Cancelled

Title: COMMON PARTS/MATERIALS, SPACE USE, GENERAL SPECIFICATION FOR

Document number: JAXA-QTS-2000D

Cancellation date: 15 March 2021

JAXA

JAPAN AEROSPACE EXPLORATION AGENCY

NOTICE OF CHANGE

COMMON PARTS/MATERIALS, SPACE USE, GENERAL SPECIFICATION FOR

Page	Paragraph	Line	Change description		Rationale for change
			Before	After	
F-11	F.3.6.2	--	g) Name and seal of quality assurance manager h) Name and seal of registered inspector	g) Name of quality assurance manager h) Name of registered inspector	The seal requirement is deleted for duplicate information.
F-11	F.3.6.4	--	j) Name and seal of quality assurance manager k) Name and seal of registered inspector	g) Name of quality assurance manager h) Name of registered inspector	
F-12	F.3.6.5	--	h) Name, department and seal of quality assurance manager	h) Name and department of quality assurance manager	
F-27	Format F-15	--	Omitted	As shown in Attachment 1.	The seal requirement is deleted because electronic approval replaces seal of concerned party (reviewer, judge, development officer, Chief witness, and assistant witness).
F-28	Format F-16	--	Omitted	As shown in Attachment 2.	
F-30	Format F-17	--	Omitted	As shown in Attachment 3.	
F-32	Format F-20	--	Omitted	As shown in Attachment 4.	
F-37	Format F-25	--	Omitted	As shown in Attachment 5.	The seal requirement is deleted for duplicate information.
F-38	Format F-26	--	Omitted	As shown in Attachment 6.	
F-39	Format F-27	--	Omitted	As shown in Attachment 7.	

Attachment 1

Review comments and judgment:

Review comments	Example: As a result of a review of items such as development tests, the quality assurance program, the quality assurance program plan and organization, at a minimum, the application is considered to satisfy all requirements. Reviewed by:

Judgment	Example: Application No. _____ (issued on dd/mm/yyyy) is judged appropriate. Judged by:

The application is approved as follows.

Certification number	Approval date(dd/mm/yyyy)	President's seal for approval

Format F-15

Attachment 2

CORRELATION TABLE BETWEEN
QUALIFICATION TEST ITEMS AND
DEVELOPMENT TEST ITEMS

Qualification test item					Development test item		
Group	Test order	Test item	Requirement paragraph	Test method paragraph	Group	Test order	Test method paragraph
A	1						
	2						
	3						
	4						
	⋮						

Review comments and judgment on qualification tests	Example: All the qualification tests have been performed as development tests and it has been confirmed that all the requirements were fulfilled. By:

Format F-16

Attachment 3

REPORT OF DEVELOPMENT TEST

1. Summary of development tests

Product(s)	Part number	Production site(s)	Contact information

Title and document number of applicable specification and standard	Qualification coverage	Approval number of the Implementation Plan for Development Test

		Development officer
Test site		
Test period		

Format F-17

Attachment 4

Review comments and judgment:

Review comments by witness on qualification test results	
Overall review comments by the witness	This application is considered appropriate. Chief witness: Assistant witness:

Judgment	Example: Application No._____ (dd/mm/yyyy) is judged appropriate. Judged by:

The application is approved.

Certification number	Approval date (dd/mm/yyyy)	President's seal for approval
Certification number of the last certification	Date of the last certification (dd/mm/yyyy)	

Format F-20

Attachment 5

REPORT OF QUALIFICATION AND DELIVERY STATUS

Product(s)	Part number	QML manufacturer
Detail specification number (date of issue)	Qualification coverage	Production site(s)
Manufacturing conditions		

Current certification no. (dd/mm/yyyy)		Name of quality assurance manager	
Effective period of current certification		Name of registered inspector	

Product	Part number	Quantity of delivered products	Customer	Remarks

Format F-25

Attachment 6

REPORT OF QUALITY CONFORMANCE INSPECTION STATUS

Product(s)		Detail specification number	
Part number		Manufacturing conditions	
Lot number (production date)		Inspection period	
Name of quality assurance manager		Name of registered inspector	

Inspection item	Criteria for pass/fail	Sample size (accept number)	Test results				Judgment
			No. of defectives	Max.	Min.	Avg.	

Format F-26

Attachment 7

REPORT OF QUALITY ASSURANCE PROGRAM UPDATE

Product(s)	Part number	QML manufacturer

Title and document number of detail specification	Production site(s)

Document number and established date of Quality Assurance Program Plan	
Period covered	
Name and department of quality assurance manager	

Description of change(s)

Document number	Last update date	Updated contents	Impact(s) on Quality Assurance Program Plan

Format F-27

NOTICE OF CHANGE

COMMON PARTS/MATERIALS, SPACE USE, GENERAL SPECIFICATION FOR

Page	Paragraph	Line	Change description		Rationale for change
			Before	After	
6	3.4.1.1	End of line	Not available	In the case of withdrawal of the application after submission and before starting the qualification test, the applicant shall submit Notice of Qualification Test Termination (Format F-13).	Added the requirement regarding withdrawal of application.
10	3.4.4	1	…send a QML Certificate to…	…send a QML Certificate (Format F-30) to…	Added the Certificate format
14	6.1	End of line	Not available	The applicable specification shall be revised in the following cases; a) A notice of change contains 10 or more pages or the 10th issue of notices of change for a revision of the specification has become necessary. b) The modifications to the applicable specification extend to 50% or more.	Added the requirement for revising applicable documents
15	6.3	End of line	Not available	When the previous revision of the applicable specification is not cancelled on the revision date, the validated period shall be clearly stipulated on the cover page of the revised specification. When the specification is cancelled without being revised, the cancelled date shall be clearly stipulated on the notice of change. JAXA will stop the issue of or cancel the applicable specification for the following reasons; a) the requirements of the technologies/ managements are obsolete and difficult to apply. b) the replacement for the applicable specification has been established. c) the intended purpose has been achieved. d) JAXA concluded that the specification should be cancelled.	Added the requirement for cancelling applicable specification

Page	Paragraph	Line	Change description		Rationale for change
			Before	After	
F-25	Format F-13	--	Omitted	As shown in Attachment 1.	Changed format
F-42	Format F-30	--	Omitted	As shown in Attachment 2.	Added new format
All forms	Name of era on submission date, etc.	--	Heisei	Date shall be written in either Christian era or Japanese era (Reiwa) (Note this change only affects format written in Japanese)	Addressed change of era

Attachment 1

NOTICE OF QUALIFICATION TEST TERMINATION / APPLICATION WITHDRAWAL

Document No.

Date:

(President's name)
President
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

I am submitting this form to notify (termination of the Qualification tests / withdrawal of Qualification test application)(1) due to the following reason.

1. Product(s):
2. Part number:
3. Manufacturer:
4. Approval Number of Qualification Test Application: JAXA-QTR- XXXXX
   (Date of Approval) (dd/mm/yyyy) (If applicable)
5. Reason for termination/withdrawal (Extra page can be attached if necessary):

6. Test report (for termination of the test) (Extra page can be attached if necessary):

Note(1): Cross out the unnecessary words within the parenthesis.

Format F-13

Attachment 2

Document No.
Date:

(Certified person's name)
Company name

(President's name)
President
Japan Aerospace Exploration Agency

CERTIFICATE

This is to certify that the parts (or part family) below satisfied the standards as a JAXA-qualified part based on Qualification Provision for Common Parts/Materials for Space Use (Articles 15-42).

1. QML Manufacturer: XXX Corporation

2. Manufacture site: XXX Corporation located at 2-1-1 XX City, XXX #####

3. Applicable specifications for qualified part name and part number:
   Resistors, General Specification for (JAXA-QTS-2050; Established in dd/mm/yy)
   Resistors, Chip, Fixed, Film, High Reliability, Space Use, Detail Specification For (JAXA-QTS-2050/E301B; Established in dd/mm/yy)

4. Quality Assurance Program Plan (manufacture conditions): Manufactured based on XX Quality Assurance Program Plan for Space Use Resistors, XXX Corporation document #: 01-01 (revision #)

5. Qualification Number: YYYYY

6. Qualification date: dd/mm/yyyy

7. Validated date: dd/mm/yyyy

Format F-30

Registration No. 1150

JAXA-QTS-2000D
7 July 2016

Superseding
JAXA-QTS-2000C
Cancelled
7 July 2016

COMMON PARTS/MATERIALS, SPACE USE, GENERAL SPECIFICATION FOR

JAXA
JAPAN AEROSPACE EXPLORATION AGENCY

This document is the English version of JAXA QTS/ADS which was originally written and authorized in Japanese and carefully translated into English for international users. If any question arises as to the context or detailed description, it is strongly recommended to verify against the latest official Japanese version.

The release date of the English version of this specification: June 1, 2021

Revision Record

Rev.	Date	Major changes
NC	3 Dec. 1999	Original
A	31 Mar. 2003	Revised for transition to the QML certification system.
B	31 Mar. 2004	Revised for improvements. • Clarified the definition of “failure.” • Clarified the definitions of Groups A, B and C of the quality conformance inspection. • Added provisions required for transition from the QPL certification system to the QML certification system.
C	2 Oct. 2006	Incorporated changes contained in Notices of Change 1 and 2 of JAXA-QTS-2000B. Major additions and modifications are as follows. • Paragraph 3.2.2: Modified to allow JAXA to prepare detail specifications. • Paragraph 3.4.1.10: Added a certification requirement on JAXA-developed parts. • Appendix A, Paragraph A.3.1.4: Changed “NASDA” to “JAXA” in part numbers. • Appendix E, Paragraph E.5.3.4: Clarified the provision for review of the Application for Certification Retention. • Figure E-2: Clarified the flowchart for initial certification. • Appendix G, Section G.3: Added a provision on issuing Notice of Change for Application Data Sheet. • Appendix K, Paragraph K.3.5.1.5: Added material changes to the review items. Paragraph K.3.6.2, item c): Clarified items to be reported to JAXA in addition to scheduled reports on TRB activities.
D	7 July 2016	• Reflected Change Notices 1 through 3 of JAXA-QTS-2000C in to text. • Replaced “Common parts/materials” with “Qualified parts” in the text after certification. • Appendix C: Deleted the reference paragraph number of ISO9001. • Paragraph 1.3: Defined “Certification” and “Qualified parts”. • Paragraph 1.4: Defined “Obligation of JAXA” and “Responsibility and obligation of the QML manufacturer”. • Paragraph 1.5: Reviewed the following definitions. l) Registered inspector r) QML manufacturer v) Quality assurance manager • Paragraph 1.5: Added the following definitions. z) Anomaly aa) manufacturer

Rev.	Date	Major changes
D	7 July 2016	• Paragraphs 3.3.3 and C.4.2: Deleted the definition of quality assurance manager since it is defined in paragraph 1.5 Terms and Definitions. • Paragraph 3.3.4: Deleted the definition of registered inspector since it is defined in paragraph 1.5 Terms and Definitions. • Paragraph 3.3.5: Clarified that QML manufacturer does not just submit TRB status report but JAXA will review the activity status, and added that JAXA will notify the QML manufacturer the review results and that this is a part of the review for retention of certification. • Paragraph 3.3.6: Modified the expression using the word “qualification” defined in JMR-004 “Reliability program standards” and JMR-005 “Quality assurance program standards”. • Paragraphs 3.4.1.2 and 3.4.2: Deleted the description of audit since it is defined in paragraph 3.3.6 and instead, listed the paragraph number to be referred. • Paragraph 3.4.1.2: Clarified that the QML manufacturer may start its production of the sample for qualification test upon approval of the qualification test application. • Paragraph 3.4.2.1: Clarified the target period of the TRB Status Report accompanied with application for retention of certification. • Paragraph 3.4.4: Modified the wording in line with the description in paragraph 1.3.1 Certification. • Paragraph 3.4.5: Modified the de-certification conditions to be consistent with JAXA regulations. Clarified that JAXA informs QML manufacturer of its de-certification with the request for return of the QML certificate. • Paragraph 3.4.6: Added paragraph for procedure of suspending the shipment of a part of qualified parts. • Paragraph 3.4.7: Added paragraph describing consolidating of the effective period of the certification if the manufacturer have more than one qualified parts. • Paragraph 3.6: Clarified that JAXA could stop shipment on the products of QML manufacturer in case of nonconformance. Also clarified the conditions to lift the stop shipment and disposition of the products in the storage. • Paragraph 6.4: Clarified that detail specifications, Application Data Sheet and notices of changes shall be prepared and established by QML manufacturer, and registered with registration number and issued by JAXA. • Section 8: Added Appendix Z “Procedure after Revision of QTS-2000”. • Paragraph A.3.2.4.4: Changed the word “requirement criteria” to “requirements” • Paragraph A.3.3.2.2: Corrected error from paragraph 3.4 to 3.4.1. • Paragraph C.4.6.7 a): Added requirement of Trend analysis. • Paragraph C.4.11: Specified classification Grades I through III and defined each grade in the requirement of change control.

Rev.	Date	Major changes
D	7 July 2016	• Paragraph C.4.11.1: Removed the facility for analysis from the change list to be determined due to the facility for analysis not directly associated with production and shipment of qualified parts. • Paragraph C.5.1 b) Changed the time to review quality assurance program plan from “at the time of certification” to “after application for certification is submitted”. • Paragraph D.3: Modified role and responsibility of the Quality Assurance Manager. • Paragraph D.4: Modified role and responsibility of the registered inspector. • Paragraph D.5: Modified qualification and selection criteria for registered inspector. • Paragraph D.7: Deleted paragraph D.7 due to the contents herein included in role and responsibility of registered inspector. • Paragraph E.5.3.4 a) Clarified that JAXA reviews the application and supporting documents. • Paragraphs F.3.5.1, F.3.6.1, Formats F-14, and F-24: Modified to clarify that JAXA does not certify an individual part but the capability of the manufacturer. • Formats F-14 and F-24: Added a sentence clarifying that the applicant will agree to be bound by the obligation specified in paragraph 1.4 at the application of certification. • Paragraph K.3.2 d), e), f): Added to clarify that TRB’s responsibility includes planning phase of failure analysis, corrective action, and changes to tests and inspections. • Paragraph 3.5.3 a) 4): Clarified the action when TRB status report submission is exempted. • Paragraph K.3.6.2: Added a provision in which QML manufacturer can be exempt from submitting TRB status report in the case of no production of qualified parts or no changes to the quality assurance program plan concerning qualified parts. • Paragraph K.3.6.3 b), c): Added reference paragraphs “paragraph C.4.9” and “paragraph C.4.11” due to omission of these numbers. • Added Appendix Z “Procedures after Revision of QTS-2000”

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Appendix A
Preparation of Applicable Specifications

Appendix B
This appendix has been cancelled.

Appendix C
Requirements for Quality Assurance Program

Appendix D
Quality Assurance Manager and Registered Inspector

Appendix E
Certification Procedures

Appendix F
Application Form and Procedures

Appendix G
Preparation of Application Data Sheet

Appendix H
Supplementary Requirements for Tests and Inspections

Appendix J
This appendix has been cancelled.

Appendix K
TRB Guidelines

Appendix Z
Procedure after Revision of QTS-2000

COMMON PARTS/MATERIALS,
SPACE USE,
GENERAL SPECIFICATION FOR

1. GENERAL

1.1 Objective

The purpose of this specification is to define the general, certification and quality assurance requirements for parts and materials which are frequently used (hereinafter referred to as “common parts/materials”) for electronic equipment installed on space systems.

1.2 Scope

This specification is applicable for preparation and maintenance of documents related to certification, quality assurance and applicable specifications of common parts/materials, of which reliability and quality shall be controlled by the Japan Aerospace Exploration Agency (herein after referred to as “JAXA”).

1.3 Certification and Qualified Parts

1.3.1 Certification

Certification is that JAXA recognizes that a manufacturer has the capability of supplying such common parts/materials which satisfy the reliability and quality requirements specified in the applicable specifications by confirming the conditions of production and quality control and the qualification test results using a sample of common parts/materials.

1.3.2 Qualified Parts

Qualified parts are the common parts/materials which will be supplied under the quality assurance provisions specified in applicable specifications which are fulfilled by the certified QML manufacturer.

1.4 Obligations

1.4.1 Obligations of JAXA

a) JAXA establishes and maintains the applicable specifications as well as defining the requirements of quality, tests and inspections for qualification therein.
b) JAXA determines whether the qualification test results using quality control system and a sample are conformance to the requirements of the applicable specifications, and decides whether to certify the manufacturer based on its application for certification.
c) JAXA reviews the quality control system of the QML manufacturer periodically and as needed, and confirms that the system is maintained.
d) JAXA analyzes the causes of anomaly and nonconformance of the qualified parts as needed, and provides the technical supports such as quality evaluation.

e) JAXA issues “Shinraisei Gijutsu Jouhou” (Reliability Technical Alert Information) when anomaly or nonconformance of the qualified parts which are considered pervasive is found, and notifies all relevant parties.
f) JAXA verifies the measures proposed by the manufacturer, and corrective actions with the verification results when nonconformance of the qualified parts is found.

1.4.2 Responsibilities and Obligations of QML manufacturer

a) QML manufacturer is responsible for that the delivered products conform to the requirements of applicable specifications. QML manufacturer shall explain to the customers as needed that JAXA is not responsible for that the delivered products conform to the requirements in detail specifications.
b) QML manufacturer shall address the issues when anomaly or nonconformance is found in the qualified parts.
c) In the case of certification removal, the de-certified QML manufacturer shall notify the customers for the products and the customer considering a purchase at once of its de-certification.
d) In the case of suspending the shipment of the qualified parts, the QML manufacturer shall notify the purchasers at once of the suspension of the shipment.

1.5 Terms and Definitions

The following terms and definitions are used in this document:

a) FMAT: FMAT stands for Failure Mechanism and Assurance Technique.
b) QML: The QML (Qualified Manufacturers List) is a list of manufacturers certified on the QML system. The list provides information such as the names of manufacturers, production sites, product(s) names, qualification coverage, applicable specifications (titles and specification numbers) and contact information.
c) QML certification: Certification of common parts/materials in accordance with the specification system defined in the General Specification for Space Use Common Parts/Materials (JAXA-QTS-2000).
d) QPL: The QPL (Qualified Products List) is a list of certified parts and materials. The list provides information on parts and materials certified on the QPL system including the names of manufacturers, production sites, product names, summary of part characteristics, applicable specifications (titles and numbers) and contact information.
e) QPL certification: Certification of common parts/materials in accordance with the specification system defined in the Common Parts etc., Space Development Use, General Specification for (JAXA-QTS-38100).
f) TRB: The TRB (Technology Review Board) is a multi-functional organization established by the manufacturer to review and determine the validity of establishment, maintenance, revisions and implementation of and changes to the quality assurance program and as well as corrective actions.
g) Retention of qualification: A process to renew the QML certification status of the qualified parts conducted at the end of certification period.
h) Defect: A state in which qualified parts are unable to fulfill the intended applications or requirements for specified applications.
i) Failure: The loss of the ability of a qualified part to perform its required functions.

j) Failure analysis: The detailed analysis of reliability data such as life, numbers of failed parts, failure conditions and degree of deterioration to physically characterize the failure status.
k) Requalification: A qualification process performed to change the qualification coverage.
l) Registered inspector: A person who is registered with JAXA to verify that the manufacturer certainly fulfills the functionality, performance and quality assurance requirements of the qualified parts, independent from any quality assurance section in the production department of the manufacturer by acting as an inspector of JAXA.
m) Initial qualification: A process to obtain QML certification for new common parts/materials.
n) Field data: The test data, actual failure rate and nonconformance information of the products which are manufactured in the same production line and with the same or similar design, processes and quality assurance program as the product(s) (or product group) to be qualified.
o) Applicable specifications: Applicable specifications include generic specifications and detail specifications applicable to qualified parts.
p) Qualification test: A series of tests to obtain QML certification. The tests are performed to verify that the parts meet the requirements of applicable specifications.
q) Qualification coverage: Qualification coverage is a scope of characteristics, performance and technology which are represented by a test vehicle. It shall be defined in the applicable specifications.
r) QML manufacturer: A manufacturer that obtained QML certification
s) Catastrophic failure: A failure leading to loss of functionality and/or performance of qualified parts.
t) Test vehicle: A device or sample that represents the product(s) (or product group) manufactured using the manufacturing line to be qualified.
u) Quality conformance inspection: Tests specified in the applicable specification and performed by the QML manufacturer to confirm that the qualified parts meet specified functionality, performance and quality.
v) Quality assurance manager: A person who has the responsibility and authority to establish, implement, maintain and control the quality assurance program of the qualified parts as a representative of the manufacturer.
w) Quality assurance program: A program that includes all quality assurance activities required to manufacture and deliver qualified parts.
x) Quality Assurance Program Plan: Papers in which the complete quality assurance program is documented.
y) Nonconformity: The performance of the qualified parts inconsistent with requirements of the applicable specifications. Nonconformance includes failure, deviation, defect, lack and malfunction.
z) Anomaly: Any sign of suspected functional problems
aa) Manufacturer: A company which performs most of fabrication process and assemble of the parts and materials purchased or provided, and manufactures the finished products.

1.6 Classification of Qualified Parts

Qualified parts, defined in the applicable specifications which are developed in accordance with this specification shall be classified as follows:

a) Established reliability parts: See “Terminology” (Section 7).
b) High reliability parts: See “Terminology” (Section 7).

2. APPLICABLE DOCUMENTS

2.1 Applicable Documents

The documents listed below form a part of this specification to the extent specified herein. The issues of these documents are the latest issues available at the time of contract award or application.

a)	JIS Z 8201	Mathematical Symbols
b)	JIS Z 8202	Quantities and Units – Part 0: General Principles through Part 13: Solid State Physics
c)	JIS Z 8203	SI Units and Recommendations for the Use of their Multiples and of Certain Other Units
d)	JIS Z 8301	Rules for the layout and drafting of Japanese Industrial Standards
e)	JIS Z 8401	Guide to the Rounding of Numbers
f)	JIS Z 9015-1	Sampling Procedures for Inspection by Attributes – Part 1: Sampling Plans Indexed by Acceptable Quality Level (AQL) for Lot-by-Lot Inspection
g)	ISO 9001:2000	Quality management Systems – General Requirements
h)	ANSI/NCSL Z 540-1	Calibration Laboratories and Measuring and Test Equipment – General Requirements
i)	ISO 14644-1:1999	Cleanrooms and Associated Controlled Environments – Part 1: Classification of Air Cleanliness
j)	ISO 14644-2:2000	Cleanrooms and Associated Controlled Environments – Part 2: Specifications for Testing and Monitoring to Prove Continued Compliance with ISO 14644-1

2.2 Order of Precedence

In the event of a conflict between the text of this specification and the applicable specifications, the following order of precedence shall apply:

a) Detail specification
b) Generic specification
c) This specification
d) Applicable documents of this specification (paragraph 2.1)

3. REQUIREMENTS

3.1 General Requirements

General Requirements for qualified parts shall be defined in accordance with the requirements specified in this specification.

3.2 Detail Requirements

3.2.1 Requirements for Each Product Type

The generic specifications shall define the general requirements of the qualified parts for each part group. JAXA shall develop and establish the generic specification in accordance with Appendix A.

3.2.2 Detail Requirements

Detail specification shall define detailed requirements for individual qualified parts which are not covered in the applicable generic specification. The manufacturer or JAXA can create and establish detail specifications in accordance with Appendix A.

3.3 Requirements for a Quality Assurance Program

3.3.1 Establishment of a Quality Assurance Program

To obtain a QML certification of common parts/materials in accordance with this specification, the manufacturer shall establish a quality assurance program in compliance with Appendix C to assure that the product(s) meets the quality requirements for space use and that the manufacturer is able to sustain production and supply of the product with a consistent quality. If the manufacturer has already obtained an official certification(s) such as ISO 9001 or an equivalent, the manufacture may use the documents used for the certification as part of the Quality Assurance Program.

