

**Panasonic**

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**Panasonic Avionics Corporation**

**SUPPLIER QUALITY ASSURANCE  
REQUIREMENTS**

**“SQAR”**

Revision: F

Sep.12, 2007

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REV	DATE	DESCRIPTION	SECTION/PAGE	AUTHOR	MANAGER
NEW	7/3/06	Initial Release (Replacing SQAR-2 & -3)	N/A	Peter Shaybani	Sandra Stipp
A	8/11/06	Added EN to AS9100; Added note about suppliers outside of USA.	Sec. 3/P. 4	Peter Shaybani	Sandra Stipp
	8/11/06	Modified Paragraph to include EASA requirements.	Sec. 10/P. 5	Peter Shaybani	Sandra Stipp
	8/11/06	Added paragraph for non-USA seller may provide EASA form1 instead of C of C as long as it contains all required data.	Sec. 20/P. 7	Peter Shaybani	Sandra Stipp
	8/11/06	Added All <b>USA</b> based Panasonic Avionics Suppliers instead of All Panasonic Avionics Suppliers	Sec. 23/P. 8	Peter Shaybani	Sandra Stipp
B	9/29/06	Rewrote Sec. 23 in its entirety.	Sec.23/P. 8	Sandra Stipp	Sandra Stipp
C	1/4/07	Added additional requirements	Sec. 7/P. 5	Peter Shaybani	Sandra Stipp
D	1/31/07	Per request from PAC Bothell Repair Station:  Changed 14 CFR Part 121.303 (H) FAA" Fabrication: Inspection Systems Requirements" to 14 CFR Part 121.303 FAA" Operating Requirements: Airplane Instruments & Equipment".  Changed 14 CFR Part 145.45 FAA" Repair Stations: Inspection System Requirements" to 14 CFR Part 145.217 FAA" Repair Stations: Contract Maintenance"	Sec. 3/P. 4	Peter Shaybani	Sandra Stipp
E	2/17/07	Added RSACM, Repair Station and Quality Control Manual Added NAA, National Aviation Authority Re-wrote parts of the paragraph.	Sec. 3/P. 4 Sec. 3/P. 4 Sec. 23/P. 8	Peter Shaybani	Sandra Stipp
F	9/12/07	Formatted Scope Revised & added paragraphs 5.3, 5.4, 5.6, 5.7 to Prohibited Practices Formatted Responsibility for product conformance Revised & added paragraph 7.6 to seller's Records Revised Right of Entry & added EASA and NAA Formatted Source Inspection Formatted inspection & calibration system Formatted Age & Shelf Life Sensitive Items Formatted Panasonic Furnished Equipment Formatted Acceptable Signatures Formatted Product realization Formatted First article Inspection Formatted Product Safety Design Requirements Formatted Test Equipment Safety Certification Formatted Certification & Test Reports Formatted Packaging Formatted & upgraded CAPA Added Change of Charges (COC) Added Annual Internal Quality Audit Added Annual Management Review Added Language Moved FAA Drug & Alcohol Program Compliance	Sec. 2/P. 5 Sec. 5/P.6 Sec. 6/P.6 Sec. 7/P.6-7 Sec. 8/P. 7 Sec. 9/P.7 Sec. 10/P.7 Sec. 11/P.7 Sec. 12/P.8 Sec. 13/P.8 Sec. 15/P.8 Sec. 17/P.8 Sec. 18/P.9 Sec. 19/P.9 Sec. 20/P.9 Sec. 21/P.10 Sec. 22/P.10 Sec. 23/P.11 Sec. 24/P.11 Sec. 25/P.11 Sec. 26/P.11 Sec. 27/P.11	Peter Shaybani	Sandra Stipp

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Originator: Supervisor, GSQM– Peter Shaybani	Date:
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**1. PURPOSE**

This document establishes Quality Assurance requirements for Purchase Orders issued to all suppliers, referred to as Seller, by Panasonic Avionics Corp, referred to as Buyer. Sellers & their Sub-Tiers shall comply with all Purchase Order requirements & referenced documents. Seller shall flow down the requirements to its sources.

