Driver information
- Dashboard display
- Car navigation

Security
- Immobilizer
- Car alarm

Powertrain
- Engine control system
- Transmission
- Fuel injection
- Fuel pump

Safety
- Airbag
- Seat occupation detection
- Pedestrian protection
- Night Vision
- Tire air pressure detection

Chassis
- Power steering
- Braking
- VDM

Body electricals
- BCM
- CAN gateway
- Light controls

JEDEC, AEC-Q100, 101, 200, OEM in-house spec.

Certifications, AEC Standards & OEM Specification Required for Automotive Electrical Components

AEC-Q100 Integrated Circuits

AEC-Q101 Discrete Semiconductors

AEC-Q200 Passive Components

Evaluation of Lead-free Solder Applied Electrical Components

Composition of main Automotive application components

Component Level Qualification

Sub. System Level Qualification

Automotive Level Mechanical Durability
AEC-Q100, the reliability evaluation standard for integrated circuits (IC), defines 4 classes in regard to available temperature range. It is composed of various reliability tests that target not only information on design and production but also core failure mechanism. It is a suitable standard for automotive semiconductor evaluation that requires high reliability.

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Ambient Operating Temp. Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 0</td>
<td>-40°C to +150°C</td>
</tr>
<tr>
<td>Grade 1</td>
<td>-40°C to +125°C</td>
</tr>
<tr>
<td>Grade 2</td>
<td>-40°C to +105°C</td>
</tr>
<tr>
<td>Grade 3</td>
<td>-40°C to +85°C</td>
</tr>
</tbody>
</table>

AEC-Q101 is the standard for evaluating discrete components that consist of only one component, such as FET, Diode, IGBT, and Transistor. It consists of tests that can evaluate the physical durability and characteristics of high heat power semiconductors or optical semiconductors.

<table>
<thead>
<tr>
<th>Minimum Temp. Range</th>
<th>Discrete Semiconductor Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40°C to +125°C</td>
<td>discrete semiconductors except for LEDs</td>
</tr>
<tr>
<td>-40°C to +85°C</td>
<td>all LEDs</td>
</tr>
</tbody>
</table>

**Qualification Test Flow for Integrated Circuits**

**Qualification Test Definitions for Discrete Semiconductors**

<table>
<thead>
<tr>
<th>Stress</th>
<th>Area</th>
<th>Test type</th>
<th>Note</th>
<th>Sample Size</th>
<th>Acceptance (current revision)</th>
<th>Additional requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre- and Post-Stress Electrical Test</td>
<td>TEST 1 NG</td>
<td>parts tested per the requirements of the applicable part specification.</td>
<td>0</td>
<td>JESD22-A113</td>
<td>Preconditioned components must be tested prior to Test 7, 8, 9, 10, 11, and 12 before any post-processing. Any replacement of parts must be reported.</td>
</tr>
<tr>
<td>2</td>
<td>Pre-processing</td>
<td>PE 1 NG</td>
<td>SMD qualification parts meeting the requirements of the applicable part specification.</td>
<td>0</td>
<td>JESD22-A113</td>
<td>Preconditioned components must be tested prior to Test 7, 8, 9, 10, 11, and 12 before any post-processing. Any replacement of parts must be reported.</td>
</tr>
<tr>
<td>3</td>
<td>Internal Visual</td>
<td>PV 1 NG</td>
<td>Discrete semiconductor part to be tested.</td>
<td>0</td>
<td>JESD22-A113</td>
<td>Discrete semiconductor part to be tested.</td>
</tr>
<tr>
<td>4</td>
<td>Parametric</td>
<td>PV 1 NG</td>
<td>Individual AEC over specification test.</td>
<td>0</td>
<td>JESD22-A113</td>
<td>Individual AEC over specification test.</td>
</tr>
<tr>
<td>5</td>
<td>High Temperature Reverse Bias</td>
<td>HTBM 1 NG</td>
<td>Individual AEC over specification test.</td>
<td>0</td>
<td>JESD22-A113</td>
<td>Individual AEC over specification test.</td>
</tr>
<tr>
<td>27</td>
<td>Electrically Evident Defects</td>
<td>EED 1 NG</td>
<td>1</td>
<td>0</td>
<td>AEC-Q100-005</td>
<td>Tests for electrically evident defects.</td>
</tr>
<tr>
<td>26</td>
<td>Short Circuit Failure Characterization</td>
<td>SCR 1 NG</td>
<td>1</td>
<td>0</td>
<td>AEC-Q100-005</td>
<td>Tests for short circuit failures.</td>
</tr>
<tr>
<td>25</td>
<td>Lead Free</td>
<td>LF 1 NG</td>
<td>1</td>
<td>0</td>
<td>AEC-Q100-005</td>
<td>Tests for lead-free solder joint reliability and solderability requirements.</td>
</tr>
</tbody>
</table>
Automotive Electronics Qualification