3.3.2 Quality Assurance Program Plan

The quality assurance program shall be documented as the Quality Assurance Program Plan which shall cover all the details of the program and shall be submitted to JAXA for review. After a QML certification is granted, the manufacturer shall implement the quality assurance activity in compliance with the Quality Assurance Program Plan. Any change to the quality assurance program shall be immediately documented to insure accurate program status in the Quality Assurance Program Plan.

3.3.3 Quality Assurance Manager

The manufacturer shall designate a quality assurance manager and register this person with JAXA in accordance with Appendix D of this specification.

3.3.4 Registered Inspector

The manufacturer shall designate a registered inspector and register this person with JAXA in accordance with Appendix D of this specification.

3.3.5 TRB

The purpose of introducing the TRB to the QML certification system is to incorporate self-initiative to the QML manufacturer in verifying the functionality, performance and quality assurance requirements of the qualified parts. The QML manufacturer is provided authority over the verification method change and responsibility to demonstrate its validity. To flexibly respond to technical progresses and revolution of industrial structures, the QML manufacturer is also authorized to optimize

manufacturing lines, test and inspection methods. The TRB shall deliberate and determine the validity of the establishment, implementation, maintenance and revisions (changes), among other things, to the quality assurance program. In case of nonconformance, the TRB shall determine the corrective actions and assess their results. The TRB shall be a multi-functional group. The organization and management details shall be as specified in Appendix K. The QML manufacturers shall report their TRB activities to JAXA annually in compliance with Appendix K for JAXA to review proper operation of TRB. This review forms a part of retention of qualification as specified in paragraph 3.4.2. JAXA may skip the review if the manufacturer has already notified JAXA of exemption of preparation and submission of TRB status report in accordance with paragraph K.3.6.2.
JAXA reviews the TRB status report at each submission and notifies the QML manufacturer of the results.

3.3.6 Audit of the Quality Assurance Program

JAXA reserves the right to audit the quality assurance program established during the certification process and when necessary. Audits shall be conducted at the manufacturer's site. In the audit, JAXA evaluates the content and implementation status of the quality assurance program based on a comprehensive examination of the production, inspection, test with the equipment, and any accompanying technical documents. If requested, the manufacturer will make available to JAXA the most current documents and/or materials related to the quality assurance program during the audit. If JAXA requests improvements, the manufacturer shall take appropriate actions.

3.4 QML Certification Requirements

To be listed on the QML and supply their products as QML common parts/materials, a manufacturer is required to obtain QML certification. The QML certification consists of three types of qualification processes as follows.

a) Initial qualification
b) Retention of qualification
c) Requalification

The qualification procedures are defined in Appendix E. The application procedures and forms to obtain a QML certification are defined in Appendix F.

3.4.1 Initial Qualification

The initial qualification is a process to initially obtain a QML certification. The manufacturer shall develop a detail specification of the products to be certified and establish a quality assurance program in compliance with Appendix C. After the quality assurance program has been reviewed, the manufacturer shall produce test vehicles or samples which represent the products within the qualification coverage and shall perform the qualification test required in the applicable specifications. After completion of the qualification test, the manufacturer shall apply for the QML certification and obtain an approval from JAXA. If the application is determined acceptable, JAXA approves the application and shall add the manufacturer to the QML.
For initial qualification, the manufacturer shall submit the following applications to JAXA:

a) Application for Qualification Test

b) Application for QML Certification

3.4.1.1 Application for Qualification Test

The manufacturer shall submit the Qualification Test Application accompanied with the following documents as specified in Appendix E:

a) Implementation Plan for Qualification Test: In accordance with Appendix F.
b) Detail specification: In accordance with Appendix A.
c) Quality Assurance Program Plan: In accordance with paragraph 3.3.2.
d) Notice of Quality Assurance Manager/Registered Inspector: In accordance with Appendix F.
e) Application Data Sheet (preliminary): In accordance with Appendix G.
f) Field data (if applicable): In accordance with item n) of Terms and Definitions (paragraph 1.5).

3.4.1.2 Approval of Application for Qualification Test

JAXA shall review the application with the supporting documents and perform an audit of the quality assurance program specified in paragraph 3.3.6 based on the Qualification Test Application submitted by the manufacturer. If the application is determined acceptable, JAXA shall approve the application and notify the manufacturer of the approval. The manufacturer may start manufacturing the evaluation element or the sample for the qualification test upon receiving the approved qualification test application from JAXA.

3.4.1.3 Changes to Qualification Test

After approval of the Qualification Test Application, changes to the qualification test procedures shall be approved by JAXA in accordance with paragraph E.5.2.7.

3.4.1.4 Witnessing of Qualification Tests

Upon approval of the Qualification Test Application, JAXA shall designate a witness for the qualification test and notify the manufacturer of the witness including name, job title and affiliation. The witness shall coordinate the witness with the manufacturer such as the schedule. The witness is responsible for monitoring the manufacturer's performance of the qualification test in compliance with the Implementation Plan for Qualification Test.

3.4.1.5 Implementation of Qualification Test

In the qualification test, the manufacturer shall verify the design and performance limits of the product group to be certified and prove their ability to supply the product repeatedly with a consistent quality. Qualification tests shall be performed as specified in the Implementation Plan for Qualification Test and in the presence of the witness. If, after completion of the qualification tests, the JAXA witness is able to confirm what the manufacturer is to demonstrate as stated above, the tests may be performed without the JAXA witness. If the manufacturer does not initiate the qualification test within 3 months after the approved start date, JAXA shall revoke approval of the Qualification Test Application.

3.4.1.6 Termination of Qualification Test

In the event of nonconformance, erroneous tests or an excess of the allowable failure occurrence, the manufacturer shall report the event to the JAXA witness. As a result, if the qualification test is to be terminated, the manufacturer shall submit a Notice of Qualification Test Termination in accordance with paragraph E.5.2.8.

3.4.1.7 Application for QML Certification

After all the qualification tests are completed in accordance with the Implementation Plan for Qualification Test, the manufacturer shall submit an Application for QML Certification in accordance with Appendix E within 30 days following completion of the qualification test. The following documents shall be accompanied with the application:

a) Report of Qualification Test (Appendix F)
b) Quality Assurance Program Plan (the latest version)
c) Application Data Sheet (the latest version prepared for registration)
d) Test data and records

3.4.1.8 Approval of QML Certification

JAXA shall approve an application when the Application for QML Certification meets all the requirements in this specification and applicable specifications. QML manufacturer is allowed to supply products within an approved qualification coverage in accordance with detail specifications registered with JAXA.

3.4.1.9 Transition from QPL Certification to QML Certification

In the event of transition from QPL certification to QML certification, the QPL manufacturer may submit the Application for QML Certification without the qualification test, provided that there are no changes in the test items and criteria, workers, materials, production processes and facilities. The detailed requirements for transition shall be as follows.

a) Qualification Test Application
   Submittal of a Qualification Test Application may not be required. However, the detail specifications and Notice of Quality Assurance Manager/Registered Inspector shall be attached to the Application for QML Certification.
b) Correlation table of the qualification test items and criteria in QPL certification and QML certification
   The QPL manufacturer shall prepare a table correlating the qualification test items and criteria specified in the respective applicable specifications of QPL certification and QML certification. It shall demonstrate that the qualification test for QPL certification conforms to that of QML certification.
c) Quality conformance inspection within the effective period of QPL certification
   The quality conformance inspection within the effective period of QPL certification may be performed as Group B inspection of the quality conformance inspection required for the first production lot of QML certification.

d) On-site audit
The quality assurance program shall be audited at the manufacturer's site as specified on the certification application. The primary purpose of this audit is to review documentation relating to the Quality Assurance Program Plan at the manufacturer's site.

e) QPL products manufactured in the transition to the QML certification
If the QPL products were manufactured at the time of transition to the QML certification, the products were considered to be manufactured during the initial QML certification period. The activity status including the delivery status of such products shall be included in the next periodical TRB status report.

3.4.1.10 Certification of JAXA-Developed Parts

For parts/materials developed under a contract with JAXA (hereinafter referred to as JAXA-developed parts), Qualification Test Application (paragraph 3.4.1.1), implementation of qualification test (paragraph 3.4.1.5), and Qualification Test Report (paragraph 3.4.1.7) may be replaced by attaching development test results and measurements conducted under the contract to the Application for QML Certification. In addition, the following provisions shall apply.

a) Qualification Test Application
Qualification Test Application is not required. Detail specification and Notice of Quality Assurance Manager/Registered Inspector required for applying qualification tests shall be attached to an Application for QML Certification.

b) Cross-reference table between qualification and development test items
A cross-reference table between the qualification and development test items shall be prepared to verify compliance of the development tests with the qualification tests.

c) On-site audit
The quality assurance program shall be audited at the manufacturer's site as specified in paragraph 3.3.6 on the certification application.

3.4.2 Retention of Qualification

Retention of qualification is a process for the QML manufacturer to renew the QML certification and shall be completed within the effective period of the QML certification. The QML certification period is less than 3 years and defined in the generic specification in consideration of characteristics unique to each product group. The QML manufacturer shall have their quality assurance program specified in paragraph 3.3.6 and results of the quality conformance inspection conducted within the effective period of certification audited. This audit is intended to verify the manufacturer's ability to supply the qualified part(s) with the same quality level as initially certified. The manufacturer shall reflect the results of this review and request retention of the QML certification from JAXA.
If it revealed that the qualified parts are not produced as specified in the quality assurance program, JAXA may revoke the QML certification or request the manufacturer to perform requalification procedures.

3.4.2.1 Application for Certification Retention

The QML manufacturer shall submit an Application for Certification Retention to JAXA commencing between 30 and 60 days prior to the expiration date of the certification period in accordance with paragraph E.5.3. The following documents shall be accompanied with the application. Submittal of the Report of Quality Conformance Inspection Status may be omitted when contained with the TRB Status Report.

a) Report of Quality Conformance Inspection Status (paragraph F.3.6.2)
b) Quality Assurance Program Plan (the latest version)
c) TRB Status Report (paragraph F.3.7)
    1) Report of Qualification and Delivery Status (paragraph F.3.6.4)
    2) Report of Quality Assurance Program Update (paragraph F.3.6.5)
    3) Nonconformance information (paragraph F.3.9)

JAXA will audit the TRB status report for the last one year of activities submitted as a part of retention of certification application documents in accordance with paragraph 3.3.5.

3.4.2.2 Approval for Certification Retention

JAXA shall approve the application when it meets all the requirements of this specification and applicable specifications. The retention of the QML certification becomes effective on the day following the last day of the current certification period and remains effective until the day specified in the generic specification.

3.4.3 Requalification

The requalification process for the QML manufacturer to change the qualification coverage for the qualified parts shall be performed in accordance with paragraph E.5.4. The TRB is authorized to change test items required for requalification by assessing the impact due to proposed product/process changes. In this case, the rationale for the changes shall be documented in the Implementation Plan for Requalification Test.

3.4.4 QML Certificate

JAXA shall send a QML Certificate to the QML manufacturer upon completion of the initial qualification, retention of qualification or requalification. The QML Certificate shall specify the name of the QML manufacturer, manufacturing facility, titles and document numbers of applicable specifications and the Quality Assurance Program Plan, the certification date and the effective period.
The QML manufacturer shall present the certificate if requested by JAXA or a purchaser of the qualified parts.

3.4.5 De-Certification

JAXA may revoke the QML certification if any of the following events, a) through j) occurs. If the QML certification is cancelled, JAXA shall notify the QML manufacturer of the cancellation and request for return of the certificate. And the information on the relevant product(s) shall be removed from the JAXA QML.

a) The Application for Certification Retention was not submitted within 30 days prior to the expiration date of the certification period.
b) The Application for Certification Retention fails to meet the requirements for retention of the qualification.
c) A review for qualification retention or an audit requested by JAXA indicates that the quality assurance program has been implemented improperly.
d) The QML manufacturer applies for cancellation of the QML certification.
e) An uncorrectable defect is discovered in the manufacturing process of the qualified part(s).
f) Applicable specification(s) is cancelled.
g) Although applicable specification(s) is modified and requalification for the new specification is required, the applicable tests are not performed.
h) There is false statement in the test results or in the application of the qualified parts.
i) All supplies of the qualified parts are no longer available.
j) The QML manufacturer is found to have no ability to manufacture the qualified parts.

3.4.6 Stop Shipment of the Qualified Parts

In the case of stop supply of the qualified parts, the QML manufacturer shall notify JAXA in accordance with paragraph F.3.8 unless this stop shipment is imposed by JAXA (See paragraph 3.6).

3.4.7 Arranging the Certification Periods

In the case of having certifications for more than one applicable specifications, the QML manufacturer may aggregate those different certification periods in one period at the timing of certification retention or recertification. For that purpose, the application for certification retention may be submitted anytime regardless of the specific timing stated in paragraph 3.4.2.1. However, the current certification period cannot be expired.

3.5 Part Number and Marking

3.5.1 Part Number

The part number shall be identified as qualified parts for space use and shall be specified in the applicable specifications in accordance with paragraph A.3.1.4.

3.5.2 Marking

Each product shall be marked with the part number, lot number and other items as specified in the applicable specifications. All markings shall be easily visible when the product is used in a normal configuration.

3.6 Nonconformance

The QML manufacturer shall report the anomaly or nonconformance to JAXA at once if anomaly or nonconformance of a qualified part(s) is found during the tests and/or inspections conducted by the QML manufacturer, during incoming inspections performed by the purchaser, during production, tests or inspection processes performed at the unit or

system manufacturers' or at JAXA's test or assembly facilities. For nonconformance in the quality conformance inspection, the lots containing the failed product(s) shall be disposed as specified in the applicable specifications.
JAXA can impose a stop shipment on the qualified parts if JAXA determined that the reported failure was attributed to nonconformance of the qualified parts.
The QML manufacturer shall stop shipment of the qualified parts immediately upon JAXA's decision. After stop shipment was imposed and the products stored at the QML manufacturer' site are to be shipped, the QML manufacturer shall consult with JAXA.
At the completion of investigating the cause and corrective actions, the QML manufacturer shall submit the nonconformance report including the results of the investigation and the corrective action to JAXA. If JAXA approves the corrective actions, the stop shipment order will be lifted.

3.6.1 Failure Analysis

If the nonconformance is a failure of the qualified part(s), the QML manufacturer shall perform the failure analysis program defined in the quality assurance program.

3.6.2 Emergency Notification

In the event of the qualified part(s)- or lot-specific nonconformance, the QML manufacturer shall immediately report to JAXA the details of the nonconformance, the part numbers and the lot numbers.

3.6.3 Catastrophic Failure

If catastrophic failures are discovered during the qualification test, quality conformance inspection or inspection after long-term storage, the manufacturer shall immediately report the failure to JAXA.

4. QUALITY ASSURANCE PROVISIONS

4.1 Implementation of the Quality Assurance Program

The manufacturer is responsible for implementing the quality assurance program established in accordance with paragraph 3.3.

4.2 Change Control for the Quality Assurance Program

The manufacturer shall implement and control any changes to the quality assurance program in accordance with paragraph C.4.11.

4.3 Requirements for Tests and Inspections

The manufacturer shall perform the tests and inspections shown below to verify the functionality, performance and quality assurance requirements of the qualified part(s) defined in Section 3.

a) In-process inspection
b) Qualification test
c) Quality conformance inspection

4.3.1 Qualification Test

The qualification test is performed to qualify product(s) as a QML certified part(s) and to verify that the product(s) is in accordance with the requirements specified in the applicable specifications. The details or the qualification test shall be clearly defined in the applicable specifications.

4.3.2 In-Process Inspection

The in-process inspection is performed during the manufacturing processes to detect defects that could significantly affect the reliability and quality of the product(s), and to examine characteristics which cannot be measured with finished products. Data of in-process inspections may also be used for the quality conformance inspection during the production process. Details of the in-process inspection shall be defined in the applicable specifications.

4.3.3 Quality Conformance Inspection

The quality conformance inspection shall be performed to verify that the certified products meet the performance, characteristics and quality as confirmed by the qualification test. The quality conformance inspection shall be classified in following three groups. Inspection items and methods shall be defined in the applicable specifications.

4.3.3.1 Quality Conformance Inspection during the Production Process

The quality conformance inspection shall be performed during each production process for all qualified parts.

4.3.3.2 Quality Conformance Inspection within the Effective Period of Certification

The quality conformance inspection shall be performed for the first production lot within the effective period of certification. Inspection samples shall be taken from products which have completed the inspections specified in paragraph 4.3.3.1. The manufacturer shall report the inspection results to JAXA in the TRB status report or application for certification retention.

4.3.3.3 Quality Conformance Inspection at Restarting Production

The quality conformance inspection shall be performed at the time of restarting the production when the manufacturer acquires the retention of the QML certification without production within the effective period of the certification and the quality conformance inspection. Inspection samples shall be taken from products which have completed the inspections specified in paragraph 4.3.3.1. The manufacturer shall complete the inspections specified in paragraph 4.3.3.2 and this paragraph prior to delivery. The inspection results shall be reported to JAXA in the TRB status report or application for certification retention.

4.3.4 Products Stored for Long-Term

4.3.4.1 Disposition of Lots for Long-Term Storage by Manufacturer

When products have been stored longer than specified in the applicable specifications after the completion of the quality conformance inspection, the applicable inspection shall be repeated prior to delivery. Lots that fail this inspection shall be subjected to 100% inspection and only acceptable products may be shipped. The date of the inspection shall be marked on the package.

4.3.4.2 Storage by Purchaser

Storage conditions and/or shelf life requirements for the purchaser shall be specified in the applicable specifications.

4.4 Changes to Tests and Inspections

The manufacturer is allowed to change the tests and inspections defined in the generic specifications when adequate data and technical rationale for the changes exist and the TRB determines that the changes do not affect the reliability of the products.

5. PREPARATION FOR DELIVERY

For delivery from the QML manufacturer to the purchasers, the qualified parts supplied in accordance with this specification shall be properly packaged as qualified parts, and shall have required markings. The packaging materials shall not affect the quality and reliability of the qualified parts. The QML manufacturer shall develop a packaging specification as part of the quality assurance program. The marking on packages shall include the following items as minimum:

a) Part name
b) Part number
c) Applicable specifications
d) Lot identification code
e) Customer's name
f) Manufacturer's name
g) Quantity of packages
h) Inspection date (day, month, year)
i) Inspection results
j) ESD sensitive (if specified)
k) Beryllia used (when used)

If the qualified parts require electrostatic discharge protection, an appropriate action shall be taken. In addition, an "ESD sensitive" marking shall be provided on the package. If the qualified parts contain beryllia (beryllium oxide, BeO), a "Beryllia used" marking shall be provided on the package. Details of the packaging shall be defined in the applicable specifications.

6. CONTROL OF APPLICABLE SPECIFICATIONS

Applicable specifications are controlled with regard to establishment, revisions, changes (issuance of change notices) and cancellation. Revision of the applicable specifications shall be identified by the applicable specification number followed by a capital letter in an

alphabetical sequence beginning with A. The capital letters I, O, and Z shall not be used as revision symbols. Certification of the qualified parts manufactured, stored and procured under a cancelled version of the applicable specifications prior to the cancellation date shall remain effective after the cancellation date.

6.1 Establishment and Revision of Detail Specifications

A detail specification shall be established and changed in accordance with Section A.4. The detail specification shall be as defined in the applicable generic specification. To make a change to or delete a test(s) or inspection(s) in accordance with paragraph 4.4, the details of the test(s) or inspection(s) and grounds for the change shall be described in the detail specification in accordance with paragraph A.4.4.2. In this case, the detail specification shall be revised or newly established and registered with JAXA.

6.2 Changes

A change notice shall be issued in accordance with Section A.5 for minor changes to generic specifications or detail specifications. Minor changes are those listed below.

a) Correction of typographical errors in text
b) Changes in terminology
c) Changes in figures and tables

When they can be effectively handled, a change notice shall be issued for minor changes other than those above.
The notice of change shall remain valid until the applicable specification is revised.
The notices of change shall be identified by a sequential number for each applicable specification.

6.3 Cancellation of Applicable Specification

When the applicable specifications are revised, the previous version including all applicable notices of change shall be cancelled on the date the new revision is established.
The qualified parts manufactured in compliance with the cancelled version of the applicable specifications prior to the cancellation data shall remain as certified products after the cancellation date.

6.4 Registration

Detail specifications, Application Data Sheet and notices of changes shall be prepared and established by QML manufacturer and registered with JAXA. JAXA shall issue general specifications and their change notices, detail specification and their change notices, and application datasheet and their change notices with providing a registration number to each specification/change notice.

6.5 Publication

General specifications, generic specifications, detail specifications and Application Data Sheets shall be stored in the database of JAXA Qualified EEE Parts and Materials and published on the Internet.

7. TERMINOLOGY

a) ISO 9001 (Quality management systems – Requirements): ISO 9001 establishes the requirements for a quality management system in which the concept of quality assurance is taken one step further by covering the improvement of customer satisfaction.

b) DPA (Destructive physical analysis): Inspections or analyses performed destroying the device to confirm the compliance with the applicable design and process requirements.

c) JAXA-developed parts: Qualified parts developed under a contract with JAXA.

d) Spacecraft: A generic term referring to satellites, space experiment equipment, space stations and their launch vehicles.

e) Inspection lot: An inspection unit for a quality conformance inspection. As a rule, an inspection lot is a production lot.

f) In-process inspection: Inspections which are performed during the manufacturing process to detect defects which could significantly affect the reliability and quality of the product and to examine the characteristics and attributes of the product which cannot be measured using finished products.

g) On-site audit: An audit of the quality assurance program performed by JAXA at the manufacturer's site.

h) Failure rate level: Numerical representation of a degree of reliability based on failure rate.

i) Sales volume and customers' list: A list of the number of shipments and primary customers of certified products.

j) High reliability parts: Qualified parts whose failure rate level is not specified in the applicable specification, however, whose quality is assured by means of stringent design control, process control and quality conformance inspections for each production lot.

k) Established reliability parts: Qualified parts whose failure rate is specified in the applicable specification and whose quality is assured by means of stringent design control, process control and quality conformance inspections for each production lot.

l) Non-JAXA-developed parts: Common parts/materials developed by a manufacturer at their own expense to acquire QML certification without a JAXA contract.

m) Production lot: A production unit whose products can be considered as identical in regards to the production line continuity, production efficiency and reliability.

n) Products: The QML system certifies a group of products represented by the test vehicles or samples. The QML manufacturer, therefore, is allowed to develop new detail specifications and supply products as certified products within the qualification coverage. The term "products" in the QML system is used as opposed to "part" in the QPL certification to help users understand this concept.

o) Application Data Sheet: A sheet summarizing test data and applications, among other things, of the qualified parts.

p) Part group: A class of common parts/materials that have particular configuration and features in common, such as integrated circuits, resistors and capacitors. For example, the part group number 22, consists of 20 of EEE parts and 2 materials.

q) Part type: Part identification further classifies the part group. The part type is described such as "Microcircuits, CMOS 32 bit MPU, monolithic silicon, high reliability, space use", "Resistors, fixed, film, high reliability, space use", and "Capacitors, multiple layer, fixed, ceramic dielectric, high reliability space use"

8. APPENDIX

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Appendix C	Requirements for Quality Assurance Program
Appendix D	Quality Assurance Manager and Registered Inspector
Appendix E	Qualification Procedures
Appendix F	Application Procedures and Formats
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APPENDIX A

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This document is the English version of JAXA QTS/ADS which was originally written and authorized in Japanese and carefully translated into English for international users. If any question arises as to the context or detailed description, it is strongly recommended to verify against the latest official Japanese version.