**2. SCOPE**

- 2.1** All documents including drawings and specifications, whether issued by Panasonic Avionics Corp, Industry, Government or Panasonic Avionics Corp’s Customers, are considered part of the Purchase Order requirements, when specified or referenced.
- 2.2** The revisions of documents are effective as of Purchase Orders issue date.
- 2.3** Seller is responsible for Certification of all Off-The-Shelf & Catalogue items, including testing equipments, to meet Quality & Safety requirements.

**3. REFERENCES**

Seller is responsible to obtain all Non-Panasonic Avionics documents at own cost, as required to their applicable “products/Processes”:

<b><u>Document ID#</u></b>	<b><u>Document Name</u></b>
ISO 9001:2000	Quality Management Systems- Requirements
ISO 10012-1	Quality Assurance Requirements for Measuring Equipment
ISO 14001	Environmental Management Systems- Requirements
EN/AS9100	Quality Management Systems- Aerospace – Requirements
EN/AS9102	(R) Aerospace- First Article Inspections – Requirement
EN/AS9103	Variation Management of Key Characteristics
EN/AS9110	Quality Maintenance Systems- Aerospace - Requirements for Maintenance Organizations
EN/AS9120	Quality Management Systems- Aerospace – Requirements for Stock list Distributors
ATA Specification 300	Specification for Packaging of Airline Supplies
14 CFR Part 121.303	FAA “Operating Requirements: Airplane Instruments & Equipment”
14 CFR Part 145.217	FAA “Repair Stations: Contract Maintenance”
BLO-QOP-22-01	Panasonic Avionics’ Product Safety Design Standard
BLO-QOP-22-02	Panasonic Avionics’ Product Safety Checklist
RSQCM	Repair Station and Quality Control Manual

Seller shall have a Quality System registered to the Quality Management System Standard, EN/AS9100 or ISO 9001 and associated documents, or a system equivalent to the EN/AS9100 or ISO 9001 and associated documents that meets the intent of the standard.

**NOTE:** Sellers located outside of USA, will comply to European Aviation Safety Agency (EASA) / National Aviation Authority (NAA) requirements in place of Federal Aviation Administration (FAA).

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#### **4. COMMUNICATIONS**

All communications related to the fulfillment of Purchase Order(s) shall be carried out through the Panasonic Avionics Procurement office which places the Purchase Order(s).

#### **5. PROHIBITED PRACTICES**

- 5.1 Seller shall not make design & product changes, substitutions or repairs, regardless of Design being controlled by Panasonic Avionics or the Seller, unless otherwise approved by Buyer in writing.
- 5.2 Seller shall not make any changes in facility(s) location(s), size & manufacturing processes unless the Buyer has been informed in writing prior to changes. This does not apply to clerical changes such as correcting errors on documents.
- 5.3 Seller shall not implement any changes to their QMS, including changes to the Quality Control system that may affect the inspection, conformity or airworthiness of the product, unless the buyer has been notified in writing & approved by Buyer prior to the changes.
- 5.4 Seller shall not subcontract or relocate any work to outside of USA until a written permission is issued by Buyer. Seller's declaration of intention shall include subcontractor's name, address, telephone number, name of Quality Manager (or designee), part name(s) & part number(s) affected by the change.
- 5.5 Steel Stamping and Vibro-Engraving identification methods are prohibited except on nameplates or attached metal tags, unless permitted by drawing.
- 5.6 Seller shall not sell or transfer any excess inventory of Panasonic Avionic Corp to a third party without prior written permission of the Buyer. Seller is held responsible for strict control of Buyer's inventory.
- 5.7 Seller shall not procure products & services from unapproved sources. As a minimum, Seller shall implement a system compliant to ISO9001:2000 purchasing, 7.4., and establish the criteria for selection & maintenance of the suppliers.

#### **6. RESPONSIBILITY FOR PRODUCT CONFORMANCE**

- 6.1 Sellers & their Sub-Tiers are responsible for Quality, Reliability & Safety of their products to meet all Form, Fit & Function requirements for Panasonic Avionics' parts/products.
- 6.2 Inspections & Audits do not relieve Sellers & their Sub-Tiers of any issues associated with their products.