**AEC Q200**

AEC-Q200 is the evaluation standard for passive elements such as Capacitor, Inductor, and Resistor. The minimum temperature range that is required for each product is provided in the table below, and this consists of tests that take into account the characteristics of passive elements such as flammability and lead integrity.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Temp. Range</th>
<th>Passive Component Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-50°C to +150°C</td>
<td>Flat chip ceramic Resistors, X8R ceramic capacitors</td>
</tr>
<tr>
<td>1</td>
<td>-40°C to +125°C</td>
<td>Capacitor Networks, Resistors, Inductors, Transformers, Thermistors, Resonators, Crystals and Varistors, all other ceramic and tantalum capacitors</td>
</tr>
<tr>
<td>2</td>
<td>-40°C to +105°C</td>
<td>Aluminum Electrolytic capacitors</td>
</tr>
<tr>
<td>3</td>
<td>-40°C to +85°C</td>
<td>Film capacitors, Ferrites, R/R-C Networks and Trimmer capacitors</td>
</tr>
</tbody>
</table>

**Qualification Test Definitions for Passive Components**

<table>
<thead>
<tr>
<th>Qualification Sample Size Requirements</th>
<th>Stress</th>
<th>NO.</th>
<th>Note</th>
<th>Sample Size Per Lot</th>
<th>Number of lots</th>
<th>Accept on Number Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- and Post-Stress Electrical Test</td>
<td>1</td>
<td>G</td>
<td></td>
<td>Any qualification parts submitted for testing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>High Temperature Exposure</td>
<td>3</td>
<td>DG</td>
<td></td>
<td>Note B</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Temperature Cycling</td>
<td>4</td>
<td>DG</td>
<td></td>
<td>Note B</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Destructive Physical Analysis</td>
<td>5</td>
<td>DG</td>
<td></td>
<td>Note B</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Shear Strength</td>
<td>31</td>
<td>DG</td>
<td></td>
<td>30</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Short Circuit Fault Current Durability</td>
<td>32</td>
<td>DG</td>
<td></td>
<td>30</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Fault Current Durability</td>
<td>33</td>
<td>DG</td>
<td></td>
<td>30</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>End-of-Life Mode Verification</td>
<td>34</td>
<td>DG</td>
<td></td>
<td>30</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Jump Start Endurance</td>
<td>35</td>
<td>DG</td>
<td></td>
<td>30</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Load Dump Endurance</td>
<td>36</td>
<td>DG</td>
<td></td>
<td>30</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**QRT Inc. AEC Standard Full Coverage Service**

The certification test demands that follow AEC standards are increasing as the demand for high-reliability semiconductors are mounting. However, it was not easy to find a laboratory at home and abroad that provides all the tests defined in each standard. QRT Inc. has been putting efforts into constructing the requirements of the AEC standard, and is now providing Full Coverage Qualification Services for customer satisfaction.

QRT Inc. can execute tests in regard to the conditions of each class required for automobile electronic components, and we also have a system to evaluate environment tests, life tests, electrical characteristics and mechanical characteristics for reliability evaluation that satisfies the AEC-Q Standard. Furthermore, we can give a quick feedback since we are running a failure analysis lab that can instantly analyze the occurred failure. In regard to the AEC Inc Test, the person in charge provides a 1-on-1 **One Stop Service** to minimize customer inconvenience and increase efficiency of the work procedure.
The electronic system for Automotives is gradually turning into smart electronic equipment, from equipment that passively assists driving or driver's condition to equipment that predicts the situation and controls the system with the goal of achieving a complete automated driving system. Following this trend, the regulations of ISO 26262 define systematic safety requirements to minimize physical damage due to failure in electronic devices. Since functional stability can be established with component reliability as the foundation, the OEM standards for certification and evaluation of components is getting reinforced.

The test that is demanded in the ES standard requires conducting sequential tests and the use of special/large equipment. Thus, it is important whether laboratory capacity and the equipment can be provided all at once. In addition, with the 24/7/365 operating system as the foundation, functional tests can be provided and custom sequence operation is possible at any time that the consumer prefers, be it before, during, or after the test.
### One-Stop Integrated Analysis Service

- **Analysis of material microstructure and fine cross section of micro area**
- **Component analysis of material surface, distribution chart and survey depth profiling**
- **Qualitative and quantitative analysis of inorganic compounds**
- **Qualitative and quantitative analysis of organic compounds**

### Material Analysis Service

#### Micro Structure Analysis
- FE-SEM Analysis
- Dual FIB Analysis
- TEM Analysis
- EDS Analysis
- EELS Analysis

#### Surface Analysis
- AFM Analysis
- TOF-SIMS Analysis
- AES Analysis
- XPS Analysis
- XRD Analysis

#### Organic Analysis
- GC Analysis
- GC-MS Analysis
- FT-IR Analysis
- UV/Vis Analysis

#### Inorganic Analysis
- ICP-OES Analysis
- ICP-MS Analysis
- XRF Analysis
- IC Analysis
Training and Consulting

Training, Consulting and Factory Audit

- **Training**
  Provides comprehensive and essential core programs that include not only basic theories to improve the reliability and quality of the product, but also on-site training (training process open for negotiation).