APPENDIX A

PREPARATION OF APPLICABLE SPECIFICATIONS

A.1. Scope

This appendix establishes the rules for preparation of applicable specifications as required in paragraph 3.2 of JAXA-QTS-2000.

A.2. General

JAXA-QTS-2000 specifies general requirements for common parts and materials. In order to acquire certification by JAXA for common parts and materials in accordance with JAXA-QTS-2000, applicable specifications shall be prepared to define detail requirements.

A.2.1 Sub-Tier Specifications and Organization of Applicable Specifications

A.2.1.1 Sub-Tier Specifications

Applicable specifications shall be composed of the following sub-tier specifications.

a) Generic specifications: Generic specifications define general requirements common to qualified parts of the part type.
b) Detail specifications: Detail specifications define requirements unique to the group of the qualified parts.

Note: Notices of change shall document partial changes of generic specifications or detail specifications. A notice of change shall constitute a part of generic specification or detail specification.

A.2.1.2 Organization

Unless otherwise specified, applicable specifications shall be organized as shown in Table A-1.

Table A-1. Organization of Applicable Specifications

Sub-tier specification	Contents
Generic specification	(1) Cover (2) Table of contents (3) Main body (4) Appendix (prepared for each matter relevant to the main body, or for each part type designation)
Detail specification	(1) Cover (2) Table of contents (3) Main body (4) Appendix (If necessary)

A.2.1.3 Management

a) Applicable specifications shall be properly established, changed, revised or cancelled.
b) Generic specifications shall be prepared and issued by JAXA.

c) Detail specifications shall be prepared and established by the QML manufacturers or JAXA and registered with JAXA.

d) The applicable specification shall be published on the Internet and posted on the public website as part of the Database of JAXA Qualified EEE Parts and Materials.

A.2.2 Document Number of Applicable Specifications

A.2.2.1 Generic Specification

The document number of applicable specifications to be established by JAXA shall be provided as follows.

JAXA-QTS- 2xxx □
(1) (2)

(1) Generic specification number
(2) Revision letter

A.2.2.1.1 Generic Specification Number

The generic specification number shall be a four-digit number for which the first generic specification number is provided with “2010.”

A.2.2.1.2 Revision Letter

A revision letter shall be assigned in an alphabetical order. The first revision shall be identified by “A”. Alphabets of “I”, “O” and “Z” shall not be used as a revision letter.

a) Where a generic specification is revised.
Example: JAXA -QTS-2040 → JAXA -QTS-2040A

A.2.2.2 Detail Specification Number

The detail specification number to be established by a manufacturer shall be provided as follows.

JAXA-QTS- 2xxx / A xxx □
(1) (2) (3) (4)

(1) Generic specification number
(2) Appendix letter of generic specification
(3) Individual identification
(4) Revision letter

A.2.2.2.1 Generic Specification Number

The generic specification number shall be the number of the applicable generic specification. However, no revision letter shall be involved.

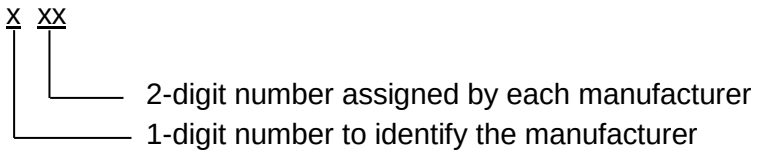
A.2.2.2.2 Appendix Letter of Generic Specification

The appendix letter shall be provided to identify the applicable appendix of the generic specification. The appendix letter shall not be used for the following cases.

a) The applicable generic specification has no appendixes.
b) Appendixes of the applicable generic specification are not prepared for each part type.

A.2.2.2.3 Individual Identification

The individual identification shall be a three-digit number. The first digit shall identify the manufacturer, and the other two digits shall be assigned by the manufacturer.



A.2.2.2.4 Revision Letter

A revision letter shall be assigned in an alphabetical order. The first revision shall be identified by “A”. Alphabets of “I”, “O” and “Z” shall not be used.

a) When a detail specification is revised.
Example: JAXA-QTS-2040/A101 → JAXA-QTS-2040/A101A
b) When the applicable detail specification is revised to reflect changes in the generic specification.
Example: JAXA-QTS-2040/A101A → JAXA-QTS-2040/A101B
c) When the applicable detail specification is not affected by changes in the generic specification.
Example: JAXA-QTS-2040/A101A → JAXA-QTS-2040/A101A
(The applicable detail specification is not revised.)

A.2.2.3 Cancellation of Applicable Specification

When an applicable specification is revised, the previous version shall be automatically cancelled on the date of the revision. The document number of the cancelled specification and date of cancellation shall be indicated on the cover of the revised specification.

Example: Where revised as “revision A”.	JAXA-QTS-2001A 1 July 1989 Superseding JAXA-QTS-2001 Cancelled 1 July 1989

A.2.2.4 Numbering of Notice of Change

The document number of a change notice shall be assigned as follows. The number and revision letter of the applicable specification to be changed shall be also indicated.

Example:
JAXA-QTS-2000A
NOTICE 1
(1)
(1) Serial number provided for each notice

A.2.3 Title

Unless otherwise specified, the title shall be provided as follows.

A, B, Space Use, C
(1) (2) (3)

(1) Nomenclature of qualified parts
(2) Reliability level
(3) Sub-tier specification

A.2.3.1 Reliability Level

Reliability level shall be indicated as either “established reliability” or “high reliability”.

A.2.3.2 Nomenclature of Qualified Parts

The nomenclature of qualified parts shall be determined in accordance with public standards such as JIS standards.

A.2.3.3 Sub-Tier Specifications

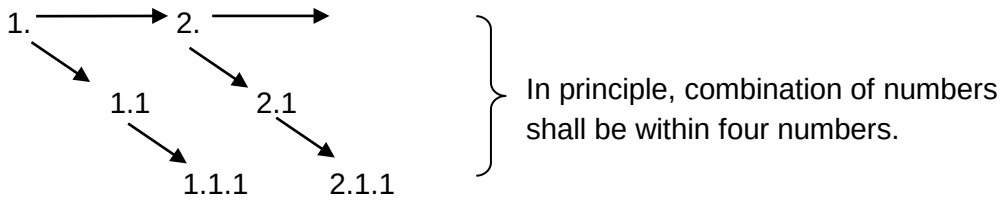
Sub-tier specifications shall be indicated as either “general specification” or “detail specification”.

A.2.4 Description Rules of Applicable Specification

Applicable specifications shall be prepared in accordance with the following description rules.

A.2.4.1 Paragraph Numbering

a) In the main body, the paragraph number shall be provided as follows.



b) In appendixes, the paragraph number shall be provided as follows.

A.1. → A.2. →
↘ ↘
A.1.1 A.2.1
↘ ↘
A.1.1.1 A.2.1.1

The first capital letter shall be the appendix letter. In principle, combination of numbers shall be within four numbers.

c) To itemize requirements in a paragraph, the itemization number shall be provided as follows.

a) → b) → c)
↘
1) → 2) → 3)
↘
1.1) → 1.2) → 1.3)

A.2.4.2 Numbering of Figures, Tables and Pages

a) Figure and table numbers shall be sequentially assigned for the main body or each appendix.

b) The identification number and title of a figure shall be indicated at the bottom of the figure. For a table, the number and title shall be indicated at the top of the table.

Figure or Table x - xx title
Appendix letter Serial number
(left blank in the main body)

Example: Table A-3. Performance

c) The page number shall be indicated at the top of the page.

- x - xx -
Appendix letter Serial number
(left blank in the main body)

Example: - A–3 -

A.2.4.3 Notes

a) Symbols of notes link terms in the main body to corresponding supplementary explanation and shall be given in the form of "(x)", where X is a sequential number starting "1" in each paragraph.

Example:
Note: (1) Corrosion which will affect performance of the part.

b) Symbols of notes for figures or tables link figures or tables to corresponding supplementary explanation and shall be given in the form of "(x)", where X is a sequential number starting "1" for each figure or table.

Example:
Note: (1) Shall apply to qualification tests.

A.2.4.4 Unit Symbol

Unless otherwise specified, unit symbols shall comply with the following standards.

a) JIS Z 8202-0 Quantities and Units - Part 0: General Principles
b) JIS Z 8202-1 Quantities and Units - Part 1: Space and Time
c) JIS Z 8202-2 Quantities and Units - Part 2: Periodic and Related Phenomena
d) JIS Z 8202-3 Quantities and Units - Part 3: Mechanics
e) JIS Z 8202-4 Quantities and Units - Part 4: Heat
f) JIS Z 8202-5 Quantities and Units - Part 5: Electricity and Magnetism
g) JIS Z 8202-6 Quantities and Units - Part 6: Light and Related Electromagnetic Radiations
h) JIS Z 8202-7 Quantities and Units - Part 7: Acoustics
i) JIS Z 8202-8 Quantities and Units - Part 8: Physical Chemistry and Molecular Physics
j) JIS Z 8202-9 Quantities and Units - Part 9: Atomic and Nuclear Physics
k) JIS Z 8202-10 Quantities and Units - Part 10: Nuclear Reactions and Ionizing Radiations
l) JIS Z 8202-12 Quantities and Units - Part 12: Characteristic Numbers
m) JIS Z 8202-13 Quantities and Units - Part 13: Solid State Physics
n) JIS Z 8203 SI Units and Recommendations for the Use of their Multiples of Certain Other Units

A.2.4.5 Mathematical Symbols and Formula

Unless otherwise specified, mathematical symbols and formula shall comply with the following standard.

a) JIS Z 8201 Mathematical Symbols

A.2.4.6 Rounding of Numbers

Unless otherwise specified, numbers shall be rounded in accordance with the following standard.

a) JIS Z 8401 Guide to the Rounding of Numbers

A.2.4.7 Formats of Specifications

Unless otherwise specified, specification formats shall comply with the following standard.

a) JIS Z 8301 Rules for the Layout and Drafting of Japanese Industrial Standards

A.2.4.8 Tolerances

Tolerances shall be indicated as follows in accordance with paragraph A.2.4.7, item a).

Example: 2000^{+72}_{0} hours

2.54mm±0.25mm

A.3. Generic Specification

As a minimum, the following requirements shall be defined in the main body of generic specification in accordance with this specification. Common requirements to all appendixes shall be defined in the main body, if any.

a) Revision record
b) General
c) Applicable documents
d) Requirements
e) Quality assurance provisions
f) Preparation for delivery
g) Notes
h) Appendix

A.3.1 General

The following items shall be defined.

a) Scope
b) Definition of terms
c) Classification of part group
d) Part number

A.3.1.1 Scope

a) The text of this paragraph shall be in the following format.

> Example:
> This specification establishes the general requirements and quality assurance provisions for space use, high reliability, resistors (hereinafter referred to as "resistors") which are used for electronic equipment installed on space systems.
> This specification complies with JAXA-QTS-2000 (Common Parts/Materials, Space Use, General Specification for) which is based on the qualified manufacturing line system, and supersedes the following specification.
>
> a) NASDA-QTS-55182G Resistors, Fixed, Film, High Reliability, Space Use, General Specification for

b) If the above format cannot adequately define the scope of the specification, any necessary modification shall be made.

A.3.1.2 Definition of Terms

a) Unless otherwise specified, the definition of terms shall conform to public standards such as JIS.
b) Special terms, which are not covered in public standards such as JIS, and ambiguous terms shall be listed and defined in the specification.
c) If there are so many terms to be defined, the definitions of those terms may be provided in the notes paragraph or in appendixes. In this case, the reference to a paragraph containing the definitions of terms shall be provided here.

A.3.1.3 Classification of Part Group

The qualified parts may be further divided into part groups per configuration and/or functionality.
Example: The classification of resistors shall be specified in Table 1.

Table 1. Classification of Part Groups

Part group	Appendix of this specification	Equivalent QPL specification
Resistors, fixed, film	A	NASDA-QTS-55182G
Resistors, fixed, film, insulated small	B	NASDA-QTS-39014D

A.3.1.4 Part Number

The part number shall be assigned as follows.

a) Use the existing part number and associated information in the following format, if any.

Example 1: JAXA(1)	RNS55	J	1001	F
	Style	Characteristic	Nominal resistance	Resistance tolerance
	(see 1.3.1)	(see 1.3.2)	(see 1.3.3)	(see 1.3.4)

Note: (1) "JAXA" indicates the part is certified for space use and may be abbreviated "J."

When a QPL specification is superseded by a generic specification, part numbers used in QPL specification may be also used in the generic specification.

Example 2: NASDA(1)	CKS05	BX	100	K
	Style	Characteristic	Nominal capacitance	Capacitance tolerance
	(see 1.3.1)	(see 1.3.2)	(see 1.3.3)	(see 1.3.4)

Note: (1) "NASDA" indicates the part is certified for space use and may be abbreviated "N."

b) Otherwise, use the following format.

Example: JAXA[1]	2345	/	A	101	(-A6G8)
	Generic specification number		Appendix letter	Individual identification	Characteristic identifier
	(see 1.2.1)		(see 1.2.2)	(see 1.2.3)	(see 1.2.4)

Note: [1] "JAXA" indicates the part is certified for space use and may be abbreviated "J".

c) Unique part numbers may be defined in each generic specification.
Example: Use the JEITA parts' numbering system for semiconductor devices.

A.3.2 Applicable and Other Related Documents

This section shall specify the following items.

a) Applicable documents
b) Reference documents
c) Order of precedence
d) Detail specifications

A.3.2.1 Applicable Documents

a) The text of this paragraph shall be in the following format.

> Example:
> The documents listed below form a part of this specification to the extent specified herein. The issues of these documents are the latest version available at the time of contract award or application. If it is necessary to designate an issue, the issue shall be specified in the detail specification.
>
> NASDA-QTS-12345 (Title)
> MIL-STD-23456 (Title)

b) A revision letter shall not be given unless a particular version needs to be specified.

A.3.2.2 Reference Documents

The following document shall be listed as reference documents for the qualified parts.

a) JERG-0-035 NASDA Parts Application Handbook

Other reference documents shall be listed as required.

A.3.2.3 Order of Precedence

The order of precedence of applicable specifications and applicable documents shall be specified in accordance with paragraph 2.2 of this specification.

A.3.2.4 Detail Specifications

Unless otherwise specified, the text of this paragraph shall be in the following format.

> Example:
> Detailed requirements for style and performance of the resistors are specified in each detail specification.

A.3.2.4.1 Detail Specification Number

a) It shall be stated that the detail specification number shall be assigned in accordance with paragraph A.2.2.2 of this appendix.
b) Rules to assign detail specification number shall be illustrated using an example.

A.3.2.4.2 Revision Letter of Detail Specification

It shall be stated that a revision letter in the detail specification number shall be assigned in accordance with paragraph A.2.2.2.4 of this appendix.

A.3.2.4.3 Independency of Detail Specification

The text of this paragraph shall be in the following format.

> Example:
> The detail specification shall be a stand-alone document with a unique document number.

A.3.2.4.4 Format of Detail Specification

It shall be stated that the format of detail specification shall be in accordance with paragraph A.6., item b) of this appendix. It shall be also stated that requirements in the detail specification shall be specified in accordance with paragraph A.4 (Detail Specification).

A.3.3 Requirements

The following items shall be defined.

a) General requirements
b) Certification
c) Quality assurance program
d) Materials
e) Design and construction
f) External view, physical dimensions, mass and marking
g) Workmanship
h) Specifications
i) Screening
j) Electrical performance
k) Mechanical performance
l) Environmental performance
m) Durability

A.3.3.1 General Requirements

General requirements shall be specified only when deemed necessary. For example, it shall be stated that detail requirements of the qualified parts shall comply with the detail specification.

A.3.3.2 Certification

Requirements for certification and retention of certification shall be specified with regard to the items listed in the following paragraphs in accordance with this specification.

A.3.3.2.1 Qualification Coverage

The coverage of qualification for each item (element) shall be specified in the main body or each appendix. It shall be stated that details of qualification coverage which cannot be specified in the main body or appendix shall be covered in the detail specification.

A.3.3.2.2 Initial Qualification

It shall be stated that qualification tests shall be conducted in accordance with paragraph 3.4.1 of this specification.

> Example:
> To acquire certification under this specification, a manufacturer shall establish a quality assurance program that meets the requirements specified in paragraph 3.3, conduct the qualification tests specified in paragraph 4.3.1, and acquire an approval from JAXA as specified in paragraph 3.4.1 of JAXA-QTS-2000. The manufacturer shall be listed on the Qualified Manufacturers List of the Japan Aerospace Exploration Agency (JAXA QML).

A.3.3.2.3 Retention of Qualification

It shall be stated that a manufacturer shall apply for retention of the certification in accordance with paragraph 3.4.2 of this specification, with results of the quality conformance inspection and maintenance status of quality assurance program within the effective period of certification. A procedure to apply for retention of certification shall be specified, where no product was manufactured during the effective period of certification.

A.3.3.2.4 Effective Period of Certification

Effective period of certification shall be specified. The period shall not exceed three years.

A.3.3.2.5 Change of Qualification Coverage

When the manufacturer has changed the qualification coverage, it shall be stated that a manufacturer shall be requalified in accordance with paragraph 3.4.3 of this specification.
It shall be stated that, in principle, requalification shall be conducted only for the items which might be affected by the change.

A.3.3.3 Quality Assurance Program

A.3.3.3.1 Quality Assurance Program

It shall be stated that a manufacturer shall establish a quality assurance program in accordance with paragraph 3.3 and Appendix C, and generate a quality assurance program plan (hereinafter referred to as "QAP plan") which documents the complete quality assurance program.

A.3.3.3.2 TRB Formation

It shall be stated that a manufacturer shall form a Technical Review Board (TRB) in accordance with paragraph 3.3.5 of this specification.

A.3.3.4 Materials

a) Requirements for materials shall be specified.
b) Prohibited materials for space use shall be specified.
c) It shall be stated that general requirements on materials shall be specified in the manufacturing conditions of the quality assurance program.
d) If necessary, it shall be stated that detail requirements shall be specified in the detail specification.

A.3.3.5 Design and Construction

a) Requirements for critical design and construction of the qualified parts shall be specified.
b) If necessary, it shall be stated that detail requirements shall be specified in the detail specification.

A.3.3.6 External View, Physical Dimensions, Mass and Marking

a) Requirements for external view, physical dimensions, mass and marking shall be specified.
b) For example, requirements of interface with other devices including leads, mounting structure, plating and mass shall be specified.
c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.3.7 Workmanship

a) Requirements for workmanship shall be specified.
b) For example, verification requirements such as precap, PIND, radiography and DPA shall be specified.
c) If necessary, it shall be stated that detail requirements shall be specified in the detail specification.

A.3.3.8 Specifications

a) Specifications shall be specified.
b) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.3.9 Screening

a) Requirements for screening shall be specified.
b) For example, verification requirements such as thermal tests, mechanical tests, radiography or other appropriate methods shall be specified.
c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.3.10 Electrical Performance

a) Requirements for electrical performance shall be specified.
b) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.3.11 Mechanical Performance

a) Requirements for mechanical performance shall be specified.
b) For example, verification requirements with regard to terminal strength, solderability, resistance to soldering heat and sealing shall be specified.
c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.3.12 Environmental Performance

a) Requirements for environmental performance shall be specified.
b) For example, verification requirements such as shock test, acceleration test, vibration test, solvent resistance test, salt spray test, barometric pressure (reduced) test, thermal shock test, thermal and immersion cycling test, humidity test, thermal vacuum test, radiation hardness test, flammability test, offgas test, outgassing test and odor test shall be specified.
c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.3.13 Durability

a) Requirements for durability shall be specified.
b) For example, verification requirements with regard to storage life and operating life shall be specified.
c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.4 Quality Assurance Provisions

The following items shall be specified in the quality assurance provisions.

a) General requirements
b) Classification of tests and inspections
c) In-process inspection
d) Qualification test
e) Quality conformance inspection
f) Test method
g) Long-term storage
h) Change of tests and inspections

A.3.4.1 General Requirements

It shall be stated that a manufacturer shall be responsible for implementation of the quality assurance program in accordance with paragraphs 4.1 and 4.2, and that the manufacturer shall have the obligation to operate the Technical Review Board (TRB) properly. Other requirements specially required for quality assurance provisions shall be specified.

A.3.4.2 Classification of Tests and Inspections

Paragraph 4.3 of this specification shall be referenced. Other requirements necessary for the classification of the qualified parts shall be also specified.

A.3.4.3 In-Process Inspection

a) The in-process inspection shall be specified, in order to detect any failure which could seriously affect the reliability and quality of the products, assure the workmanship, and identify the characteristic properties which cannot be measured after parts are finished products. Examples are shown below.
   1) Internal visual inspection of semi-finished products (100% or sampled inspection for non-destructive inspection)
   2) Physical and chemical inspection of semi-finished products (destructive inspection or 100% or sampled inspection for non-destructive inspection)
   3) Characterization of semi-finished products (100% or sampled inspection for non-destructive inspection)
b) It shall be stated that the in-process inspection shall be defined in the manufacturing process flowchart of a QAP plan specified in Appendix C, and the in-process inspection shall be conducted in accordance with it.

A.3.4.4 Qualification Test

The following items shall be specified in the provision of qualification test.

a) Samples
b) Production records
c) Test items and number of samples
d) Criteria for pass/fail
e) Miscellaneous

A.3.4.4.1 Samples

a) It shall be stated that samples shall be manufactured in accordance with the manufacturing conditions specified in the quality assurance program.
b) Selection of samples shall be specified in relation to the qualification coverage.

A.3.4.4.2 Production Records

It shall be stated that a manufacturer, which intends to acquire certification status, shall archive and manage certificates of materials, and acceptance inspection data or test data of materials, process records during the production of samples and in-process inspection data, and submit them upon request.

A.3.4.4.3 Test Items and Number of Samples

a) Test items for qualification test shall be provided in the form of tables.
b) Sampling plan, distribution of samples to each test group and order of tests shall be specified.
c) If necessary, it shall be stated that detail requirements of test methods shall be as specified in the detail specification.

A.3.4.4.4 Criteria for Pass/Fail

a) Criteria for pass/fail shall be specified.
b) Disposition of the accepted products shall be specified, when the number of defectives does not exceed the permitted number of defectives specified, but the failure mode of the defectives is catastrophic.

A.3.4.4.5 Miscellaneous

Miscellaneous things such as disposition of non-conformance, post-test disposition of samples, sample storage shall be specified.

A.3.4.5 Quality Conformance Inspection

The following items shall be specified in the provision of quality conformance inspection.

a) Classification of tests
b) Samples
c) Test items and number of samples
d) Criteria for pass/fail
e) Post-test disposition of sample
f) Miscellaneous

A.3.4.5.1 Classification of Tests

Classification of tests shall be specified. Unless otherwise specified, quality conformance inspection shall be grouped as follows.

a) Group A: Quality conformance inspection to be performed for all products during the manufacturing processes.
b) Group B: Quality conformance inspection to be performed with the first lot manufactured during the effective certification period.
c) Group C: Quality conformance inspection to be performed at the time of resuming production, when no products were manufactured during the effective certification period and the recertification was obtained without conducting the quality conformance inspection.

A.3.4.5.2 Samples

Criteria for sample selection and constitution of an inspection lot shall be specified.

A.3.4.5.3 Test Items and Number of Samples

a) Test items and the number of samples shall be specified based on those of qualification tests.
b) Order of each test of the quality conformance inspection shall be specified.

c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.4.5.4 Criteria for Pass/Fail

a) Criteria for pass/fail shall be specified.
b) Disposition of the accepted products shall be specified, when the number of defectives does not exceed the permitted number of defectives specified, but the failure mode of the defectives is catastrophic.
c) If necessary, it shall be stated that detail requirements shall be as specified in the detail specification.