#### **7. SELLER'S RECORDS**

- 7.1 Unless otherwise approved by Buyer in writing, Seller shall retain all required records for a minimum of Twenty (20) years after completion of the last installation or the life of the Aircraft, whichever time period is longer as objective evidence of conformance to Purchase Order requirements.
- 7.2 This requirement applies to all Panasonic Avionics' Suppliers that have accepted a Purchase Order at anytime.
- 7.3 These records, included but not limited to, are Design, Procurement, Materials, Manufacturing, Testing, Processing, Inspection, Preservation, packaging and Shipping Certificate documents with all related data and information.
- 7.4 If a seller is no longer holding "Approved" status with the Buyer, all above mentioned documents shall be submitted to Panasonic Avionics' Global Supplier Quality department upon termination of business relationship within Thirty (30) days or sooner, depending on urgency of the request.

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- 7.5 Seller's system shall include appropriate controls and records at Seller's sub-tier sources, showing the date, lot #, serial number, revision letter, or other positive identification that provides objective evidence of incorporation of all changes in product(s). Such records shall be subject to verification by Buyer and shall be available to the Buyer for review upon request.
- 7.6 Seller's shipping records shall include packing slip, certification of conformance which can be included as part of the packing slip, evidence of Seller's product acceptance and all purchase order requirements.
- 7.6 Based on written mutual agreement, Buyer can maintain the records for Seller, if Seller is unable to hold the records for the minimum requested years.

## **8. RIGHT OF ENTRY**

- 8.1 The Seller shall allow representatives of Panasonic Avionics, the Federal Aviation Administration (FAA), European Aviation Safety Agency (EASA), National Aviation Authority (NAA) and Panasonic Avionics customers to verify the quality of work, records and material, and also to allow for conducting Quality Audits at the Seller's plant and Seller's sub-tier sources.
- 8.2 Use of Buyer specified sub-tier sources does not relieve Seller of compliance to all applicable product technical and quality requirements.

## **9. SOURCE INSPECTION**

- 9.1 If applicable to product(s) & agreed by Buyer & Seller in advance, Seller shall notify Buyer of the time the product will be ready for in-process &/or final **source inspection** at Seller's facility.
- 9.2 Seller's measuring and test equipment, facilities, and personnel shall be made available for use by Buyer's representative when requested.

## **10. INSPECTION & CALIBRATION SYSTEM**

- 10.1 Seller shall establish and maintain an inspection & calibration system in **compliance** with the requirements of International Standard ISO9001:2000 or EN/AS9100.
- 10.2 If Seller is certified to EASA / FAA PART 145 &/or EASA / FAA PART 21 , Seller accordingly shall establish and maintain an inspection system in **compliance** with European Aviation Safety Agency (EASA) / Federal Aviation Administration (FAA) requirements.

## **11. AGE & SHELF LIFE SENSITIVE ITEMS**

- 11.1 As applicable to Seller's products, Seller shall establish an effective system for control of time, temperature or any other environmental sensitive Materials.
- 11.2 For materials with limited shelf-life, Seller shall show on each container and also on the certificate, the cure or manufacturing date, expiration date or shelf life, lot batch number, and when applicable, any special storage or handling conditions.
- 11.3 It is Seller's responsibility to assure that age sensitive materials upon delivery to Panasonic Avionics, will have 90% of their remaining shelf life as a minimum.

## **12. PANASONIC FURNISHED EQUIPMENT**

- 12.1 Seller shall be responsible for ascertaining the accuracy and stability of Panasonic Avionics furnished equipment used for product acceptance.

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12.2 Panasonic Avionics furnished equipment shall be periodically re-inspected and calibrated to assure continued accuracy, at Seller's cost & according to Seller's Quality system.

### **13. ACCEPTABLE SIGNATURES**

13.1 Only actual signatures rendered in ink by the signing official, a facsimile of an actual signature, or a machine or computer graphics generated facsimile signature are acceptable to Buyer.

13.2 Seller may use a quality inspection stamp in lieu of a signature, providing such stamp(s) identify the Seller and the Seller's authorized individual to whom the stamp is assigned, and that the issue, use and control of such stamp(s) are governed by Seller's documented procedures.

13.3 For computer generated certifications, Seller shall establish a documented system for control of certifications that do not bear original signatures or where name(s) of authorized official(s) are computer generated. This system may be verified on-site by Buyer's quality representative.