- **Consulting**
  Provides guidelines for the innovation of product production process and quality improvement.

- **Factory Audit**
  Helps for a clear understanding of the suppliers’ production capacity, quality control system, and management and operation procedures.

Business to support Co-utilization of Research Equipment Audit

- **Business Purpose**
  Establish the foundation for boosting the utilization of the equipment in institutions and improving the technology competitiveness of small and medium-sized businesses, by supporting co-utilization of the research equipment and software that universities and research institutions possess in the research & development of the small and medium-sized firms www.smtech.go.kr (comprehensive management system) ▶ refer to business announcement for details.

- **Target for Support**
  Small and medium-sized businesses that plan on conducting research & development

- **Support Range**
  Supports equipment fees in the form of online vouchers (coupon) to small and medium-sized businesses, that use research equipment that universities and research institutions possess for research & development purposes (the upper bound for government subsidies has been increased in 2016).

<table>
<thead>
<tr>
<th>Business classification</th>
<th>Government subsidy (Under 70% (Max. 70 million Won))</th>
<th>Expense share for company (Over 30% (Cash))</th>
<th>Total Voucher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Startup companies (companies under 7 years)</td>
<td>Under 70% (Max. 70 million Won)</td>
<td>Over 30% (Cash)</td>
<td>100%</td>
</tr>
<tr>
<td>General companies (companies over 7 years)</td>
<td>Under 60% (Max. 70 million Won)</td>
<td>Over 40% (Cash)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: If a general company purchases 10 million Won worth of vouchers ▶ 6 million Won (60% government subsidy) + 4 million Won (40% expense share for company).

- **Standard for issuing test report**
  - Permitted: R&D results, for management of quality, for analysis of factors for failure, for certification (only for certification of new technology)
  - Unacceptable: delivery, for certification
  - Only for certification of new technology development such as NET (new technology), NEP (new product), new environmental technology, new construction technology.

- **Application Period**
  By the end of December of the year the business started (early deadline when the budget is exhausted).

- **Application method**
  - During business period, regular online application available at www.smtech.go.kr
  - Apply by writing equipment utilization plan and application form at www.smtech.go.kr
  - The participating firm that has once been approved can continue to participate in the business until the end date (end of December of the year) unless additional restrictions are imposed
  
  * For further details on this business, please contact the people in charge listed below.

- **People in charge**
  Senior Researcher Lee, Seonghun: +82-31-8094-8253 sunghun.lee@qrtkr.com
  Researcher Ahn, Minkue: +82-31-8094-8251 minkue.ahn@qrtkr.com
Reliability Test Service (AEC/JEDEC/OEM Specification)

- Client
  - Product Information: Datasheet/Pin Layout
  - Package Information: Pin count / Dimension
  - Consultation about Board Manufacturing Condition
  - HTOL: Test Vector Operation Timing Operating Voltage
  - THB: Bias Configuration Rising Voltage
  - ESD: Zapping Voltage Zapping Mode

- QRT Inc.
  - Receive Test Request
  - Review of conditions
  - Accept Purchase Order (PO)
  - Progress Manufacturing of Board
  - Test Board Receipt/Acceptance
  - Progress Reliability Test

- Remarks
  - Issuing Estimates
  - Accept Purchase Order (PO)
  - 3~4 weeks are required for manufacturing the board

Analysis Service

- Client
  - Check the requested items
  - Preparing the request and sending specimens
  - Review of Analysis Results
  - Troubleshooting

- QRT Inc.
  - Accept the request and specimen
  - Review of analysis information
  - Carrying out the analysis
  - Sending the analysis result
  - Sending the estimate
  - Issuing the tax invoice

Essential Certification status and Support Business

- Accreditation
  - KOLAS: Quality reliability technology
  - IPC: Essential Certification status and Support Business

- Description
  - QRT Inc. had acquired the country’s first KOLAS international certified testing institution qualification for industrial and automotive semiconductor fields in 2004 and 2009, respectively. Because the products, which had passed test in QRT Inc. didn’t need to undergo an extra additional test by mutual recognition for domestic and overseas sales, the cost of testing can be reduced and the development period can be shortened.

- QRT Inc. is selected as a lead agency of the research equipment co-utilization support project, so small and medium-sized businesses can be supported by 60 to 70% from the Small and Medium Business Administration by using the company’s equipment and service for the R&D purpose (see www.smtech.go.kr).

- QRT Inc. acquired the Certified IPC Specialist (IPC officially recognized engineer) qualification for IPC-A-610 (Acceptability of Electronics Assemblies) and IPC-A-600 (Acceptability of Printed Boards) of IPC (Institute for Printed Circuits), so contributes to improving quality/reliability in the ICT electronics industry.

Global Network

To cover the whole spectrum of the electronics industry from IC to end Products.

Sales Network

Construction of nationwide service network

Customer and Technology Support

Contact Information of main people in charge

- Semi-conductor Test & Analysis
  - Jeong, Hanchul: +82-31-8094-8212
  - Lee, Jinsu: +82-31-8094-8214

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