A.3.4.5.5 Post-Test Disposition of Sample

a) In the case of non-conformance, disposition of the products shall be specified.
b) Disposition of the products subjected to destructive test shall be specified.

A.3.4.5.6 Miscellaneous

If necessary, it shall be stated that detail requirements shall be specified in the detail specification.

A.3.4.6 Test Method

a) Conditions of the tests and inspections shall be specified.
b) Test methods shall be specified to verify the conformance of the common parts/materials to the requirements defined in each applicable specification in accordance with paragraphs A.3.3.4 through A.3.3.13 of this appendix.
   1) Materials
   2) Design and construction
   3) External view, physical dimensions and marking
   4) Workmanship
   5) Screening
   6) Electrical performance
   7) Mechanical performance
   8) Environmental performance
   9) Durability
c) It shall be stated that requirements shall be verified by analysis when they cannot be verified by tests.
d) It may be stated that detail requirements shall be as specified in the detail specification, if necessary.

A.3.4.6.1 Materials

a) Test methods to verify the conformance of the materials to the requirements shall be specified.
b) Verification requirements for certification such as certificates of materials and review of quality assurance program shall be specified.

A.3.4.6.2 Design and Construction

a) Verification methods for the requirements of design and construction such as DPA shall be specified.

b) Verification requirements for certification and shipment shall be specified.

A.3.4.6.3 External View, Physical Dimensions and Marking

a) Verification methods for the requirements of externals, physical dimensions and marking shall be specified.
b) Accuracy and magnification requirements of measuring equipment shall be specified.

A.3.4.6.4 Workmanship

Verification methods for the requirements of workmanship shall be specified.

A.3.4.6.5 Screening

Verification methods for the requirements of screening shall be specified.

A.3.4.6.6 Electrical Performance

a) Verification methods for the requirements of electrical performance shall be specified.
b) Unless otherwise specified, test methods shall be in accordance with the following standards. Special conditions for tests shall be specified, if necessary.
   1) MIL-STD-202
      Test Method Standard, Electronic and Electrical Component Parts
   2) MIL-STD-750
      Test Method Standard, Semiconductor Devices
   3) MIL-STD-883
      Test Method Standard, Microcircuits
c) When no standards of test methods are available, the test methods shall be specified.

A.3.4.6.7 Mechanical Performance

a) Verification methods for the requirements of mechanical performance shall be specified.
b) Unless otherwise specified, test methods shall be in accordance with the standards specified in paragraph A.3.4.6.6, item b). Special conditions for tests shall be specified, if necessary.
c) When no standards of test methods are available, the test methods shall be specified.

A.3.4.6.8 Environmental Performance

a) Verification methods for the requirements of environmental performance shall be specified.
b) Unless otherwise specified, test methods shall be in accordance with the standards specified in paragraph A.3.4.6.6, item b). Special conditions for tests shall be specified, if necessary.
c) When no standards of test methods are available, the test methods shall be specified.

A.3.4.6.9 Durability

a) Verification methods for the requirements of durability shall be specified.
b) Unless otherwise specified, test methods shall be in accordance with the standards specified in paragraph A.3.4.6.6, item b). Special conditions for tests shall be specified, if necessary.
c) When no standards of test methods are available, the test methods shall be specified.

A.3.4.7 Long-Term Storage

A.3.4.7.1 Disposition of Lots Stored for a Long Term at Manufacturer's Site

Disposition of lots stored for a long term shall be specified in accordance with paragraph 4.3.4 of this specification.

a) Period of storage
b) Test item
c) Test date
d) Identification of products

A.3.4.7.2 Storage by Purchasers

It shall be stated that conditions and period of storage by purchasers shall be as specified in the detail specification.

A.3.4.8 Change of Tests and Inspections

The change of tests and inspections for the in-process inspection and quality conformance inspection shall be specified.

> Example:
> If the manufacturer wishes to change or delete the test and/or inspections of the in-process inspections and quality conformance inspections, paragraphs 4.4 and 6.1 of JAXA-QTS-2000 shall apply.

A.3.5 Preparation for Delivery

Paragraph 5 of this specification shall be referenced, and the following shall be specified.

a) Packaging
b) Marking on package

A.3.6 Notes

Miscellaneous things that are not covered in the previous paragraphs shall be specified. Examples are shown below.

a) Notice for a QML manufacturer
b) Notice for acquisition officers
(Items to be specified at the time of procurement such as part number, applicable specification number, deliverable data and source inspection shall be specified.)
c) Notes for preparation and registration of application data sheets

A.3.7 Appendix

Appendixes shall be used, if necessary, to supplement or add details to the main body. Unless otherwise specified, appendixes shall be prepared separately for each item of the main body or for each type of qualified parts.

A.4. Detail Specification

The detail specification shall specify the following items.

a) Revision record
b) General
c) Applicable documents
d) Requirements
e) Quality assurance provisions
f) Preparation for delivery
g) Notes

A.4.1 General

Unless otherwise specified, the following items shall be specified.

a) Scope
b) Part number
c) Specifications
d) Miscellaneous

A.4.1.1 Scope

The scope of the detail specification shall be specified, indicating the applicable generic specification.

Example: This specification establishes the detailed requirements for RNS50, 55, 60, 65 and 70 of film, fixed resistors (specified in appendix A of JAXA-QTS-2050), in the context of the space use, high reliability, resistors (specified in JAXA-QTS-2050).

A.4.1.2 Part Number

Part number shall be specified in accordance with the applicable generic specification.

A.4.1.3 Specifications

Major properties of the parts such as operating temperature range, electrical properties, mechanical properties, environmental properties and durability shall be specified.

A.4.1.4 Miscellaneous

Miscellaneous things shall be specified.

A.4.2 Applicable Documents

Applicable documents such as generic specifications shall be listed in accordance with paragraph A.3.2.

A.4.3 Requirements

a) Requirements shall be specified in accordance with the applicable generic specification.
b) Unique requirements shall be provided if necessary.
c) A detail specification shall specify items that are required in the generic specification to specify in a detail specification.
d) Performance requirements may be tabulated, if appropriate, indicating compliance with the requirements defined in the generic specification.

A.4.4 Quality Assurance Provisions

A.4.4.1 General

a) Quality assurance provisions shall be specified in accordance with the applicable generic specification.
b) Unique requirements shall be specified.
c) Test items of screening test, if applicable, in-process inspection, qualification test and quality conformance inspection may be tabulated in association with the requirements of the generic specification.

A.4.4.2 Change of Tests and Inspections

If the manufacturer wishes to change or delete the test and/or inspections of the in-process inspections and quality conformance inspections specified in the applicable generic specifications at the issuance of a detail specification or the revision, the manufacturer shall describe the rationale that the products shall satisfy the quality assurance requirements after the implementation of the change as specified in paragraphs 4.4 and 6.1 of this specification.

A.4.5 Preparation for Delivery

a) Requirements of preparation for delivery shall be specified in accordance with the applicable generic specification.
b) If there are conditions and/or maximum period of storage that must be observed by purchasers, those conditions and/or maximum period of storage shall be specified.
c) Unique requirements shall be specified, if necessary.

A.4.6 Notes

Notes shall cover what is not specified above.

A.5. Notice of Change

A.5.1 Scope

A notice of change shall be prepared in accordance with paragraph 6.2 of this specification.

A.5.2 General Requirements

a) A notice of change shall be issued for each generic specification or detail specification.

b) The notice of changes shall remain effective until a revision is issued for the original specification.

A.5.3 Instructions for Preparation

a) Each change shall be described in the order of pages on which the paragraph appears in the original specification. Description before and after the change and rationale for the change shall be described.
b) To delete a paragraph, the subsequent paragraph numbers shall remain unchanged.
   Example: 3.4.2 (title) Deleted
c) A paragraph shall be added without affecting existing paragraph numbers.
d) When numerous changes are made to a paragraph, rewrite the whole paragraph.

A.6. Formats of Applicable Specifications

a) An example of generic specifications is shown in A-1.
b) An example of detail specifications is shown in A-2.
c) An example of notice of change is shown in A-3.

Example: Format A-1 Generic Specification

(Cover sheet)[1]

Registration No. xx

JAXA-QTS- xxxxG
(date)

Superseding
JAXA -QTS-xxxxF
Cancelled
(date)

RESISTORS,
HIGH RELIABILITY,
SPACE USE,
GENERAL SPECIFICATION FOR

JAXA
JAPAN AEROSPACE EXPLORATION AGENCY

Note: [1] The purpose of Example Format A-1 is to show the format for generic specification. Contents used here vary for each part type. (the same applies next few pages)

Example: Format A-1
(Revision record)

JAXA-QTS-xxxxG Day Month Year	J A X A Parts Specification	Page	- i -

Issue/revision record		
Rev.	Date	Description

Example: Format A-1
(Table of contents)

Contents

1. GENERAL 1
1.1 Scope.....1
1.2 Terms and Definitions.....1
1.3 Classification.....2
1.4 Part Number 1

(continues)

2. APPLICABLE DOCUMENTS 2
2.1 Applicable Documents.....2

(continues)

Example: Format A-1
(Text)

JAXA-QTS-xxxxG Day Month Year	J A X A Parts Specification	Page	- 1 -

RESISTORS,

HIGH RELIABILITY, SPACE USE,

GENERAL SPECIFICATION FOR

1. GENERAL

1.1 Scope

This specification establishes the general requirements and quality assurance provisions for space use, high reliability, resistors…….. (continues)

1.2 Terms and Definitions

The definitions for terms used herein are as shown below.

a) Derating curve: The curve ……(continues)

1.3 Classification

Products covered by this specification shall …… (continues)

1.4 Part Number

The part number is defined in the following format and identifies the style, characteristic, nominal resistance and resistance tolerance.

Example: JAXA[(1)]	RNS55	-	J	-	1001	-	F
	Style		Characteristic		Nominal Resistance		Resistance tolerance
	(see 1.4.1)		(see 1.4.2)		(see 1.4.3)		(see 1.4.4)

Note: [(1)] "JAXA" indicates the common part for space use and may be abbreviated to "J".
(continues)

2. APPLICABLE DOCUMENTS

2.1 Applicable Documents

The documents listed below form a part of this specification as specified herein. These documents are …….(continues)

JAXA-QTS-2000	Common Parts/Materials, Space Use, General Specification for
MIL-STD-202	Test Method Standard, Electronic and Electrical Component Parts

(continues)

Example: Format A-2 Detail Specification

(Cover sheet)[1]

Registration No. xx

JAXA-QTS-××××/A×××A
(date)

Superseding
JAXA -QTS-××××/A×××
Cancelled
(date)

RESISTORS, FIXED, FILM,
HIGH RELIABILITY,
SPACE USE,
DETAIL SPECIFICATION FOR

Prepared and Established by: ABCD CORPORATION

Issued by: JAPAN AEROSPACE EXPLORATION AGENCY

Note: [1] The purpose of Example Format A-2 is to show the format for detail specification.
Contents used here vary for each part.(The same applies next few pages)

Example: Format A-2
(Revision record)

JAXA-QTS-××××/A×××A Day Month Year	J A X A Parts Specification	Page	- i -

Revision Record		
Rev.	Date	Description

Example: Format A-2
(Table of contents)

Contents

1. GENERAL 1
1.1 Scope 1
1.2 Part Number 1
1.3 Ratings 2
(continues)

2. APPLICABLE DOCUMENTS 2
(continues)

3. REQUIREMENTS 2
3.1 Performance 2
(continues)

4. QUALITY ASSURANCE PROVISIONS 3
4.1 In-Process Inspection 3
4.2 Qualification Test 4
4.3 Quality Conformance Inspection 5
4.4 Long-Term Storage 7
4.5 Changes of Tests and Inspections 7

5. PREPARATION FOR DELIVERY 7
6. NOTES 7

Example: Format A-2
(Text)

JAXA-QTS-××××/A×××A Day Month Year	J A X A Parts Specification	Page	- 1 -

RESISTORS, FIXED, FILM,
HIGH RELIABILITY,
SPACE USE,
DETAIL SPECIFICATION FOR

1. GENERAL

1.1 Scope

This specification establishes the detailed requirements for RNS50, 55, 60, 65 and 70 of film, fixed resistors (specified in appendix A of JAXA-QTS-××××), in the context of the space use, high reliability, resistors (specified in JAXA-QTS-××××).

1.2 Part Number

The part number is defined in the following format and identifies the style, characteristic, nominal resistance and resistance tolerance.

Example: JAXA[(1)]	RNS55	-	J	-	1001	-	F
	Style		Characteristic		Nominal resistance		Resistance tolerance
	(see A.1.3.1)		(see A.1.3.2)		(see A.1.3.3)		(see A.1.3.4)

Note: [(1)] "JAXA" indicates the common part for space use and may be abbreviated to "J."

Table 1. Part Number

Item	Applicable paragraph of JAXA-QTS-××××	Specification
Style	A.1.3.1	RNS55
Characteristic	A.1.3.2	J (±25ppm/°C for -55°C to 175°C)
Resistance	A.1.3.3	Example: 100R00=100Ω (Identified by a six-digit number.)[(1)]
Resistance tolerance	A.1.3.4	V (±0.005%), T (±0.01%), A (±0.05%), B (±0.1%), C (±0.25%), D (±0.5%), F (±1.0%)

Note: [(1)] For the resistance tolerance of C, D or F, the resistance shall be identified by a four-digit number.

Example: Format A-2
(Text)

1.3 Ratings

The ratings are shown in Table 2.

Table 2. Ratings

Item	Requirement paragraph of JAXA-QTS-××××	Specification
Operating temperature range (°C)	A.3.5.2	-55 to +175
Rated ambient temperature (°C)	A.3.5.3	125
Derating curve	A.3.5.4	As specified in Figure 1.
Style	-	RNS55
Nominal resistance range (Ω)	A.3.5.1	30.1 to 100k
Power rating (W)	A.3.5.3	0.3
Maximum operating voltage (V)	A.3.5.5	300
Power rating at 70°C	-	0.6
Maximum operating voltage at 70°C	-	300

(continues)

2. APPLICABLE DOCUMENTS

Applicable documents are as specified in paragraph 2.1 of JAXA-QTS-××××.

(continues)

3. REQUIREMENTS

Requirements shall be as specified in paragraph A.3 of JAXA-QTS-××××.

3.1. Performance

The performance shall comply with Table 3.

Example: Format A-2
(Text)

Table 3. Performance

Item	Test method paragraph of JAXA-QTS-××××	Performance
Materials	A.3.2	As specified in Appendix A of JAXA-QTS-××××.
External view, physical dimensions, marking	A.3.3	As specified in Supplementary Figure X.
Thermal shock (I)	A.3.8.3	As specified in Appendix A of JAXA -QTS-××××.
Thermal shock (II)	A.3.8.3	As specified in Appendix A of JAXA -QTS-××××.
Overload	A.3.6.1	As specified in Appendix A of JAXA -QTS-××××.
Resistance	A.3.6.2	As specified in Appendix A of JAXA -QTS-××××.
Radiography	A.3.4.1	As specified in Appendix A of JAXA -QTS-××××.

(continues)

4. QUALITY ASSURANCE PROVISIONS

The quality assurance provisions shall comply with paragraph A.4 of JAXA-QTS-××××.

4.1 In-Process Inspection

The in-process inspection shall comply with paragraph 4.3 of JAXA -QTS-××××. [The changes shall be made to xxx test. The details and rationale of the change shall be specified in paragraph 4.4. (These sentences are added when any changes have been made.)]

Table 4. In-Process Inspection

Test item	Requirement paragraph	Test method paragraph	Quantity of samples
External view and physical dimensions	A.3.3	A.4.3.2	100%
Plating thickness	-	-	100%

(continues)

Example: Format A-2
(Text)

4.2. Qualification Test

The qualification test shall comply with paragraph A.4.1 of JAXA-QTS-××××.

Table 5. Qualification Test

Test			Require-ment paragraph	Test method paragraph	Pass/fail	
Group	Order	Item			Quantity of samples	Quantity of allowable defects (2)
I	1	External view, physical dimensions and marking(1)	A.3.3	A.4.3.2	565 (all samples except for I-6 and IA tests)	0
	2	Thermal shock (I)	A.3.8.3.1	A.4.3.6.3.1		
	3	Overload	A.3.6.1	A.4.3.4.1		
	4	Resistance	A.3.6.2	A.4.3.4.2		
	5	Radiography	A.3.4.1	A.4.3.3.1		
	6	Destructive physical analysis (DPA)	A.3.4.2	A.4.3.3.2	2 or 3(2)	0
IA	1	Solderability(3)	A.3.7.3	A.4.3.5.3	12 Any resistance	0
	2	Resistance to solvents(3)	A.3.8.5	A.4.3.6.5		
II	1	Resistance-temperature characteristic	A.3.6.3	A.4.3.4.3	30 { 10 Maximum resistance 10 Critical resistance or nearest critical(4) 10 Minimum resistance	1
	2	Low temperature storage	A.3.8.6	A.4.3.6.6		
	3	Low temperature operation	A.3.8.7	A.4.3.6.7		
	4	Terminal strength	A.3.7.1	A.4.3.5.1		

(continues)

Example: Format A-2
(Text)

4.3. Quality Conformance Inspection

The quality conformance inspection shall comply with paragraph A.4.2 of JAXA-QTS-××××. [The changes shall be made to xxx tests. The details and rationale of the change shall be specified in paragraph 4.4. (These sentences are added when any changes have been made.)]

Table 9. Quality Conformance Inspection (Group A)

Test			Requirement paragraph	Test method paragraph	Pass/fail	
Sub-group	Order	Item			Quantity of samples	Quantity of allowable defects
A1	1	Thermal shock (I)	A.3.8.3.1	A.4.3.6.3.1	100%	0
	2	Overload	A.3.6.1	A.4.3.4.1		
	3	Resistance	A.3.6.2	A.4.3.4.2		
A2	1	External view, physical dimensions and marking(1)	A.3.3	A.4.3.2	AQL 4.0%	
A3	1	Radiography2)	A.3.4.1	A.4.3.3.1	100%	0
A4	1	DPA(3)	A.3.4.2	A.4.3.3.2	2 or 3	0
A5	1	Resistance-temperature characteristic	A.3.6.3	A.4.3.4.3	AQL 2.5%	
	2	Dielectric withstanding voltage (atmospheric pressure)	A.3.6.4	A.4.3.4.4		
	3	Insulation resistance	A.3.6.6	A.4.3.4.5		

(continues)

Example: Format A-2
(Text)

Table 10. Quality Conformance Inspection (Group B)

Test			Requirement paragraph	Test method paragraph	Pass/fail	
Sub-group	Order	Item			Quantity of samples	Quantity of allowable defects
B1	1	Resistance-temperature characteristic	A.3.6.3	A.4.3.4.3	10	0
	2	Dielectric withstanding voltage	A.3.6.4	A.4.3.4.4		
	3	Insulation resistance	A.3.6.6	A.4.3.4.5		
	4	Resistance to soldering heat	A.3.7.4	A.4.3.5.4		
	5	Moisture resistance	A.3.8.4	A.4.3.6.4		
B2	1	Solderability	A.3.7.3	A.4.3.5.3	5	0
	2	Resistance to solvents	A.3.8.5	A.4.3.6.5		
B3	1	Low temperature storage	A.3.8.6	A.4.3.6.6	10	0
	2	Low temperature operation	A.3.8.7	A.4.3.6.7		
	3	Terminal strength	A.3.7.1	A.4.3.5.1		
B4	1	Life (125°C)	A.3.9.1	A.4.3.7.1	10	0
B5	1	Life (70°C)	A.3.9.2	A.4.3.7.2	10	0
B6	1	Stability(1)	A.3.8.8	A.4.3.6.8	10	0

Note: (1) After the stability test, the dielectric withstanding voltage test (at atmospheric pressure) and insulation resistance test shall be performed.

(continues)

Table 11. Quality Conformance Inspection (Group C)

Test			Requirement paragraph	Test method paragraph	Pass/fail	
Sub-group	Order	Item			Quantity of samples	Quantity of allowable defects
C1	1	Shock	A.3.8.2	A.4.3.6.2	10	0
	2	High frequency vibration	A.3.8.1.1	A.4.3.6.1.1		
C2	1	Thermal shock (II)	A.3.8.3.2	A.4.3.6.3.2	10	0
C3	1	Random vibration	A.3.8.1.2	A.4.3.6.1.2	10	0
C4	1	Voltage coefficient	A.3.6.5	A.4.3.4.6	10	0
	2	Mechanical shear(1)	A.3.7.2	A.4.3.5.2		

Note: (1) Applicable to RNS50.

(continues)

Example: Format A-2
(Text)

4.4. Long-Term Storage

Long-term storage shall be as follows and in accordance with paragraph A.4.4 of JAXA-QTS-xxxx, Appendix A.

(continues)

4.5. Changes of Tests and Inspections

Example 1
There is no change to the test or inspection from the quality conformance inspection specified in Appendix A of JAXA-QTS-xxxx.

Example 2
The changes has been implemented to xxx test.

a) Change description: xxx
b) Rationale: xxx

(continues)

5. PREPARATION FOR DELIVERY

Preparation for delivery shall comply with paragraph 5 of JAXA-QTS-×××× and the following requirements.

(continues)

6. NOTES

Notes shall comply with paragraph 6 of JAXA -QTS-×××× and the following requirements.

(continues)

Example: Format A-3 Notice of Change[(1)]

JAXA-QTS-xxxx Notice 1 Date	J A X A Parts Specification	Registration No. xx

NOTICE OF CHANGE

XXXXX
HIGH RELIABILITY,
SPACE USE,
GENERAL SPECIFICATION FOR

Page	Paragraph	Line	Change description		
			Before	After	Reason

Note: [(1)] The purpose of Example Format A-3 is to show the format for Notice of Change.

APPENDIX C

REQUIREMENTS FOR QUALITY ASSURANCE PROGRAM

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Example: Format C-1 Quality Assurance Program Plan ..... C-133 to C-27
Example: Format C-2 DPA Manual ..... C-288 to C-34

This document is the English version of JAXA QTS/ADS which was originally written and authorized in Japanese and carefully translated into English for international users. If any question arises as to the context or detailed description, it is strongly recommended to verify against the latest official Japanese version.

APPENDIX C

REQUIREMENTS FOR QUALITY ASSURANCE PROGRAM

C.1. Scope

This appendix covers the general requirements of the quality assurance program that manufacturers shall establish in accordance with paragraph 3.3 of this specification in order to acquire certification of JAXA for common parts and materials.

C.2. Applicable Documents

a) ISO 9001 Quality Management Systems – Requirements
(JIS Q 9001:2000 Quality Management Systems - Requirements)
b) ISO 9000 Quality Management Systems - Fundamentals and Vocabulary
(JIS Q 9000 Quality Management Systems - Fundamentals and Vocabulary)

C.3. Definition of Terms

a) QML manufacturer
"Manufacturer" corresponds to "organization" used in ISO 9001.
b) Quality assurance program
"Quality assurance program" corresponds to "quality management system" used in ISO 9001 and also includes the requirements for space use.
c) Quality assurance program plan
"Quality assurance program plan" corresponds to "quality manual" used in ISO 9001 and also includes document titles, descriptions on production facilities, equipment and instruments involved in activities from material procurement to product delivery.
d) Quality assurance manager
"Quality assurance manager" corresponds to "management representative" specified in ISO9001.
e) Nonconformance
"Nonconformance" corresponds to "nonconformity" specified in ISO9001.

C.4. Requirements

To acquire certification of JAXA for common parts and materials, a manufacturer shall meet the requirements specified in this section for the establishment of a quality assurance program. If the manufacturer has certification of ISO 9001 standard or any equivalent public certification, the manufacturer may use the documents prepared to acquire the certification in a quality assurance program.