### **14. CONTAMINATION & DAMAGE**

Seller shall provide materials, parts, and products free of any contamination, damage or objects not listed on the drawings &/or specifications.

### **15. PRODUCT SERIALIZATION**

15.1 As applied to Line Replaceable Units (LRU), items such as Arms, Handsets and Cord Reels, Video Control Centers (VCC), Cradles, Retracts, Keyboards, Floppy Disk Drives, Card Readers and Thermal Printers, Serial Numbers shall be assigned by Seller, applied on all products, and recorded on all applicable documentation by Seller.

15.2 The assigned serial numbers shall not be altered or duplicated or replaced without prior written authorization from Buyer.

### **16. QUALIFIED PARTS**

Unless otherwise approved by Buyer in writing, Seller shall furnish only items specified on the Purchase Order issued by Buyer.

### **17. FIRST ARTICLE INSPECTION**

17.1 Concurrent with delivery of first production product(s) and First Article sample, seller shall provide a First Article Inspection Report documenting the results of Seller's First Article Inspection &/or Test of the product and each sub-tier component.

17.2 Buyer inspection and acceptance of First Article product(s) is required prior to delivery of First of Model to Buyer or any subsequent change that invalidates the previous first article inspection result.

17.3 Buyer reserves the right to accept or reject the First Article Inspection report.

17.4 Each First Article product shall be completely processed per Purchase Order and clearly identified as a First Article sample.

17.5 As applicable to the product(s), Seller shall notify Buyer sufficiently in advance so that inspection of the First Article with proper documentation can be scheduled at Seller's facility prior to the Purchase Orders' specified delivery due date.

17.6 Buyer may waive the On-Site participation of First Article Inspection at Seller's facility

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- 17.7 Unless prior sampling & inspection plans have been approved by Buyer, Seller shall perform 100% inspection of all characteristics on all products covered by the Purchase Order.
- 17.8 As requested by Buyer, records of Seller's 100% inspection results showing actual values shall accompany each delivery of product(s).
- 17.9 With each delivery of product(s), Seller shall maintain a copy of Seller's final inspection report(s) and/or records showing the actual results (dimensions, values, etc.) obtained by seller during final inspection of the delivered product(s).

**18. PRODUCT SAFETY DESIGN REQUIREMENTS**

- 18.1 Airborne Equipment (Line Replaceable Unit) shall be installed and maintained under a Panasonic Avionics part number, and must be designed, tested and qualified to the following:

- 18.1.1 BLO-QOP-22-01 - Product Safety Design Standard
- 18.1.2 BLO-QOP-22-02 - Product Safety Checklist

- 18.2 Components defined as "**Safety Parts**" are the ones that will have significant impact on Product Safety, if failed during the operation.

- 18.3 Electrical component(s) shall be connected on the primary side of the AC power supply is (are) considered "**Safety Parts**". Seller whose product fall under this category must provide the following to Buyer's Design Engineering:

- 18.3.1 Certificate of Conformance
- 18.3.2 Product Specification (First of Model Only)
- 18.3.3 Test Data (First of Model Only)

**19. TEST EQUIPMENT SAFETY CERTIFICATION**

- 19.1 Seller shall provide evidence of product certification for assuring public safety and protecting the safety of consumers as defined by:

- 19.1.1 UL (USA) Certification or Equipment Tag
- 19.1.2 CE (EU/EEA) Declaration and Equipment Tag

- 19.2 Seller shall contact the appropriate agency to obtain the documents which will specify proper safety procedures.

**20. CERTIFICATIONS & TEST REPORTS**

- 20.1 Seller shall furnish all certifications, test reports & samples issued by Seller or Seller's sub-tier sources with the initial delivery of product(s) on the Purchase Order.
- 20.2 Seller is responsible for verifying certifications furnished by Seller's sub-tier sources for their adequacy and compliance to the Purchase Order and the requirements herein.
- 20.3 To assure adequacy and authenticity of all certifications furnished by Seller, the certifications & test reports shall include the name of the issuing organization, and shall be signed by an official of the issuing organization.

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- 20.4 Seller shall provide a written statement, Certificate of Conformance (C of C), that all supplies and/or services comply with all requirements of the purchase order.
- 20.5 Certificate(s) of conformance shall contain the part number, revision, Change Notices, packing slip shipper number, and Panasonic Avionics Purchase Order Number.
- 20.6 Non-USA seller may provide EASA form 1 in lieu of C of C, as long as all above required data is provided.
- 20.7 Seller shall maintain all certifications of their products/materials for Traceability Audits.
- 20.8 If parts are subject to any special processes, Seller shall furnish appropriate certificates.

## 21. **PACKAGING**

- 21.1 Seller shall ship according to best commercial packaging practices or ATA-300 requirements, as specified on purchase order.
- 21.2 Seller & Seller's Sub-Tiers are responsible for all packaging related damages & failures.
- 21.3 Use of newspapers for packaging products is prohibited.
- 21.4 If applicable to Seller's products, Seller shall provide protection to prevent physical and **Electro-Static Discharge (ESD)** damage; also, provide protection to safely maintain leads and terminals in the manufactured condition under handling and transportation environments.
- 21.5 The outside packaging containing ESD sensitive items shall have an ESD warning label. This same label shall be used to seal shielded bags.

## 22. **CORRECTIVE AND PREVENTIVE ACTION (CAPA)**

- 22.1 Seller shall not ship any nonconforming product(s) to Buyer.
- 22.2 Per Buyer's prior approval, any product(s) found to be nonconforming to Buyer's Purchase Order or other applicable requirements, shall be documented by Seller and submitted to Buyer for disposition by Buyer's Material Review Board (MRB).
- 22.3 In case of Buyer receiving non-conforming materials from the Seller, or Buyer's discovery of product field failures & malfunctioning products, or request from Buyer's customer(s), Buyer may request from the Seller to conduct a formal failure investigation and analysis report to identify the root cause(s) of the failure. Such investigation and analysis require a timely and documented response.
- 22.4 When deemed necessary by the Buyer, the Seller shall provide a Corrective And Preventive Action (CAPA) report for nonconformities reported by the Buyer.
- 22.5 The CAPA report shall include below elements with implementation &/or target dates:
  - A)- Description of Nonconformity
  - B)- 100% Containment of parts at all locations & in-transit
  - C)- Immediate Recovery Plan
  - D)- Root Cause Analysis & Determination of Failure Modes
  - E)- Corrective Action Measures
  - F)- Preventive Action Plans
  - G)- Verification Method(s)/Technique(s) used to Confirm Effectiveness of CAPA

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**22.5** Product(s) rejected by Buyer and resubmitted by Seller shall be clearly identified as resubmitted product(s) and must also be documented on Seller's shipping documents that product(s) delivered are either "replacement" or "reworked" product(s).

**22.5.1** Seller's documents shall include reference to Buyer's rejection document number and Seller's copy of corrective & preventive action report.

**22.5.2** This is also applicable to any rejections noted by Buyer's source inspector on inspections performed at Seller's facility.

### **23. Change of Charges (COC)**

If seller is not in agreement with Buyer's determination of root cause(s) of the rejection(s), Seller can submit a request for Change of Charges (COC) to the Buyer's initiator within 20 business days from the date of notification

### **24. Annual Internal Quality Audit**

Seller shall annually conduct one Internal Audit as a minimum to ensure its compliance to ISO9001:2000, Internal Audits (8.2.2) requirements.

### **25. Annual Management Review**

Seller shall annually conduct one Management Review as a minimum to ensure its compliance to ISO9001:2000, Management Review (5.6) requirements.

### **26. Language**

**26.1** The seller shall have an English language translation of their Quality Manual and top level Procedures, as a minimum, and any other document or work instruction that provide Quality requirements.

**26.2** Panasonic Avionics Corp reserves the right to request from Seller to translate additional documents & records as deemed necessary.

### **27. FAA Drug & Alcohol Program Compliance**

**27.1** FAA approved Drug & Alcohol testing program is required for those groups/companies located in USA that perform maintenance on aircraft and aircraft parts/LRUs.

**27.2** The Drug & Alcohol testing program rule applies to suppliers that are under contract to supply work or services or parts to Panasonic Avionics Corp. It is also the supplier's responsibility to pass down the same requirements to their sub-tier supplier(s).