C.4.1 Organizational Structure and TRB Formation

C.4.1.1 Organizational Structure

A manufacturer shall prepare an organization chart which includes the following items and maintain it current.

a) A block diagram of critical organization relationship.
b) A diagram of authority and responsibility hierarchy. The organization of a companywide responsibility for management of quality assurance activities shall

be specified, and responsibilities for establishment and implementation of policies of such activities shall be identified.

c) A quality assurance manager (paragraph 3.3.3) and a registered inspector (paragraph 3.3.4) shall be specified in a list of managerial personnel for each major organization.

C.4.1.2 TRB Formation

A manufacturer shall form a Technical Review Board (TRB) to review the implementation of a quality assurance program. The TRB shall be formed and operated in accordance with Appendix K. When the manufacturer has a standing committee equivalent to a TRB, the committee may be used as the TRB.

a) As a minimum, the following items on the qualified parts shall be defined as subjects for the TRB to review and judge.
   1) Reliability and quality management
   2) Design reviews
   3) Compliance with applicable standards and criteria
   4) Establishment and maintenance, including change and trend management, of criteria for critical processes
   5) Skill certification criteria
   6) Selection, management, renewal and relocation of equipment for production, testing and inspection
   7) Internal and external audits of quality and corrective actions
   8) Plans for education and training
   9) Establishment and optimization of conditions for production, testing and inspection
   10) Change control of a quality assurance program
   11) Plans for failure analysis of nonconformance and corrective actions
   12) Exemption of tests for requalification

b) The relationship between the TRB and the in-house structure shall be specified in an organization chart. TRB members shall be also specified in the chart.

c) TRB members shall include a quality assurance manager and a registered inspector.

C.4.2 Quality Assurance Manager

The name of the quality assurance manager assigned by the QML manufacturer shall be included in the quality assurance program plan

C.4.3 Design Management

C.4.3.1 General

A manufacturer shall establish and maintain written procedures to control and verify the design of the qualified parts in order to ensure that the specified requirements are met.

C.4.3.2 Plans for Design and Development

A manufacturer shall develop a plan for each process in design and development. Each plan shall describe or reference each process and define a person responsible for implementing the process. Plans shall be revised as the design progresses.

C.4.3.3 Organizational and Technical Interfaces

When different groups are providing inputs in the design processes, the organizational and technical interfaces among the groups shall be defined. Necessary information shall be exchanged in writing and periodically confirmed.

C.4.3.4 Design Inputs

A manufacturer shall define and document the design requirements on qualified parts including applicable legal and regulatory requirements. The manufacturer shall be responsible for verifying adequacy of the selected requirements. Incomplete, ambiguous or conflicting requirements shall be resolved among sources of the requirements. For providing design input, the results from all activities for confirming the contract details shall be considered.

C.4.3.5 Design Outputs

Design outputs shall be documented such that the design outputs can be verifiable against the design inputs and other requirements. Design output shall meet the following requirements.

a) To comply with the design input requirements.
b) To contain or reference product acceptance criteria.
c) To specify the design characteristics of the qualified parts to assure safe and proper functionality.

The design output document shall be approved prior to release.

C.4.3.6 Design Reviews

The manufacturer shall plan and conduct design reviews using formal documents of design results at proper stages of the design. Reviewers shall include not only representatives of all directly involved entities in the design stage, but also experts from other areas as necessary. Review minutes shall be retained.

C.4.3.7 Design Verification

Compliance of design outputs with the design requirements shall be verified in the proper design stages. Verification methods and results shall be recorded and maintained.

C.4.3.8 Design Validation

Design validation shall be performed to ensure that qualified parts comply with user needs and/or requirements. The results shall be recorded and maintained.

C.4.3.9 Design Change

Any changes in the design shall be identified, documented, validated and approved by the authorized personnel before the changes are implemented.

C.4.4 Educational and Training Program

A manufacturer shall develop and conduct educational and training programs to provide all entities in the company involved in production and/or supply of qualified parts with motivations to maintain the reliability and quality. The educational and training programs shall cover all fields such as management, engineering, quality control, procurement, processing, assembly and production of the products.

C.4.5 Calibration System

Any measuring equipment which is used in the production processes or used for pass or fail judgment of tests, inspection or analysis shall be calibrated and controlled in accordance with the systems and regulations specified in ANSI/NCSL Z 540-1 or any equivalent standard.

C.4.6 Production Conditions and Management

C.4.6.1 Production Conditions

A manufacturer shall establish and maintain production specifications of common parts and materials to be submitted for qualification test and specify the production conditions in the specifications such as materials, production processes, process flow, inspection, and special treatments. Production records shall be retained to prove that samples have been produced in accordance with the production specifications prior to conducting qualification test.

C.4.6.2 Control of Environmental Conditions

Requirements and tolerances of critical environmental and working conditions concerning the production and inspection of qualified parts shall be defined in documents. The control requirements shall be specified in relevant documents.

C.4.6.3 Documents for Procurement, Production and Management

A manufacturer shall identify the title, number, date of establishment or latest revision of all documents used for procurement and processing of materials, production and assurance of qualified parts such as procurement specifications, production specifications, test procedures, inspection procedures and facilities management rules (hereinafter referred to as “product assurance documents”). The manufacturer shall prepare a list of these documents. When the manufacturer wishes to change product assurance documents after acquisition of certification, the manufacturer shall prepare a revision record.

C.4.6.4 Flowchart

A manufacturer shall prepare a drawing that depicts the flow of production processes specified below and lists the relevant documents.

C.4.6.4.1 Production Processes

Flowcharts shall specify materials, processes, process controls, control methods and environmental conditions required for producing qualified parts, and identification and dates of establishment and revisions of each applicable document.

C.4.6.5 Handling, Packaging and Transportation Procedures

A manufacturer shall define the provisions for handling of materials, fabricated parts, work-in-process parts and finished products, and storage, packaging and inter-factory transportation.

C.4.6.6 Process Records

A manufacturer shall establish a process recording system to record and evaluate all processes from acceptance of materials up to processing, assembly and test of qualified parts. These records shall be retained for 8 years from the date of recording in order to support traceability for purposes such as failure analysis. Records related to the delivery of products such as screening test data and quality conformance inspection data, which are specifically called out in applicable specifications, shall be retained for 8 years from the date of delivery. Recording forms and slips already established by the manufacturer may be used, provided that it shall be specified that the qualified parts are being supplied in accordance with this specification. Any record shall identify the date of processing, name of worker, and facilities used.

C.4.6.7 Control of Critical Processes

If any production process might have significant impacts on reliability and quality of qualified parts (hereinafter referred to as “critical process”), the manufacturer shall define and maintain provisions to identify and control the critical processes. The provisions shall include the following items.

a) Definition of the critical processes and control categories of manufacturing processes (Including trend analysis items)
b) Educational programs for critical processes (Paragraph C.4.4)
c) Methods to review and confirm technical skills of workers
d) Sustainment of technical skills

Critical process shall be depicted in the manufacturing process flowchart.

C.4.6.8 Disposition System of Nonconformance

A manufacturer shall establish a system to disposition nonconformance that might occur during production processes. The system shall include the following items as a minimum.

C.4.6.8.1 Reporting System of Nonconformance

A system shall be established to report the occurrence of nonconformance to the management, obtain an approval from responsible personnel and take appropriate actions under the direction of the responsible personnel. Reporting formats shall be defined.

C.4.6.8.2 Report of Nonconformance Disposition

A system shall be established to report the results of corrective actions which were taken under the direction of the responsible personnel and obtain an approval from the responsible personnel. Reporting formats shall be defined.

C.4.6.8.3 Disposition of In-Process Nonconforming Products

Procedures shall be defined to disposition the products, including partially fabricated products, which were being produced when nonconformance occurred on the production processes.

C.4.6.8.4 Records of Nonconformance Disposition

Report documents specified in paragraph C.4.6.8.2 and a list of those reports shall be managed in accordance with the requirements of paragraph C.4.6.6.

C.4.7 Packaging

A manufacturer shall establish packaging specifications applicable to the transportation and delivery of qualified parts as specified in paragraph 5 of this specification. Packaging specifications shall meet the requirements of this specification and applicable specifications.

C.4.8 Materials

C.4.8.1 Conforming Materials

A manufacturer shall maintain inspection status by using stamps, cards, tags or other appropriate methods and establish a system to identify conforming materials.

C.4.8.2 Nonconforming Materials

The system described above shall be capable of preventing the misuse of nonconforming materials or being mixed with conforming materials.

C.4.8.3 Traceability of Materials

Acceptance control numbers of a lot or a batch of the material shall be recorded in appropriate documents such as work slips and production instructions through the entire production processes from acceptance of the material to completion of the qualified parts. These records shall be verifiable against records of receiving inspections.

C.4.9 Failure Analysis and Corrective Actions

A manufacturer shall establish systems to perform failure analysis and take corrective actions. For the qualified parts when a nonconforming product is discovered by the manufacturer during tests or inspections, or a nonconforming product is returned from a purchaser, the nonconforming product (hereinafter referred to as “faulty products”) shall be analyzed in order to determine the cause of the failure. Based upon the results of the analysis, necessary corrective actions shall be taken in order to prevent recurrence of the failure.

C.4.9.1 Failure Analysis

C.4.9.1.1 Failure Reports

Once a quality assurance manager confirms a failure, the failure shall be reported to JAXA immediately.

C.4.9.1.2 Failure Analysis Capabilities and Facilities

A manufacturer shall provide engineers and facilities necessary to conduct a thorough analysis of faulty products. An external source may be used, provided that it has enough capabilities to perform the failure analysis.

C.4.9.1.3 Failure Analysis Reports

A manufacturer shall establish procedures for failure analysis. Upon completion of the analysis, the manufacturer shall immediately submit a failure analysis report to JAXA. The report shall include the following items.

a) Analysis results
b) Possible causes of the failure (as much as possible)
c) Corrective actions

C.4.9.1.4 Failure Modes and Causes

Based upon the results of the past failure analysis by analyses and/or tests, a manufacturer shall develop and maintain a failure mechanism and assurance technique (FMAT). The FMAT shall correlate each failure mode to design, process or control (paragraph 12.3 of Example: Format C-1).

C.4.9.2 Corrective Actions

A manufacturer shall establish a system to take corrective actions on all nonconformance. Analysis results on nonconformance approved by a quality assurance manager shall include a plan for corrective actions, and a department responsible for the plan. The plan shall be supported by actual data or results of evaluation tests. When corrective actions are to be taken on processes and materials, the qualified parts shall not be produced, until prototypes of the improved parts (hereinafter referred to as “prototype parts”) have been produced and evaluated by the engineering department and the TRB. When the failure is categorized to failures that require an emergency report specified in paragraph 3.6.2 of JAXA-QTS-2000, the qualified parts shall not be produced until the plan for the corrective actions has been approved by JAXA. As a result of these procedures, requalification test specified in paragraph 3.4.3 of this specification shall be performed when deemed necessary.

C.4.10 Manufacturers’ Facilities

A manufacturer shall possess facilities and equipment for production, testing, and evaluation of qualified parts in accordance with applicable specifications. In order to use these facilities effectively, provisions for management and handling shall be defined, and records of the facilities such as dates of purchase, inspection and repair, shall be maintained.

C.4.10.1 Clean Rooms

When a process control contains requirements for clean rooms, the criteria and operations for clean rooms shall comply with the requirements of ISO 14644-1 and ISO 14644-2 unless otherwise specified. Engineering department of the manufacturer shall specify proper level of cleanliness in process specifications.

C.4.10.2 Storage of Finished Products

A QML manufacturer shall establish, maintain and control the site where qualified parts are stored prior to delivery. In addition, appropriate records indicating a production lot or a date code of the products stored shall be maintained.

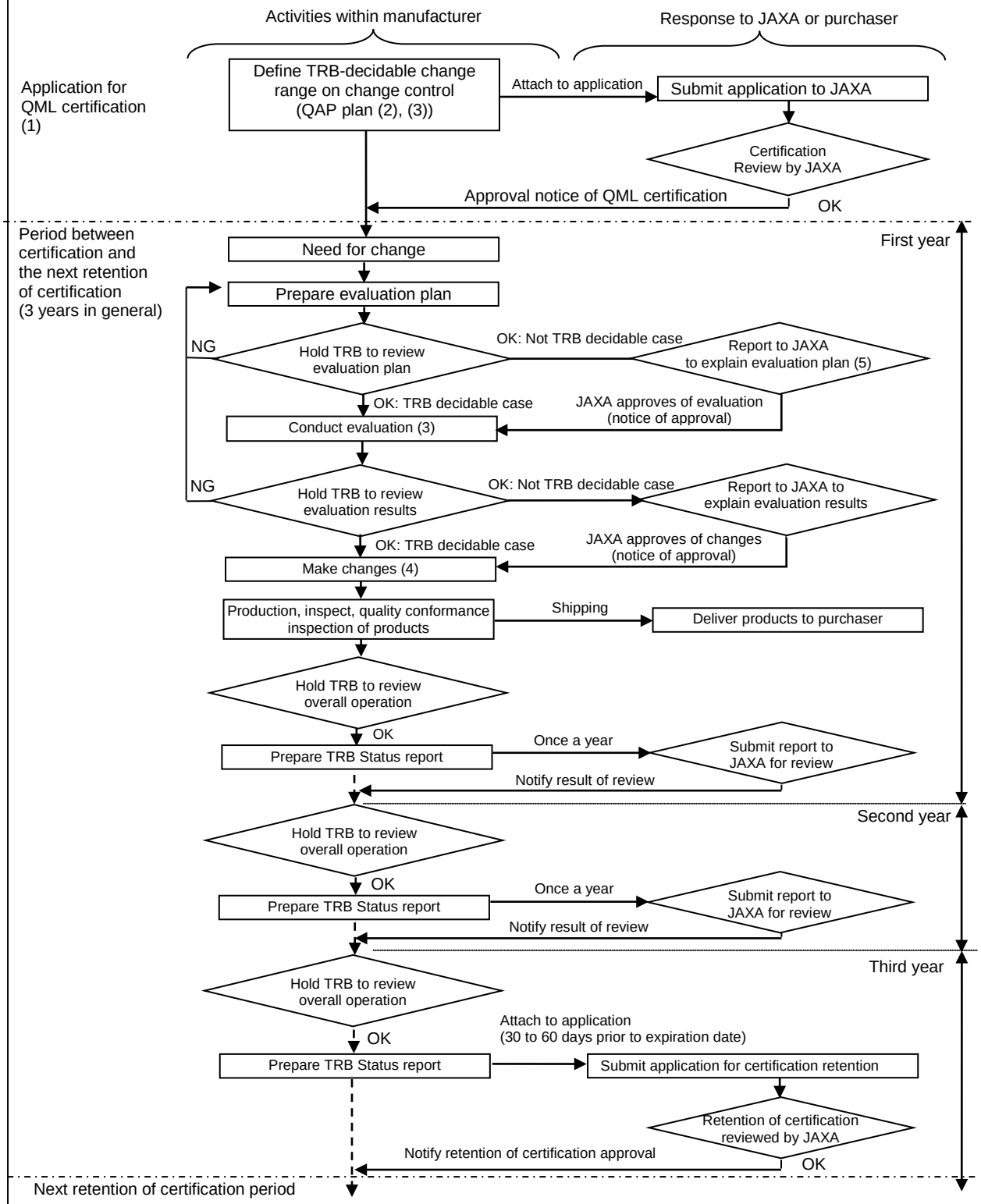
C.4.11 Change Control of Quality Assurance Program

A QML manufacturer shall establish and maintain a change control system for the quality assurance program. The system shall cover changes due to a result of corrective actions on a failure, revision of applicable specifications or test optimization, etc.

A QML manufacture (hereinafter referred to as “manufacturer”) shall conduct a change control of quality assurance program as shown below. For TRB, refer to Appendix K of this specification.

a) A manufacturer shall specify the changes which the manufacturer may add independently to the quality assurance program or other document on which change controls are specified, and then reviewed by JAXA for qualification at the timing of application for initial certification or retention of certification. The changes which can be made by a manufacturer shall be assumed that they do not affect the characteristics and reliability of the products.
   Any changes deviated from the qualification coverage shall be specified and made in accordance with paragraph 3.4.3. The classification (Grades) and action for the changes shall be specified as follows.
   1) Grade I: Requalification is required; procedure for requalification shall be taken.
   2) Grade II: Consultation with JAXA prior to change is required; the course of action for changes shall be determined through discussion with JAXA.
   3. Grade III: Requalification is not required; the decision can be made by the manufacturer’s TRB.
b) A manufacturer shall prepare and submit the change plan when the product is in need of change. Then the manufacturer shall hold a TRB meeting to determine whether the manufacturer can make its own decision for the change or the manufacturer needs to consult with JAXA based on the changed contents and the plan for collecting the necessary data.
c) If a manufacturer determines that it can make changes independently (Grade III), the rationale shall be recorded and the evaluation results obtained based on the change plan shall be reviewed by TRB to see if the change can actually be made by the manufacturer independently. Even if the manufacturer can make own decision for changes, they shall still be reviewed by JAXA by the TRB status report.
d) When a manufacturer determines that the preliminary discussion with JAXA is necessary (Grade II), the manufacturer shall obtain the data necessary for the change based on the change plan after JAXA confirms the change plan and agrees on the change procedure. After the manufacturer obtains the necessary data and holds TRB and then the changes are determined to be feasible, the manufacturer shall report the results to JAXA and the changed data shall be re-confirmed. The manufacturer shall not add changes without JAXA approval during the reconfirmation. Even prior consultation with JAXA is determined to be necessary, the changes shall still be reviewed by JAXA by the TRB status report.

Change control flow is shown in Figure C-1.



Notes:
(1) At the application of either initial or retention of certification
(2) Define the TRB decidable change range in QAP plan.
(3) Specify whether or not the evaluation test using evaluation element or sample is required for the change range.
(4) Make changes to the concerned parts/materials or technical documents stating processes, etc. on QAP plan.
(5) In case of deviation from qualification coverage, prepare for recertification.

Figure C-1. Change Control Flow

C.4.11.1 Implementation of Evaluation Tests

When the manufacturer is to change product assurance documents specified in the quality assurance program or facilities for production, testing, or inspection, the manufacturer shall collect data through proper methods such as evaluation tests to evaluate possible impacts on characteristics of qualified parts such as performance, quality, reliability and compatibility. The TRB shall judge if the changes are appropriate based on data such as evaluation test results in accordance with Appendix K.

C.5. Quality Assurance Program Plan

This section provides the manufacturer, who is to obtain certification, with the guidelines to prepare and maintain a quality assurance program plan (hereinafter referred to as “QAP plan”) in accordance with paragraph C.4.

C.5.1 General Requirements

a) As a condition for JAXA to certify a production line of qualified parts in accordance with applicable specifications, the quality assurance program shall be completely documented to ensure that a manufacturer can continuously produce qualified parts with a consistent quality.
b) When requirements for a quality assurance program are defined in applicable specifications other than this specification, the requirements shall be included in a QAP plan.
c) A manufacturer, who is to obtain certification, shall develop a QAP plan in consideration of uniqueness for space-use parts, identification of common parts and materials supplied in accordance with this specification and post-certification maintenance.
d) JAXA shall review a QAP plan after application for qualification test is submitted, and confirm whether a manufacturer is able to produce and assure qualified parts in accordance with applicable specifications, and audit, as required, if the QAP plan is properly implemented after the acquisition of certification.
e) When a manufacturer has some of its production, tests or inspections performed outside of the company, except for cases where their employees operate testing facilities outside of the company, the manufacturer shall provide JAXA with the evidence that these operations are controlled in accordance with a control program equivalent to the quality assurance program of this specification, or include these operations in the quality assurance program as a part of the manufacturer and provide JAXA with the program for review. In the latter case, the quality assurance program applicable to external operations shall be included in or attached to the QAP plan.

C.5.2 Preparation of QAP Plan

A QAP plan shall include the following items as a minimum.

C.5.2.1 Instructions for Preparation of QAP Plan

a) Terms shall be those commonly used.
b) A4-size paper shall be used. Unless otherwise specified, a word processor shall be used.
c) Unless otherwise specified, a QAP plan shall be prepared for each production line to be certified.
d) If there are multiple types in the qualified parts, a general QAP plan may be prepared for provisions common to all part types, and a detail QAP plan may be prepared for provisions unique to individual part type.
e) A QAP plan shall focus on items applicable to the certification by JAXA.
f) For each item specified in paragraph C.5.2.6, a manufacturer may provide an overview by referring to titles and numbers of applicable or related provisions or documents, and also provide detailed descriptions of systems using figures and/or tables.
g) When affiliated entities are involved, QAP plans of those entities shall be outlined.
h) Maintenance shall be specified for each item.

C.5.2.2 Overall Structure of QAP Plan

Unless otherwise specified, the QAP plan shall be organized as follows.

a) Cover
b) Revision record
c) Table of contents
d) Text, figures and tables
e) Blank formats of documents and examples to fill the formats
f) Supplementary documents (when specified in applicable specifications)

Note: Unless otherwise specified, when both general and detail QAP plans are to be prepared, they shall have the same document structure.

C.5.2.3 Cover

The cover shall include at least the following items.

a) Document number of the QAP plan and date of issue
b) Title
c) Name of quality assurance manager
d) Name of manufacturer

C.5.2.3.1 Document Number of QAP Plan and Date of Issue

The document number shall be indicated in the manufacturer's style, and the date of establishment and revision shall be indicated.

C.5.2.3.2 Title

a) The title shall be in the same format as that of applicable specifications.
Example: Resistors, High Reliability, Space Use, Quality Assurance Program Plan for
b) Product identification such as part number may be provided if necessary.
c) When both general and detail QAP plans are to be prepared, the titles shall be in the following formats, respectively.

Example 1: Resistors, High Reliability, Space Use, General Plan of Quality Assurance Program for

Example 2: Resistors, Fixed, Film, High Reliability, Space Use, Detail Plan of Quality Assurance Program for

C.5.2.3.3 Signatures

A quality assurance manager and a registered inspector shall set their seals or sign on the QAP plan.

C.5.2.4 Revision Records

Revision records shall include the following items. When a manufacturer has their own document management provisions, they may use the forms and guidelines specified by their internal provisions.

a) Revision letter
b) Revision date
c) Revision description
d) Seals or signatures of quality assurance manager and registered inspector

C.5.2.5 Table of Contents

a) A table of contents shall be provided.
b) A separate list of figures and tables shall be provided after the table of contents.

C.5.2.6 Instructions for Preparation of Text

The text of the QAP plan shall include at least the following items.

a) Scope
b) Organizational structure
c) Quality assurance system
d) Applicable documents and standards constituting the quality assurance program
e) Education and training
f) Design control
g) Control of production processes
h) Management of production facilities
i) Management system of measuring instruments
j) Procurement management of materials
k) Nonconformance disposition system
l) Failure analyses and corrective actions
m) Packaging, storage and delivery
n) Change control of quality assurance program
o) Design and construction
p) Formats and examples of completed formats

C.5.3 Format of QAP Plan

An example of the QAP plan is shown in Example Format C-1.

Example: Format C-1 Quality Assurance Program Plan
(Cover)[1]

QAP plan number[2]
(date)

RESISTORS,
HIGH RELIABILITY,
SPACE USE,
QUALITY ASSURANCE PROGRAM PLAN FOR

Quality assurance manager	Taro Shinrai
Registered inspector	Taro Uchu
Date of latest revision	October 5, 1998
Date of establishment	July 1, 1989

Approved by[3]	Inspected by[3]	Prepared by[3]

EF DIVISION,
ABCD CORPORATION

Notes:

[1] The purpose of Example Format C-1 is to show the format for quality assurance program plan. Contents used here vary for each plan.