**27.3** Ref: "The certificate holder (FAA Air Agency) certifies that it will comply with the requirements of 14 CFR Part 121 appendices I and J and 49 CFR Part 40 for its Anti-drug and Alcohol Misuse Prevention Program".

### **28. Environmental Management System (EMS)**

Seller shall have an Environmental Management System (EMS) in compliance with or equivalent to **ISO 14001**.

### **29. Chemical Substances Management Risk Guidelines**

Sellers & their Sub-Tiers shall comply with "List of Prohibited Substances' Controlled Values" as noted on "Table for Controlled Values of Impurities":

### 30. Table of Controlled values of impurities

<b>Prohibited substance</b>	<b>Applicable part/material</b>	<b><u>Controlled value</u></b> (Concentration that will be deemed not to exceed without intentional use or contamination)	
Cadmium	<ul style="list-style-type: none"> <li>• Resin (incl. Rubber, film)</li> <li>• Coatings, inks, pigments, dyes</li> </ul>	Less than 20 ppm* <sup>1</sup> (High-precision analysis method in state with no volatile elements <sup>2</sup> )	
	Lead-free solder	<ul style="list-style-type: none"> <li>• Bar solder</li> <li>• Wire solder</li> <li>• Resin flux cored solder</li> <li>• Solder paste</li> <li>• Solder ball</li> </ul>	Less than 20 ppm (High-precision analysis method <sup>2</sup> )
		<ul style="list-style-type: none"> <li>• Soldered sections of purchased PC boards</li> <li>• Component solder</li> </ul>	Less than 20 ppm (High-precision analysis method <sup>2</sup> )
	Metal materials other than lead-free solder	Less than 75 ppm (High-precision analysis method <sup>2</sup> )	
Lead	<ul style="list-style-type: none"> <li>• Resin (incl. rubber, film)</li> <li>• Coatings, inks, pigments, dyes</li> </ul>	Less than 100 ppm <sup>1</sup> (High-precision analysis method <sup>2</sup> ) (with no volatile elements)	
	Lead-free solder	<ul style="list-style-type: none"> <li>• Bar solder</li> <li>• Wire solder</li> <li>• Resin flux cored solder</li> <li>• Solder paste</li> <li>• Solder ball</li> </ul>	Less than 500 ppm (High-precision analysis method <sup>2</sup> )
		<ul style="list-style-type: none"> <li>• Soldered sections of purchased PC boards</li> <li>• Component solder</li> </ul>	Less than 1,000 ppm (High-precision analysis method <sup>2</sup> )
	Metal materials other than lead-free solder	Less than 500 ppm <sup>3</sup> (High-precision analysis method <sup>2</sup> )	
	Glass (limited to uses in lamps)	Less than 500 ppm (High-precision analysis method <sup>2</sup> )	
Hexavalent Chromium	Chromated parts/materials	Less than 100 ppm (Simple analysis method)	
PBB PBDE	Resin (incl. Rubber, film)	Less than 100 ppm (High-precision analysis method <sup>2</sup> )	
Lead, mercury, cadmium, hexavalent chromium	Packaging material For each homogenous material comprising packaging (for example, resin, ink, paint)	Less than 100 ppm (High-precision analysis <sup>2</sup> ) of total quadruple heavy metals	
With respect to the "Applicable part/material" or "Prohibited substance" not specifically listed in the table above, the lower limit concentration <sup>4</sup> quantitatively measured by the corresponding high-precision analysis method is to be used as the interim controlled value.			

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**NOTES:**

- \*1: Does not apply to packaging material.
- \*2: A controlled method other than the high-precision analysis method may be used for daily control purposes when such method is confirmed to correlate with the high-precision method. (Ex. Simplified analysis method, which has been confirmed as correlating with the high-precision analysis)
- \*3: Because the lead (Ex. lead 0.35wt% or less as iron alloy), which is exempted from application by the RoHS Directive, is applicable as an alloy content, the Directive is not applied to the lead as an impurity.
- \*4: The value is determined by the sample quantity, analysis sensitivity of the analyzer (detection lower limit), etc. used by generally practiced high-precision analysis, or the detectable lower limit concentration of the target substance per unit sample quantity.