[2] The manufacturer shall fill the document number of the QAP plan and the date of issue.

[3] The registered inspector and the quality assurance manager shall set their seals or sign in the boxes under “Approved by”, “Inspected by” and “Prepared by”.

Example: Format C-1
(Revision record)

Revision Record

Revision letter	Date	Description	Approved by(1)	Inspected by(1)	Prepared by(1)

Note: (1) The registered inspector and the quality assurance manager shall set their seals or sign in the boxes under “Approved by”, “Inspected by” or “Prepared by”.

Example: Format C-1
(Table of contents)

Table of Contents

Paragraph[1] Page number[2]

1. General ..... (Page not shown)
(This paragraph shall describe manufacturer's intent that the manufacturer continually produces and supplies JAXA certified parts with a consistent quality, and explain the purpose of the QAP plan, implementation guidelines and change notification to JAXA.)
1.1 Objective
1.2 Scope
1.2.1 Document Organization
1.3 Maintenance
1.4 Policy

2. Organizational Structure ..... (Page not shown)
(This paragraph shall state that the company assures that the organization is able to fulfill the quality assurance responsibility for common parts and materials. The following items shall be included.)
2.1 Organization Chart, Work Allocation, Authority and Responsibility
2.2 Management, Supervision, Audit and Work Allocation of Affiliated Companies without Financial Relation and Subcontractors
2.3 Roles and Responsibilities of a Quality Assurance Manager, a Registered Inspector, and Their Assistants
2.4 Roles and Responsibilities of the TRB or Equivalent Standing Committee
(These items may be provided in the form of table or figure. The organization chart shall clearly indicate the date prepared and organizations involved in the QAP plan.)

3. Quality Assurance System ..... (Page not shown)
(Quality assurance system shall be described using a chart which shows relationship between the relevant internal organizations and each process from a planning and development phase to usage of common parts and materials. Managing and supervising organizations of reliability and quality control shall be identified. Work allocation shall be defined.)

4. Applicable Documents and Standards ..... (Page not shown)
(Relationship of documents and standards, which form the program, to JAXA documents and the purpose of the QAP plan shall be described. The following items shall be included.)

Notes:
[1] Only major sections are included in this example. Actual QAP plans shall include all sections.
[2] Page numbers are not shown in the example of Format C-1.

Example: Format C-1
(Table of contents - continued)

4.1 System of Internal Documents and Standards
4.1.1 Internal Documentation System (at various corporate levels such as headquarters, departments and plants)
4.1.2 Identification and Contents of Documents (including examples)
(Related companies shall be identified, if any.)
4.2 Documents Constituting a Quality Assurance Program
4.2.1 Document List
(A list of documents shall specify categories, titles, identification numbers, dates of establishment and revisions, and management departments. The documents shall be shown in the production process flowchart, and sorted by category in a table.)
4.2.2 Procedures for Establishment, Revision and Cancellation of Documents and Standards
(The document and standard management provisions shall be referenced. Internal management of document and standard shall be described on planning, reviews, approvals, decision and distribution.)

5. Education and Training.....(Page not shown)
(Applicable provisions shall be referenced. The following items shall be at least specified.)
5.1 Yearly Plan for Each Level
5.2 Skill Training for Production
5.3 Designation of Workers or Certification of Skill for Critical Processes (certification test programs to evaluate workers' skills)

6. Design Control.....(Page not shown)
(A plan shall be provided to implement each requirement specified in paragraph C.4.3 of this appendix.)

7. Management of Production Processes .....(Page not shown)
(The following items shall be at least specified.)
7.1 Work Conditions and Environmental Control
7.2 Process Records, Storage Responsibility and Period
(The process records shall provide failure traceability to the materials.)
7.3 A Flowchart of Production Process from Acceptance of Materials to Delivery of Finished Products (Figure C-5 of Example Format C-1)
(Technical values are not required in the flowchart. Subcontractors shall be specified, if any.)
7.4 Management and Identification of Critical Processes (Table C-6 of Example Format C-1)
7.5 Provisions for Subcontractor Management (provisions for selection of subcontractor, control and disposition in case of process failure)
7.6 Management of Fabricated Parts and Work-in-Process Parts
7.7 Identification of In-Process Inspections

8. Control System of Production Facilities.....(Page not shown)
(Applicable provisions shall be referenced. The following items shall be specified.)

Example: Format C-1
(Table of contents - continued)

8.1 Control of Production Facilities
(A control system of production facilities shall include the control of repair and modification history, provisions for procurement and disposal, and daily inspections and periodic inspections. The control of measuring equipment installed in production facilities shall be described in relation to paragraph 9.)

8.2 Control of Clean Rooms
(Control of clean room shall be defined if paragraph C.5.2.6 includes requirements on clean room.)

8.3 Control of Test, Inspection and Analytical Facilities
(Control items, precision and calibration cycles of test, inspection and analytical facilities shall be defined. These facilities shall be listed in accordance with Table C-7 of Example Format C-1.)

9. A Control System of Measuring Equipment .....(Page not shown)
(Applicable provisions shall be referenced. Internal substandard calibration equipment shall be categorized by type. Traceability of the equipment to national standards shall be indicated using tables and/or figures.)

9.1 A Control System of Substandard Equipment Possessed by a Manufacturer

9.2 A System of Calibration and Precision Control of Measuring Equipment for Production, Test, Inspection and Analysis

9.3 Identification and Control of Measuring Equipment Calibrated by Outside Companies

9.4 A List of Precision Control of Major Measuring Equipment for Test and Inspection Specified in Applicable Specifications

10. Procurement Control .....(Page not shown)
(Applicable provisions shall be referenced. The following items shall be at least specified.)

10.1 Criteria for Supplier Selection

10.2 Quality of Purchased Goods and Disposition to be Taken When Suppliers Changed Production Process

10.3 Receiving Inspection of Procured Goods
(Valid period of receiving inspection, disposition of failed products, storage and control of inspection records shall be specified.)

10.4 Storage Conditions of Purchased Goods and Inventory Control
(Names of purchased goods, applicable standards, procurement specification number, inspection items, definition of procurement lot, and suppliers shall be tabulated. See Table C-10 of Example Format C-1.)

11. Disposition System for Nonconformance .....(Page not shown)
(Applicable provisions shall be referenced with regard to disposition against nonconformance during production processes, complaints, or faulty products. The following items shall be specified.)

Example: Format C-1
(Table of contents - continued)

11.1 A System for the Responsible Department to Disposition Nonconformance Occurred within the Company
(All processes shall be addressed including receiving inspection, production, inspection and delivery.)
11.2 A System for the Responsible Department to Disposition Nonconformance or Complaints Reported by External Customers.
(These systems shall address reporting to the quality assurance manager and JAXA.)

12. Failure Analysis and Corrective Actions ..... (Page not shown)
(Applicable provisions shall be referenced. The following items shall be specified.)
12.1 A System and Standard Procedures for Conducting Failure Analyses
12.2 A System for Corrective Actions and Change Control
(These systems shall address reporting to the quality assurance manager and JAXA.)
12.3 FMAT (Failure Mechanism and Assurance Technique)
(The FMAT shall comply with Table C-11 of Example Format C-1.)
12.4 Facilities of Failure Analysis (paragraph C.4.9.1)
12.5 Actions to be Taken When Failure Analysis Cannot be Performed by the Company

13. Packaging, Storage and Delivery ..... (Page not shown)
(Applicable provisions shall be referenced. The following items shall be specified.)
13.1 Packaging
(Marking requirements for each packaging level shall be defined. Marking locations and methods shall be defined.)
13.2 Storage of Finished Products
(Storage methods of finished products, re-inspection items on long-stored products, valid period and record archiving shall be addressed.)
13.3 Delivery
(Handling requirements for lots and products for delivery shall be defined. Preparation and management of inspection reports, and confirmation of registered inspector shall be addressed.)

14. Control of Program Change ..... (Page not shown)
(Applicable provisions shall be referenced. The following items shall be specified.)
14.1 A system of Internal Evaluation
14.2 Evaluation and Validation of Changes by TRB
14.3 Internal Communications

15. Design and Construction ..... (Page not shown)
(When applicable specifications include the requirements for design and construction, the applicable provisions shall be referenced. The following items shall be specified.)
15.1 Design Overview
15.2 Construction or Assembly Drawing, and Criteria for Internal Inspections (Figure C-11 of Example Format C-1)
15.3 Procedures for DPA (Example Format C-2)

Example: Format C-1
(Table of contents - continued)

16. Formats and Example of Entry.....(Page not shown)
(Formats for all processes including production, test and inspection shall be provided. An example of filling the format shall be marked as space use. Examples of formats shall be listed indicating the title, departments responsible for preparation and storage, and period of storage. Examples shall be provided for ambiguous parts of the formats.)

Example: Format C-1
(List of tables and figures)

List of Tables and Figures

Page number

Figure C-1. Organization Chart .....(Page number not shown)
Table C-1. Responsible Personnel, Authority and Responsibility .....(Page number not shown)
Table C-2. Types and Contents of Provisions .....(Page number not shown)
Figure C-2. Control System of Provisions .....(Page number not shown)
Table C-3. List of Production Documents .....(Page number not shown)
Table C-4. List of Quality Assurance Documents .....(Page number not shown)
Figure C-3. Quality Assurance System .....(Page number not shown)
Figure C-4. Quality Audit System .....(Page number not shown)
Figure C-5. Production Process Flowchart .....(Page number not shown)
Table C-5. List of Process Data .....(Page number not shown)
Table C-6. List of Critical Processes .....(Page number not shown)
Table C-7. List of Facilities and Equipment for Production, Test, Inspection and Analysis .....(Page number not shown)
Figure C-6. Calibration System .....(Page number not shown)
Table C-8. List of Substandard Equipment .....(Page number not shown)
Table C-9. List of Accuracy Controls .....(Page number not shown)
Table C-10. List of Incoming Item Controls .....(Page number not shown)
Figure C-7. Procedures for Nonconformance Disposition .....(Page number not shown)
Figure C-8. Failure Analysis Procedures .....(Page number not shown)
Figure C-9. System for Corrective Actions .....(Page number not shown)
Table C-11. FMAT .....(Page number not shown)
Figure C-10. Procedures for Change Control .....(Page number not shown)
Figure C-11. Construction .....(Page number not shown)
Table C-12. List of Example Formats .....(Page number not shown)

Example: Format C-1

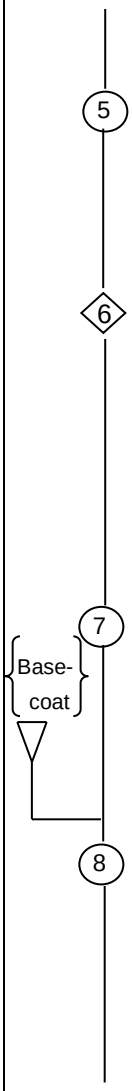
Production process flowchart (material name)(1)	Work or process name(2)	Work instruction documents (3)	Facilities used	Department in charge	Production control records			Remarks (5)
					Control items(4)	Sampling	Records	
	5 Spot welding	Process specification ABC-1234 Work guideline DEF-0123 XYZ-0005	(Facilities used shall be identified in accordance with Table B-10.) A-5678 Spot welding machine	Welding Group, Second Equipment Section, First Production Department	1. Conditions (1) Pressure (2) Time 2. Weld shape 3. Welder 4. Welding strength	All AM, PM work schedule: 3 at start	Work slips	* Critical process
	6 Intermediate inspection	Process specification ABC-5678 Inspection guideline 111-3444	Identification name	Second Group, Third Control Section, Quality Control Department	1. Resistance 2. Weld shape 3. Winding pitch 4. Effective length of winding 5. Winding state 6. Weld position	All n=5 Ac0 Re1	1. Inspec-tion slips 2. Photos	* Critical process
	7 Cleaning	Process specification ABC-3456 Work guideline XYZ-0006	Identification name	Second Group, Forth Section, First Production Department	Number of cleaning Cleaning duration	All	Work slips	
	8 Basecoat preparation	Process specification BBA-8885 DDY-3456	Identification name	First Group, Second Inspection Section, Quality Control Department	Name Quality Lot number Manufacturer name	For each shipped lot	Receiving inspection slips	
		Process specification BCD-1222 Work instruction PQR-1111	Identification name	Second Group, Third Section, First Production Department	1. Density (mixing ratio) 2. Pot life	For each work	Work slips	

Figure C-5. Production Process Flowchart

Notes:

(1) The production process flowchart shall comply with JIS Z 8206 “Graphical Symbols for Process Chart”.

(2) Work names shall be specified.

(3) Document number shall be specified for work instruction documents.

(4) Actual values are not necessary in the column of control items.

(5) Identification of critical process shall be specified in the column of remarks.

Table C-6. List of Critical Processes

Critical process	Facilities or control number	Applicable standards or documents	Identification of worker (certificate number)	Certification		Device or parts	Remarks
				Certification documents (classification)	Validity period		
Electron beam welding	EBW-XXX PO Corporation EF-1234	AB-1201	ZZ-1122 (special-012) (special-021)	YY-1201 (class I)	3 years	Body/ cap	

(The rest of the table is not shown.)

Example: Format C-1

Example: Format C-1

Table C-7. List of Facilities and Equipment for Production, Test, Inspection or Analysis

(Production facilities)[1]

Control section	Facilities	Manufacturers	Type or control number	Performance	Precision	Frequency of maintenance and calibration
A	Spot welding machine	XXZ Corporation	FG-111	1-10 WS	±1μm	- Twice per year - Every work start time

(The rest of the table is not shown.)

Note: [1] Separate tables shall be used for production facilities, test and inspection facilities and analysis facilities.

Example: Format C-1

Table C-10. List of Control of Purchased Products[1]

Procured goods	Applicable standards (date)	Procurement specification (date)	Inspection specification (date)	Inspection items	Definitions of purchased lot	Supplier
Basecoat paint (X-25)	ABC-2000 (date)	YZ-2563 (date)	XI-4233 (date)	Confirmation of inspection certificates Quantity Viscosity (sampling)		AB Paint Corporation

(The rest of the table is not shown.)

Note: [1] All materials used for products shall be listed.

Example: Format C-1

Table C-11. FMAT

Type or part number		NASDA RNR XX			Disposition(5)					
No.	Element(1)	Failure mode(2)	Failure mechanism (3)	Impacts on product(4)	Raw materials(6)	Production processes(7)	Design items(8)	In-process inspections(9)	Tests/ inspections of final products(10)	Test methods(11)
1	Lead wires	Breakages	Breakages	Open circuit	1. Core materials (frequency/anneal) (material spec. no.)	1. Handling methods (prevention of breakage) (process spec. no.)	1. Materials 2. Dimensions (lead wire diameter) (doc. no.)	1. Visual 2. Dimensions (inspection spec. no.)	1. Terminal strength 2. Vibration resistance 3. Visual 4. Dimensions 5. Shock	Paragraph number of JAXA-QTS-2*** 1. 4.7.15 2. 4.7.21 3. 4.7.3 4. 4.7.3 5. 4.7.20
		Insulation failures (with substrate)	Surface oxidation	Loose joints	1. Plating materials (composition/plating thickness) (material spec. no.)	1. Handling and storage methods 2. Material cleaning (process spec. no.)	1. Plating composition 2. Plating thickness (doc. no.)	1. Plating thickness 2. Externals (inspection spec. no.)	1. Solderability	1. 4.7.10
2	Head part of lead wires	Incomplete electrical continuity (with resistor body)	Contamination (e.g., oil,)	Excessive current noises, Loose joints		1. Handling and storage methods (process spec. no.)		1. Current noises (all samples) 2. Head dimensions 3. Load selection (all samples) (inspection spec. no.)	1. Voltage coefficient 2. Life 3. Thermal shock	1. 4.7.25 2. 4.7.22 3. 4.7.4
			Non-conforming shapes and/or dimensions			1. Head processing (process spec. no.)	1. Head construction (doc. no.)			
			Surface oxidation			1. Handling and storage methods (process spec. no.)				

Example: Format C-1

Table C-11. FMAT (continued)

3	Connection between head and body	Resistance value drift (rise) Excessive current noise	Incomplete connection	Resistance value drift (rise) Excessive current noise	1. Material Carbon: specific resistance, volumetric density Silica: grain size, purity Resin: resin content, viscosity (material spec. no.)	1. Mixture 2. Mixing conditions (temperature, time) 3. Molding conditions (temperature, time) (process spec. no.)	1. Material (doc. no.)	1. Current noise (all samples) 2. Voltage coefficient 3. Resistance stability 4. Fluidity 5. Material use test 6. Load selection (all samples) 7. External selection (all samples) (Inspection spec. no.)	1. Voltage coefficient 2. Terminal strength 3. Life 4. Thermal shock	1. 4.7.25 2. 4.7.15 3. 4.7.22 4. 4.7.4
(The rest of the table is not shown.)										

Notes:

(1) A part shall be de-integrated into individual elements. The elements shall be listed sequentially in column (1). Connections between elements shall be considered as an element.

(2) Failure mode and failure mechanism of each element shall be listed in columns (2) and (3) respectively.

(3) Effects of the failure shall be listed in column (4).

(4) Disposition for the failure shall be listed in column (5).

(5) Disposition for raw materials shall be listed in column (6). For example, receiving inspection items and the inspection documents shall be listed.

(6) Disposition for production processes shall be listed in column (7). For example, the control items specified in the production specifications and applicable document numbers shall be listed.

(7) Design philosophy shall be listed in column (8). For example, the requirements and document numbers specified in assembly specifications shall be listed.

(8) Disposition for in-process inspection shall be listed in column (9). For example, the control items and document numbers specified in inspection specifications shall be listed. The inspections defined here shall be limited to those conducted during a production process.

(9) Disposition for tests and inspections of final products shall be listed in column (10). For example, the test and inspection items specified in applicable specifications shall be listed in column (10). Paragraph number of applicable test methods shall be listed in column (11).

Example: Format C-1

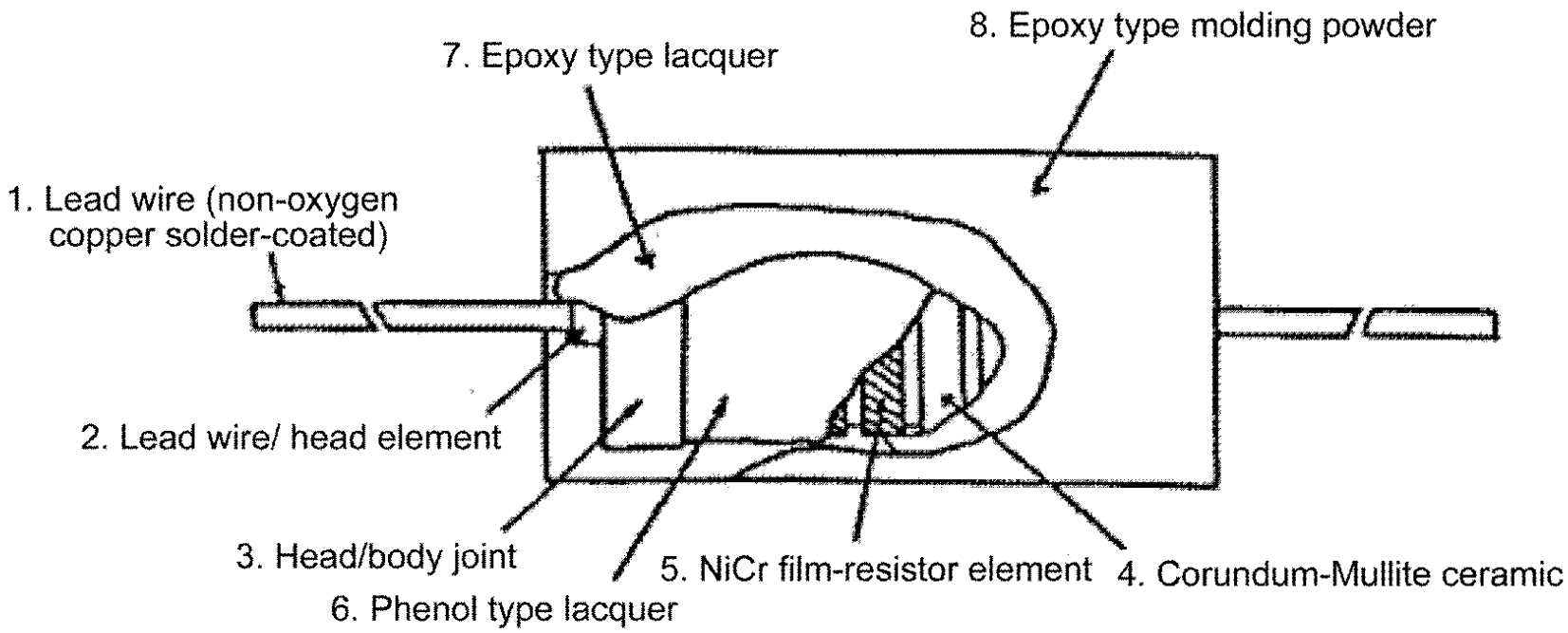


Figure C-11. Construction

Example: Format C-2 DPA Manual

(Cover)

Document No.
Established on:
Revised on:

DPA Manual

Part number	
Applicable specification number	
Document number of quality assurance program plan	

Approved by	Checked by	Prepared by

EF Division,
ABCD Corporation

Example: Format C-2
(Body)

1. Objective
   This manual is to establish requirements on Destructive Physical Analysis (DPA) including implementation procedures and acceptance criteria. DPA is performed to verify compliance of product design with requirements specified in applicable specifications of Japan Aerospace Exploration Agency.

2. Scope
   This manual is applicable in the initial review and reviews for qualification retention defined in a quality assurance program to verify compliance of product design and construction. This manual is also applicable to tests specified in applicable specifications such as qualification test and quality conformance inspection.

3. General Requirements
   a) DPA destroys the product to inspect and analyze its internal physical characteristics. DPA is used to verify the product to comply with the design requirements which are unable to be analyzed by external visual inspections.
   b) An inspector registered to JAXA shall obtain knowledge and information on DPA and make an appropriate evaluation and judgment objectively.

4. Outline of Products
   4.1 Product Overview
   (Text example is not provided.)
   4.2 Shape, Dimensions and Major Constituent Materials
   (Text example is not provided.)

5. Requirements for Design, Construction and Production
   Requirements for design, construction and production shall be as follows. Physical values shall be specified in a pre-defined format.
   5.1 Requirements for Design and Construction, and Priorities of Requirements
   (Text example is not provided.)
   5.2 Critical Production Processes to Meet Design Requirements
   (Text example is not provided.)
   5.3 Construction Drawing
   (Text example is not provided.)
   5.4 Verification Methods for Design Requirements
   (Text example is not provided.)

6. Methods of DPA
   The procedures of DPA for each sample and the verification items shall be as follows.
   6.1 The Number of Samples and Verification Items
   (Text example is not provided.)

Example: Format C-2
(Body - continued)

6.2 Preparation for DPA
(Text example is not provided.)

6.3 Procedures of DPA
(Text example is not provided.)

7. Example of Formats

a) Example of formats on DPA shall be as follows. See attachments.

1) Design requirements of products (Table 1)
2) Requirements of critical processes (omitted)
3) List of DPA results (Table 2)
4) Photographs of inspection results (Table 3)
5) List of analysis results (Table 4)

b) The data obtained in qualification tests or quality conformance inspection shall be prepared in these formats and attached to an application for QML certification.

Example: Format C-2

Table 1. Design Requirements

1. Construction drawing		2. Part number	
3. Identification number (corresponds to the construction drawing)	4. Design requirements (priority)	5. Specifications	6. Design documents
7. Order of analyses	8. Verification items (corresponds to the design requirements)	9. Inspection methods	

Example: Format C-2

Table 2. List of DPA Results

1. Classification of test or inspection	2. Part number	3. Lot number (date manufactured)

4. Identification number	5. Design requirements	6. Specification	7. Inspection results		8. Judgment	
			Measurement	Photo No.	Inspector	Registered inspector to JAXA

Example: Format C-2

Table 3. Photographs of Inspection Results

1. Classification of test or inspection		2. Part number		3. Lot number (date manufactured)	
4. Photo No.	5. Identification number	6. Specification	7. Measurement	8. Judgment by inspector	9. Judgment by registered inspector to JAXA
10. Photos to be attached here.				11. Descriptions	
4. Photo No.	5. Identification number	6. Specification	7. Measurement	8. Judgment by inspector	9. Judgment by registered inspector to JAXA
10. Photos to be attached here.				11. Descriptions	

Example: Format C-2

Table 4. List of Analysis Results

1. Classification of test or inspection	2. Part number	3. Lot number (date manufactured)

4. Identification number	5. Design and production requirements	6. Analysis results	7. Checked by registered inspector

APPENDIX D

QUALITY ASSURANCE MANGAER AND REGISTERED INSPECTOR

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D.3 Role and Responsibility of the Quality Assurance Manager D-1
D.4 Role and Responsibility of the Registered Inspector D-1
D.5 Qualification and Selection Criteria for Registered Inspector D-1
D.6 Registration Procedures for the Quality Assurance Manager and the Resitetered Inspector D-2

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APPENDIX D

QUALITY ASSURANCE MANAGER AND REGISTERED INSPECTOR

D.1 Scope

This appendix establishes the roles and responsibilities and registration procedures of the quality assurance manager and registered inspector.

D.2 General Requirments

This appendix defines the basic roles and responsibilities of a quality assurance manager and a registered inspector. It is QML manufacturer's responsibility to define specific roles and responsibilities in the Quality Assurance Program Plan.

D.3 Role and Responsibility of the Quality Assurance Manager

As a criteria for selecting a quality assurance manager, he/she shall be a director who is ultimately responsible having roles and responsibilities for quality assurance of the qualified parts representing the QML manufacturer and shall be assigned with the following roles and responsibilities:

a) To establish, implement, operate and manage the quality assurance program
b) To be a director who is ultimately responsible for the quality assurance of the products
c) To support and assure the performance of the registered inspector in the QML manufacturer

D.4 Role and Responsibility of the Registered Inspector

A registered inspector shall be responsible for the following tasks:

a) To provide comments, requests, and suggestions to JAXA and convey requirements and directions from JAXA to staff in the manufacturer
b) To verify the production of test vehicles and samples, test procedures and the results for the qualification test and quality conformance inspection
c) To verify if the manufacturing history and inspection results of the products conform to quality assurance program and applicable specifications, and determine pass/fail of shipping criteria.
d) To attend and monitor TRB and report to JAXA
e) To verify the maintenance of QAP plan, detail specifications, and application datasheets
f) To verify implementation of the tasks involving the maintenance of qualification
g) To attend all of the processes throughout designing of the qualified parts to services
h) To attend the training program for the registered inspector of JAXA qualified parts (held once a year) and educate the staff in the manufacturer.
i) To verify trend control and the current status of the analytical process
j) To confirm the operation of quality assurance program and promote the improvement

D.5 Qualification and Selection Criteria for Registered Inspector

A QML manufacturer shall select a registered inspector based on the following criteria.

a) Unless otherwise specified, a registered inspector shall be a manager or equivalent who has been assigned to an inspection and/or quality control department/technical department involved with qualified parts for at least 2 years. However, the registered inspector shall not belong to any production department.

b) When the registered inspector is replaced, the successor to be selected or the assistant is desired to have had participated in the training program for the registered inspector.

c) One registered inspector shall be selected for one quality assurance program. When multiple types of parts are qualified, one registered inspector can serve concurrently.

d) When a registered inspector performs his/her duties in fabrication facilities or other sites and a broad range of manufacturing processes should be covered, the manufacturer may designate an assistant(s) for the registered inspector. In this case, the scope of authority of the assistant shall be specified in the quality assurance program plan. However, the ultimate authority and responsibility shall rest with the registered inspector.

e) When the multiple subcontractors are involved in production, assistants may be employees of the subcontractors. In this case, responsibilities of each assistant shall be clearly identified.

D.6 Registration Procedures for the Quality Assurance Manager and the Resitetered Inspector

a) A notice shall be submitted on any of the following occasions:
   1) Initial registration of application for the qualification test
   2) Change in the quality assurance manager, registered inspector or the registered information

b) The format and preparation guidelines for the initial registration and change notice shall be in accordance with Appendix F. Changes shall be reported using cross-reference between the existing contents and the changed contents.

APPENDIX E

CERTIFICATION PROCEDURES

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APPENDIX E

CERTIFICATION PROCEDURES

E.1 Scope

This appendix defines procedures for QML certification for common parts/materials in compliance with the requirements specified in paragraph 3.4 of this specification.

E.2 Preparation

To obtain QML certification under this specification, a manufacturer shall perform the following steps prior to the submission of the Qualification Test Application:

a) Develop the detail specification in compliance with Appendix A.
b) Develop a plan to obtain certification in accordance with this specification and applicable specifications.
c) General specifications and generic specifications are available on the JAXA Qualified EEE Parts and Materials Database website.

E.3 Establishment of a Quality Assurance Program

To obtain QML certification in accordance with this specification, a manufacturer shall establish a quality assurance program in compliance with paragraph 3.3 and Appendix C. The quality assurance program shall be documented as a Quality Assurance Program Plan. The Quality Assurance Program Plan shall be prepared in accordance with the guidelines specified in paragraph C.5.

E.4 Designation of a Quality Assurance Manager and a Registered Inspector

To obtain QML certification in compliance with this specification, a manufacturer shall designate a quality assurance manager and registered inspector and register them with JAXA. The duties of the quality assurance manager and the registered inspector shall be defined in Appendix D.

E.5 Certification Procedures

E.5.1 General Requirements

Certification procedures shall be in compliance with the requirements specified in this specification and applicable specifications.
QML certification is classified into the following three types and separate procedures are defined for each. Figure E-1 depicts the qualification flow.

a) Initial qualification
b) Retention of qualification
c) Requalification

E.5.2 Initial Qualification

E.5.2.1 General Requirements

a) Initial qualification shall be in accordance with the procedures specified in paragraph 3.4.1.
b) Procedures of initial qualification are shown in Figure E-2.

E.5.2.2 Application for Qualification Test

To acquire QML certification in accordance with this specification, a manufacturer shall submit a Qualification Test Application accompanied with the following documents as specified in paragraph 3.4.1.1 of this specification. Formats of these documents shall be as specified in Appendix F.

a) Implementation Plan for Qualification Test Implementation
b) Detail Specification
c) Quality Assurance Program Plan and Quality Manual (if required)
d) Registration Notice of Quality Assurance Manager/Registered Inspector
e) Application Data Sheet (preliminary) and Field Data (if available)

E.5.2.3 Review of Qualification Test Application

JAXA shall review the application and supporting documents and perform an on-site audit of the quality assurance program in accordance with paragraph 3.3.6. If the application is determined acceptable, JAXA shall approve the application and notify the manufacturer of the approval.
In the review, JAXA shall evaluate the content and implementation status of the quality assurance program based on a comprehensive examination of various related documents, manufacturing facilities and test equipment. JAXA may waive a review of any part of the entire quality assurance program that is covered by ISO 9001 certification.

E.5.2.4 Production of Test Vehicle and Sample

Manufacturers are allowed to produce qualification test vehicles or samples in compliance with the Quality Assurance Program Plan upon receipt of the Notice of Approval for Qualification Test Application from JAXA.

E.5.2.5 Designation of Witness

Upon approval of the Qualification Test Application, JAXA shall designate a witness for the qualification tests and notify the manufacturer of the witness.

E.5.2.6 Implementation of Qualification Test

To acquire QML certification under this specification, a manufacture shall perform the qualification tests in compliance with an approved implementation plan for the qualification test.

a) The JAXA witness shall verify that the qualification tests are performed in compliance with the implementation plan for qualification tests.
b) If the JAXA witness is able to confirm what the manufacturer is to demonstrate during the qualification tests after the completion of the qualification tests, the tests may be performed without the JAXA witness.

E.5.2.7 Changes to Qualification Test

To make a change to the qualification tests, the manufacturer shall submit to JAXA for approval a Change Request for Qualification Test Application (paragraph F.3.3) accompanied with a description of and rationale for the change(s).

E.5.2.8 Termination of Qualification Test

To terminate the qualification tests, the manufacturer shall submit a Notice of Qualification Test Termination (paragraph F.3.4). In the event of nonconformance, erroneous test, or an excess of the allowable failure occurrences, the manufacturer shall report the event to the JAXA witness.

E.5.2.9 Application for QML Certification

To obtain QML certification under this specification and upon completion of the qualification tests, a manufacturer shall submit to JAXA an Application for QML Certification accompanied with the following documents in compliance with paragraph 3.4.1.7. Formats of these documents shall be as specified in Appendix F.

a) Report of Qualification Test (Development Test)
b) Quality Assurance Program Plan
c) Application Data Sheet
d) Test data and records

E.5.2.10 Notice of Approval for QML Certification

a) JAXA shall approve an Application for QML Certification if the application and supporting documents meet the requirements specified in the applicable specifications.
b) When an Application for QML Certification is approved, JAXA shall notify the manufacturer of the approval with a QML Certificate.
c) A copy of the Application for QML Certification shall be returned to the manufacturer with the certificate.
d) JAXA shall add the information of the certified manufacturing line to JAXA QML and make the information available on the Database of JAXA Qualified EEE Parts and Materials website.
e) The manufacturer must not produce the common parts/materials prior to receipt of the QML Certificate.

E.5.3 Retention of Qualification

E.5.3.1 General Requirements

a) The retention of qualification shall be processed in accordance with paragraph 3.4.2.
b) The QML manufacturer shall confirm the delivery status of qualified parts and updating status of the quality assurance program during the certification period.
c) The procedure for retention of qualification is depicted in Figure E-3.

E.5.3.2 Implementation of the Quality Conformance Inspection

The QML manufacturer shall report the results of the quality conformance inspection conducted during the certification period to JAXA in the TRB status report or retention of qualification application. If no qualified part was manufactured during the

certification period, the QML manufacturer may apply the retention of qualification without conducting the quality conformance inspection.

E.5.3.3 Application for Certification Retention

The QML manufacturer shall submit an Application for Certification Retention accompanied with the following documents to JAXA commencing between 30 and 60 days prior to the expiration date of the certification period in accordance with paragraph 3.4.2. Formats of these documents shall be as shown in Appendix F. Submission of the Report of Quality Conformance Inspection Status is not required when included in the TRB Status Report.

a) Report of Quality Conformance Inspection Status
b) Quality Assurance Program Plan
c) TRB Status Report
    1) Report of Qualification and Delivery Status
    2) Report of Quality Assurance Program Update
    3) Nonconformance information

E.5.3.4 Review of the Application for Certificaiton Retention

a) JAXA shall review the application and supporting documents. In this review, JAXA shall verify whether the results of quality assurance program audit (onsite audit) conducted at manufacturer's sites is properly reflected in accordance with paragraph 3.3.6.
b) The review may be waived for part of the quality assurance program that refers to ISO 9001.

E.5.3.5 Notice of Approval for Certification Retention

a) When the Application for Certification Retention and supporting documents are determined to meet the requirements specified in this specification and the applicable specifications, JAXA shall approve the certification retention for the period specified in the applicable specifications (this is the "retention of qualification" process.).
b) JAXA shall notify the QML manufacturer of the approval with a QML Certificate.
c) A copy of the Application for Certification Retention shall be returned to the manufacturer with the certificate.
d) JAXA shall update the JAXA QML.

E.5.4 Requalification

E.5.4.1 General Requirements

Requalification is performed to change the qualification coverage.

a) Requalification shall be conducted in accordance with paragraph 3.4.1. For the purpose of requalification, "qualification" shall be interpreted as "requalification" and "certification" shall be interpreted as "recertification."

E.5.4.2 Application for Requalification Tests

a) The application form for qualification tests (paragraph E.5.2.2) shall also be used for requalification tests. Documents and/or descriptions unrelated to the requalification are not required.
b) Submission procedures for the application for requalification shall be the same as the initial qualification (paragraph E5.2).

E.5.4.3 Application for QML Recertification

a) The application form for QML certification (paragraph E.5.2.9) shall also be used for QML recertification. Documents and/or descriptions unrelated to the requalification are not required.
b) If JAXA has already confirmed or approved data required for the requalification process, the QML manufacturer may submit an application for recertification accompanied with these data without conducting the requalification tests.
c) Submission procedures for the application for recertification shall be the same as the initial qualification (paragraph E.5.2).

E.5.5 Cancellation of QML Certification

a) To cancel the QML certification, the QML manufacturer shall submit to JAXA a request for cancellation in the form of a technical correspondence which includes items specified in F.3.8.
b) JAXA shall notify the QML manufacturer of the cancellation approval in writing and delete the pertaining information from JAXA QML.

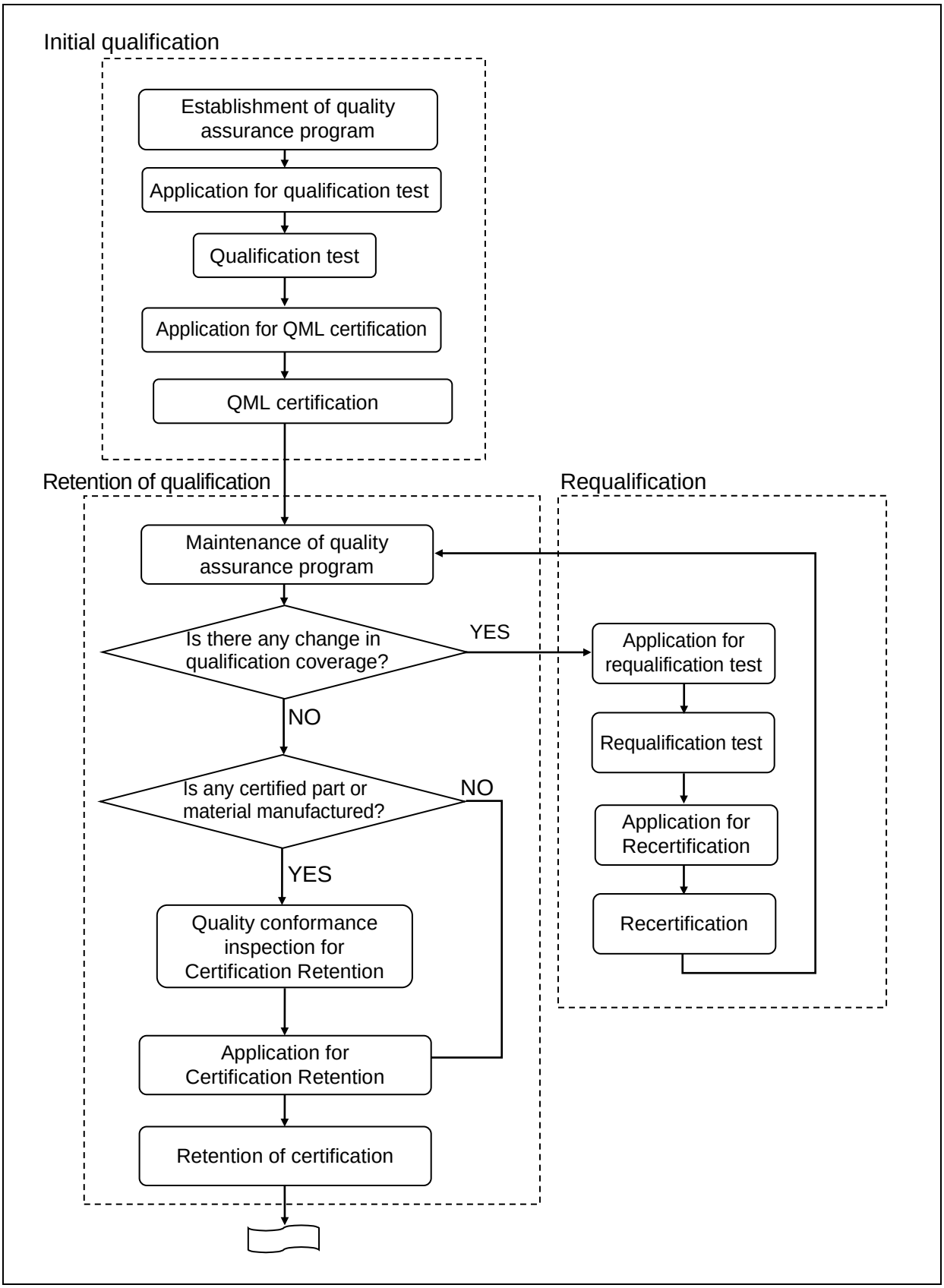

Figure E-1. Qualification Flowchart

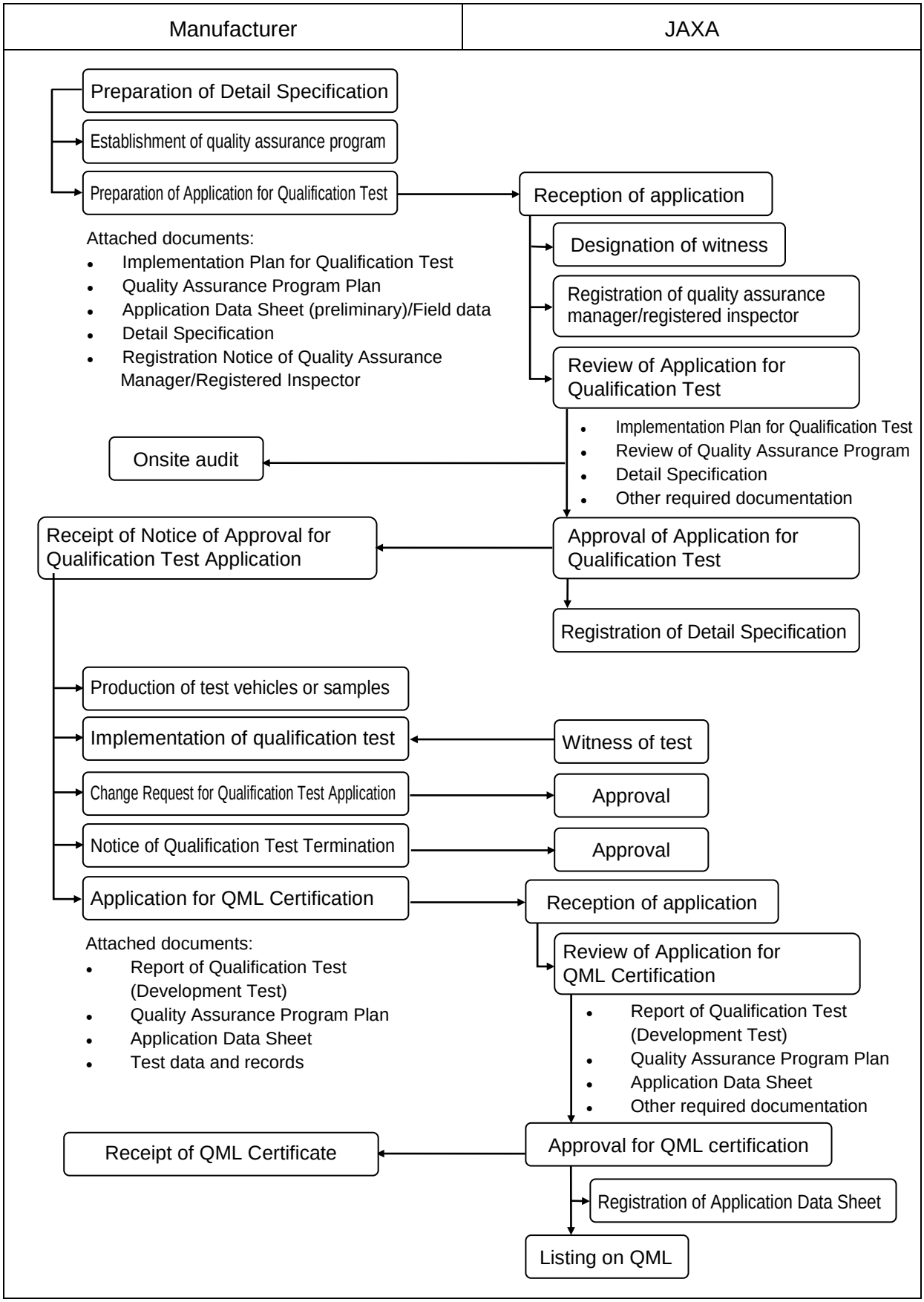

Figure E-2. Initial Qualification Procedures

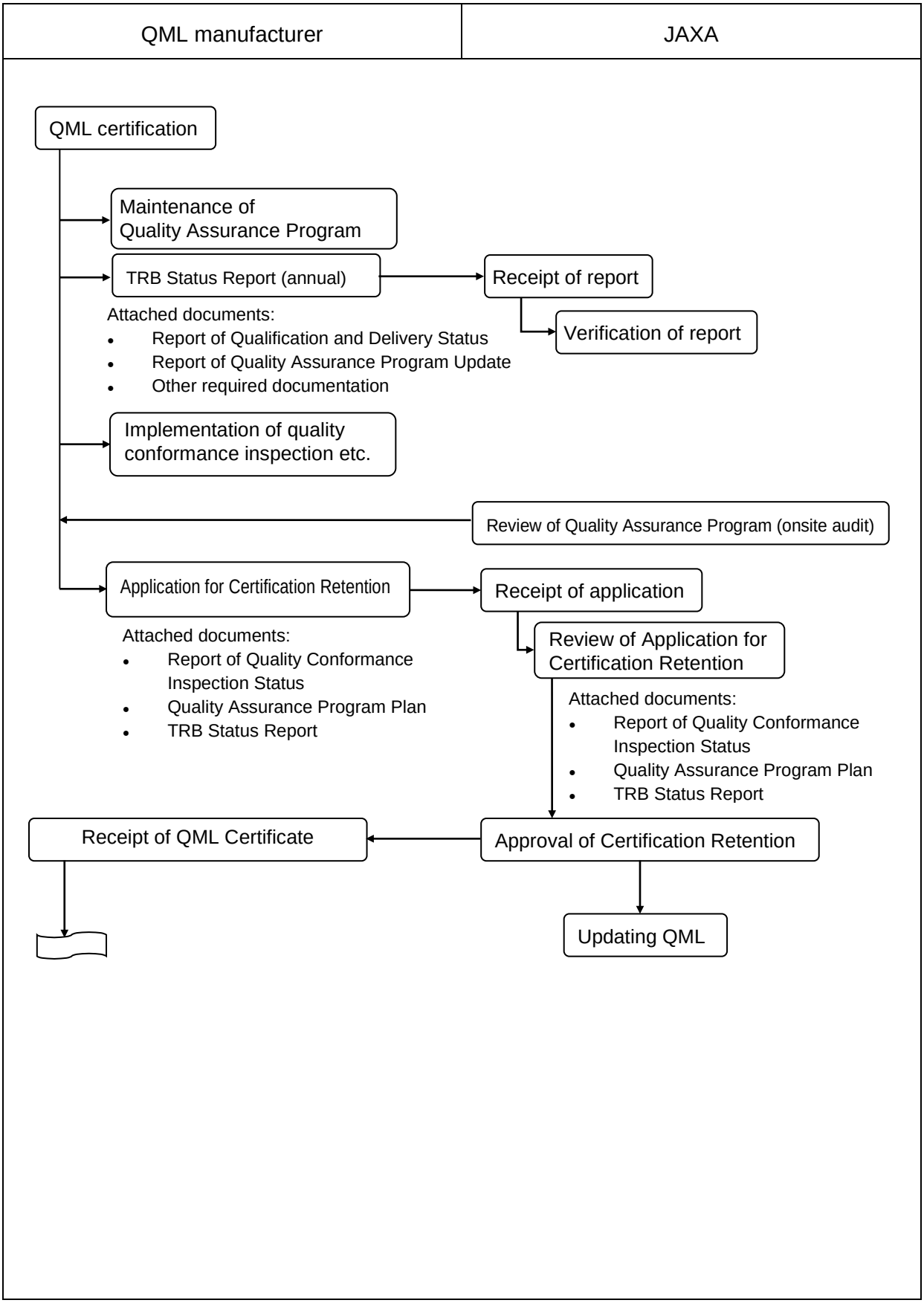

Figure E-3. Qualification Retention Procedures

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APPLICATION FORM AND PROCEDURES

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APPENDIX F

APPLICATION FORM AND PROCEDURES

F.1 Scope

This appendix provides instructions for preparation, submission and application forms which must be submitted to JAXA by manufacturers who wish to obtain QML certification for common parts/materials as specified in paragraph 3.4 of this specification.

F.2 Purposes and Application Forms

Table F-1 lists documents that the manufacturer must submit to obtain QML certification.

Table F-1. Required Documents for Qualification Test

No.	Purpose	Form and document required for application	Form No.	No. of copies required
1	Application for qualification test/ requalification test	a) Qualification Test Application	F-1	2
		1) Notice of Approval for Qualification Test Application	F-2	2
		b) Implementation Plan for Qualification Tests	F-3	2
		1) Rationale for sample selection and supplementary information	F-4	2
		2) Order of tests and sample size	F-5	2
		3) Test items and methods	F-6	2
		4) Names and major specifications of test equipment	F-7	2
		5) Test site and schedule	F-8	2
		6) Test site and guide map	F-9	2
		c) Quality Assurance Program Plan	–	2
		d) Application Data Sheet (draft) and Field Data	–	2
		e) Detail Specification	–	2
		f) Notice of Quality Assurance Manager/ Registered Inspector	F-10	1
2	Change to Qualification Test Application	Change Request for Qualification Test Application	F-12	2
3	Termination of qualification tests	Notice of Qualification Test Termination	F-13	2

Table F-2. Documents for Qualification Test (continued)

No.	Purpose	Form and document required for application	Form No.	No. of copies required
4	Application for certification (recertification)	a) Application for QML Certification	F-14	2
		1) Review comments and judgment	F-15(1) F-20(2)	2
		2) Correlation table between qualification test items and development test items	F-16(1)	2
		3) Supplementary information	F-18(1) F-22(2)	2
		b) Report of Qualification Test (Development Test)	F-17(1) F-21	2
		1) Results of Qualification Test (Development Test)	F-19(1) F-23(2)	2
		2) Test Data and Records	–	1
		c) Quality Assurance Program Plan	–	2
		d) Application Data Sheet	–	2
5	Application for certification retention	a) Application for Certification Retention	F-24	2
		b) Report of Quality Conformance Inspection Status	F-26	2
		c) Quality Assurance Program Plan	–	2
		d) TRB Status Report	F-28	1
		1) Report of Qualification and Delivery Status	F-25	1
		2) Report of Quality Assurance Program Update	F-27	1
		3) Nonconformance information	F-29	1
6	TRB Status Report	TRB Status Report	F-28	1
		1) Report of Qualification and Delivery Status	F-25	1
		2) Report of Quality Assurance Program Update	F-27	1
		3) Nonconformance information	F-29	1
7	Cancellation of certification	Request for cancellation in technical correspondence	–	1

Notes:

(1) Forms required for an application to obtain QML certification of JAXA-developed parts.

(2) Forms required for an application to obtain QML certification of non-JAXA-developed parts.

F.3 Instructions for Preparations and Submission

F.3.1 General Requirements

a) Unless otherwise specified, application forms shall be prepared using word-processing software.
b) Application forms shall be printed on A4 size paper, filed and indexed properly.
c) If multiple copies are submitted, original and duplicate shall be identified accordingly.
d) The original shall bear a corporate seal and the duplicate is a photocopy of the original.

F.3.2 Application for Qualification Tests

a) A Qualification Test Application shall be submitted prior to performance of the qualification or requalification tests. When the qualification tests are exempted, the Qualification Test Application may be submitted with an Application for QML Certification.
b) Unless otherwise specified, the Qualification Test Application shall be submitted no later than 30 days prior to the scheduled start date of qualification tests.
c) Two copies (1 original, 1 duplicate) shall be submitted for each form. The documents specified in Table F-3 shall be submitted with the application.
d) When the application is approved, JAXA will return to the manufacturer a duplicate of the application form bearing the Qualification Test Approval Number (JAXA-QTR xxx).

Table F-3. Documents for Qualification Test Application

1) Qualification Test Application	F-1
1.1) Notice of Approval for Qualification Test Application	F-2
2) Implementation Plan for Qualification Tests	F-3
2.1) Rationale for sample selection and supplementary information	F-4
2.2) Order of tests and sample size	F-5
2.3) Test items and methods	F-6
2.4) Names and major specifications of test equipment	F-7
2.5) Test site and schedule	F-8
2.6) Test site and guide map	F-9
3) Quality Assurance Program Plan and Quality Manual (if applicable)	Appendix C
4) Application Data Sheet (draft) and Field Data (as appropriate)	Appendix G
5) Detail Specification	Appendix A
6) Notice of Quality Assurance Manager/Registered Inspector	F-10

F.3.2.1 Qualification Test Application (Format F-1)

This document shall be a cover page for the Qualification Test Application and shall contain the following information.

a) Document number: Document number assigned by the manufacturer
b) Date: Date (dd/mm/yyyy) the application is submitted
c) Applicant: Unless otherwise specified, the representative's name with the company name, address and telephone number
d) Product(s): Description of the common parts/materials specified in the applicable specifications
e) Title and document number of applicable specification: Titles and document numbers of all applicable specifications
f) Part number: All part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
g) Manufacturer: Name of the company applying for certification

Note: For requalification tests, "qualification tests" shall be replaced with "requalification tests". Hereinafter, other relating formats shall be identified in the same way.

F.3.2.2 Notice of Approval for Qualification Test Application (Format F-2)

A blank form of the Notice of Approval for Qualification Test Application shall be submitted with the application.

F.3.2.3 Implementation Plan for Qualification Test (Format F-3)

This document shall contain the following information:

a) Product(s): Description of the common parts/materials specified in the applicable specifications
b) Part number: All part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
c) Qualification coverage: Qualification coverage specified in the applicable specifications (If the space is insufficient, use a separate sheet(s) and provide the qualification coverage in a tabular format.)
d) Production site(s): Name and address of all factories involved in the production
e) Specification number: Identification of all applicable specifications
f) Specification title: Title of all applicable specifications associated with specification identification
g) Deviations from the requirements (of specifications and standards, among others): "None" if there is no deviation.

F.3.2.4 Rationale for Sample Selection and Supplementary Information (Format F-4)

This document shall contain the following information:

a) Rationale for sample selection: Refer to applicable paragraphs in the applicable specifications.
b) Rationale for waiver of test(s): Provide rationale if a test(s) is waived. "None" if no test is waived.
c) Manufacturing conditions: Title of document(s) which defines the manufacturing conditions
   Example: QMLP-001 Quality Assurance Program Plan (12 June, 1998)
d) Others: Other supplementary information pertaining to the qualification test
e) Attachment(s): Title of attached documents, if any

f) Contact information: Contact information including the registered inspector or the technical operators of the applicable common parts/materials

F.3.2.5 Order of Tests and Sample Size (Format F-5)

This document shall contain the following information regarding qualification test items specified in the applicable specifications:

a) Order of tests: Order of tests specified in numbers
b) Test group: As defined in the applicable specifications
c) Paragraph number: As defined in the applicable specifications
d) Test item: As defined in the applicable specifications
e) Samples size: As defined in the applicable specifications
f) Allowable number of defectives: As defined in the applicable specifications

F.3.2.6 Test Items and Methods (Format F-6)

This document shall contain the following information in accordance with paragraph F.3.2.5:

a) Order of tests: Order of tests specified in numbers
b) Test item: As defined in the applicable specifications
c) Conditions and requirements: As defined in the applicable specifications
d) Specified test method: As defined in the applicable specifications
e) Actual test method: Describe “Same as the left” if the actual test method is the same as that defined in the applicable specifications.

F.3.2.7 Names and Major Specifications of Test Equipment (Format F-7)

This document shall contain the following information:

a) Name of test equipment
b) Relevant test item: Test items to be conducted using the test equipment
c) Major specification: Manufacturer’s name, specifications, performances and accuracy at a minimum
d) Calibration status: Organization that conducted the calibration and the effective period of calibration

F.3.2.8 Test Site and Schedule (Format F-8)

This document shall contain the following information in accordance with paragraph F.3.2.6:

a) Order of tests: Order of tests specified in numbers
b) Test item: Name of each test item as specified in the applicable specification
c) Year and month: Schedule table indicating start and completion dates by arrow accompanied with date information of year and month
d) Test site: Organizational name of internal and/or external test sites
e) Test start date: Date (dd/mm/yyyy) the qualification test will start
f) Scheduled test completion date: Date (dd/mm/yyyy) the test is scheduled to be complete

F.3.2.9 Test Site and Guide Map (Format F-9)

This document shall contain the following information for each test site.

a) Name of test site

b) Address of the test site
c) Telephone number of the test site
d) Information on contact person
e) Map to the test site

F.3.2.10 Quality Assurance Program Plan

Quality Assurance Program Plan shall be prepared in accordance with Appendix C.

F.3.2.11 Application Data Sheet

Application Data Sheet shall be prepared in accordance with Appendix G.

F.3.2.12 Field Data

Field data shall be prepared for a product manufactured on the same production lines and in an identical or similar design, production process and quality assurance system as the products to be certified. The field data shall include the following information at a minimum and shall be documented in any appropriate format.

a) Various test results
b) Actual field failure rate
c) Nonconformance information of shipped products
d) Data such as improvement history

F.3.2.13 Detail Specifications

Detail specifications shall be prepared in accordance with Appendix A.

F.3.2.14 Notice of Quality Assurance Manager/Registered Inspector (Format F-10)

Notice of Quality Assurance Manager/Registered Inspector shall be submitted to register or change the quality assurance manager and/or registered inspector. The notice shall contain the following information:

a) Document number: Document number assigned by the manufacturer
b) Date: Date (dd/mm/yyyy) the notice is submit
c) Applicant: Name of quality assurance manager
d) Name: Name of the quality assurance manager or registered inspector
e) Department: Affiliation of the quality assurance manager or registered inspector, including the organization or factory name
f) Job title: Job title of the quality assurance manager or registered inspector
g) Telephone number: The telephone number of the quality assurance manager or registered inspector
h) Fax number: The fax number of the quality assurance manager or registered inspector
i) E-mail address: The e-mail address of the quality assurance manager or registered inspector
j) Product(s) assigned: Certified parts, product group or generic nomenclature of products assigned to the quality assurance manager or registered inspector
k) Career in the company: Career of the quality assurance manager or registered inspector in the company
l) Rationale for change: Rationale to change the quality assurance manager or registered inspector

m) Date of change: Date to change the quality assurance manager or registered inspector

n) Predecessor: Name of the previous quality assurance manager or registered inspector

One of the irrelevant job titles in parentheses (quality assurance manager or registered inspector) shall be struck out. Whenever changes are made in the affiliation, job title or contact information, the manufacturer shall submit a technical correspondence documenting the changes to JAXA.

F.3.3 Change Request for Qualification Test Application (Format F-12)

If significant change(s) of test schedule or test methods are necessary following approval of the Qualification Test Application, the manufacturer shall submit two copies of this document (1 original and 1 duplicate).

a) Document number: Document number assigned by the manufacturer
b) Date: Date (dd/mm/yyyy) this document is submitted
c) Applicant: Unless otherwise specified, the representative's name with the company name, address and telephone number
d) Product(s): Description of the common parts/materials specified in the detail specification
e) Part number: Part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
f) Manufacturer: Name of the company
g) Rationale for change: Rationale to change the test. Use a separate sheet(s) for the details, if necessary.

If this request is approved, JAXA shall return the duplicate of this document to the manufacturer.

F.3.4 Notice of Qualification Test Termination (Format F-13)

Upon termination of the qualification tests, the manufacturer shall submit to JAXA two copies of the Notice of Qualification Test Termination (1 original, 1 duplicate). This document shall contain the following information:

a) Document number: Document number assigned by the manufacturer
b) Date: Date (dd/mm/yyyy) this document is submitted
c) Applicant: Unless otherwise specified, the representative's name with the company name, address and telephone number
d) Product(s): Description of the common parts/materials specified in the detail specification
e) Part number: Part numbers as specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
f) Manufacturer: Name of the company
g) Approval number of Qualification Test Application: Document number of the approval notice for the Qualification Test Application
h) Date of approval: Date (dd/mm/yyyy) the application for Qualification Test Application was approved
i) Reason for termination: Reason to terminate the test. Use a separate sheet(s) for the details, if required.

If this request is approved, JAXA shall return the duplicate of this document to the manufacturer.

F.3.5 Application for QML Certification

The manufacturer shall submit two copies of the documents given in Table F-4 (1 original and 1 duplicate) to JAXA. After the application is approved, JAXA shall send a QML Certificate to the applicant accompanied with the duplicate of the application.

Table F-4. Documents for QML Certification Application

	JAXA-developed parts	Non-JAXA-developed parts
a) Application for QML Certification	F-14	F-14
1) Review comments and judgment	F-15	F-20
2) Correlation table between qualification test items and development test items	F-16	N/A
3) Supplementary information	F-18	F-22
b) Report of Qualification Test (Development Test)	F-17	F-21
1) Results of Qualification Test (Development test)	F-19	F-23
c) Test data and records (1 original only)	–	–
d) Quality Assurance Program Plan	Appendix C	Appendix C
e) Application Data Sheet	Appendix G	Appendix G

F.3.5.1 Application for QML Certification (Format F-14)

This document shall contain the following information:

a) Document number: Document number assigned by the manufacturer
b) Date: Date (dd/mm/yyyy) the application is submitted
c) Applicant: Unless otherwise specified, the representative's name with the company name, address and telephone number
d) Product(s): Description of the common parts/materials specified in the detail specification
e) Title and document number of applicable specification: Titles and document numbers of the applicable specifications
f) Production site: Names and addresses of all facilities involving the production
g) Title and document number of quality assurance program plan: All quality assurance program plan for parts concerned

Note: When applying for recertification, "certification" shall be replaced with "recertification". Hereinafter, "recertification" shall be used for other related forms.

F.3.5.2 Review Comments and Judgment (Formats F-15, F-20)

A blank form of "Review comments and judgment" shall be submitted with the application.

F.3.5.3 Correlation Table between Qualification Test Items and Development Test Items (Format F-16)

This document shall contain the following information:

a) Qualification test items: Group, order and items of the tests, paragraph number for requirement and test method
b) Development test items: Group, order of tests and paragraph number of test method
c) Review comments and judgment on qualification test results: Left blank.

F.3.5.4 Supplementary Information (Formats F-18, F-22)

This document shall contain the following information:

a) Supplementary explanations to development test (applicable only to Format F-18): This document shall supplement the information that the product(s) is a JAXA-developed part.
b) Rationale for deletion of test(s): Rationale to delete test item(s), if any. “None” if all test items were conducted
c) Manufacturing conditions: Title of document(s) which defines the manufacturing conditions
   Example: QMLP-001 Quality Assurance Program Plan (12 June, 1998)
d) Failure rate level (applicable only to Format F-22): If applicable.
e) Others: Other supplementary information pertaining to the application
f) Attachment: Titles of attached documents
g) Contact information (pertaining to this application): Contact information including information on the quality assurance manager or registered inspector of the applicable common parts/materials

F.3.5.5 Report of Qualification Test (Development Test) (Formats F-17, F-21)

This document shall be a cover page for the Results of Qualification Test (Development Test) and shall contain the following information.

a) Product(s): Description of the common parts/materials specified in the applicable specifications
b) Part number: Part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted
c) Production site(s): Information on production site(s)
d) Contact information (pertaining to the applicable product): Contact information including address and department name of engineering, assurance and sales departments
e) Title and document number of applicable specification and standard: Titles and document number of the applicable specifications and standards of the common parts/materials
f) Qualification coverage: Qualification coverage specified in the applicable specification which reflects the qualification test results
g) Approval number of the Qualification Test Application (Implementation Plan for the Development Test)
h) Test site
i) Period of test
j) Witness of qualification test (Development officer): Left blank.

F.3.5.6 Results of Qualification Test (Development Test) (Formats F-19, F-23)

This document shall contain the following information:

a) Order of tests: The order of tests in numbers
b) Test item: Test items specified in the applicable specifications
c) Conditions and requirements: Conditions and requirements specified in the applicable specifications
d) Test results: Summary of test results. Use a separate sheet(s), if necessary
e) Judgment of the development test supervisor (witness of qualification test): Left blank

F.3.5.7 Test Data and Records

This document consists of organized data and records from the qualification tests prepared to verify the test results specified in paragraph F.3.5.6.

F.3.5.8 Application Data Sheet

The Application Data Sheet shall be prepared in accordance with Appendix G.

F.3.6 Application for Certification Retention

a) This application shall be submitted by the due date specified in paragraph 3.4.2 of this specification.
b) Two copies of documents mentioned in Table F-5 shall be submitted (1 original, 1 duplicate).
c) If the application is approved, JAXA shall send a QML Certificate to the applicant accompanied with the duplicate of the application.

Table F-5. Documents for Certification Retention Application

1) Application for Certification Retention	F-24
2) Report of Quality Conformance Inspection Status	F-26
3) Quality Assurance Program Plan	Appendix C
4) TRB Status Report	F-28
4.1) Report of Qualification and Delivery Status	F-25
4.2) Report of Quality Assurance Program Update	F-27
4.3) Nonconformance information	F-29

F.3.6.1 Application for Certification Retention (Format F-24)

This document shall be a cover page for the Application for Certification Retention and shall contain the following information.

a) Document number: Document number assigned by the QML manufacturer
b) Date: Date (dd/mm/yyyy) the application is submitted
c) Applicant: Unless otherwise specified, the representative's name with the company name, address and telephone number
d) Product(s): Name of the qualified parts specified in the applicable specifications

e) Title and document number of the applicable specifications: Title and document number of the applicable specifications
f) Effective period of current certification: Expiration date specified in the current QML Certificate
g) Current certification number (date)
h) Production site: Names and addresses of all facilities involving production
i) Title and document number of quality assurance program plan: All quality assurance program plan of parts concerned
j) Approval number of Qualification Test Application for initial certification (date)
k) Initial certification number (date)
l) Number of certification retention: Left blank.
m) Date of certification retention: Left blank.
n) Approval seal of JAXA president: Left blank.

F.3.6.2 Report of Quality Conformance Inspection Status (Format F-26)

This document shall be a cover page containing results of the quality conformance inspections conducted within the effective period of certification and contain the following information.

a) Product(s): Description of the qualified parts specified in the applicable specifications
b) Part number: Part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
c) (Deleted)
d) Number of detail specification
e) Manufacturing conditions: Title and document number of document(s) which define the manufacturing conditions (Quality Assurance Program Plan)
Example: QMLP-001 Quality Assurance Program Plan (12 June, 1998)
f) (Deleted)
g) Name and seal of quality assurance manager
h) Name and seal of registered inspector
i) Inspection items
j) Criteria of pass/fail
k) Sample size (allowable number of defectives)
l) Inspection results: Number of defectives, the maximum, minimum and average values of measurements shall be reported. Non-numerical test results shall be briefly described.
m) (Deleted)
n) Inspection period
o) Judgment on inspection
p) Lot number (production date)

F.3.6.3 Quality Assurance Program Plan

The Quality Assurance Program Plan shall be attached if the plan has been changed.

F.3.6.4 Report of Qualification and Delivery Status (Format F-25)

This document shall provide production status of the common parts/materials and shall contain the following information.

a) Product(s): Description of the common parts/materials specified in the applicable specifications
b) Part number: Part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
c) QML manufacturer: Name of the QML manufacturer
d) Detail specification number: Document number and established date of the detail specification
e) Qualification coverage: Qualification coverage defined in the applicable specifications
f) Production site(s): Name and address of production site(s)
g) Manufacturing conditions: Title and document number of document(s) which define the manufacturing conditions (Quality Assurance Program Plan) shall be reported. All conditions applied during the production period shall be described. Traceability between delivered products and the applied manufacturing conditions is not required.
   Example: QMLP-001 Quality Assurance Program Plan (12 June, 1998)
h) Current certification number
i) Effective period of current certification: Expiration date specified in the current Notice of Approval for Certification Retention
j) Name and seal of quality assurance manager
k) Name and seal of registered inspector
l) Product: Name of the delivered common parts/materials, if any
m) Part number: Part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted.
n) Quantity of delivered products: Quantity of the delivered common parts/materials, if any
o) Customer: Name of the company to which products are delivered (primary delivery only), if any

F.3.6.5 Report of Quality Assurance Program Update (Format F-27)

This document shall provide control and maintenance status of the quality assurance program for the TRB status report or application for certification retention and shall contain the following information. A revision record of the Quality Assurance Program Plan may be used in place of this report. When changes are not sufficiently communicated via a revision record alone, a copy of updated pages in the Quality Assurance Program Plan shall be attached to the revision record.

a) Product(s): Description of the common parts/materials
b) Part number: Part numbers specified in the applicable specifications. The individual identification and description that follows the part type may be omitted
c) QML manufacturer: Name of the QML manufacturer
d) Title and document number of detail specification
e) Production site(s): Name and address of the production site(s)
f) Document number and established date of Quality Assurance Program Plan
g) Period covered (by the report)
h) Name, department and seal of quality assurance manager
i) Description of change(s): The following information shall be provided.
   1) Document number

2) Last update date
3) Updated contents
4) Impact(s) on the Quality Assurance Program Plan

F.3.7 TRB Status Report (Format F-28)

This document shall be a cover sheet for a TRB activity report submitted with related documents to JAXA annually from the certification date and shall contain the following information.

a) Subject of report: Name, detail specification number, and certification number of target common parts/materials.
b) Period covered (by the report)
Example: 5 March, 2003 to 4 March, 2004
c) Report item: Check the box of applicable item(s). Add attached document number, if any.

F.3.8 Application for Cancellation of QML Certification

The QML manufacturer shall provide the following information in the form of technical correspondence and submit it to the division manager in charge of certified parts control in JAXA.

a) Product(s) for cancellation
1) Name of the QML product
2) Detail specification number
3) Current certification number and date
4) Company name of QML manufacturer
b) Reason for cancellation
c) Deadline for the final order
d) Alternative products
e) Contact information

F.3.9 Nonconformance information (Format F-29)

This document shall contain the following information.

a) Date: Date of nonconformance occurrence of certified parts or similar parts
b) Part number: Part number of nonconforming parts
c) Brief description of nonconformance
d) Title and number of related document(s): Title and document identification of a technical correspondence or non-conformance report submitted to JAXA.

QUALIFICATION TEST APPLICATION

Document No.
Date:

(President's name)
President
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

Per paragraph 3.4.1.1 of JAXA QTS-2000, I request approval to conduct qualification tests as specified in the Implementation Plan for Qualification Test.

Product(s)		Title and document number of applicable specification	
Part number		Manufacturer	

Format F-1

(Tally impression of original and duplicate)

Review comments and judgment	

The application is hereby approved.

Approval number	Date of approval (dd/mm/yyyy)	JAXA president's seal for approval

Format F-2

IMPLEMENTATION PLAN FOR QUALIFICATION TESTS

Product(s)	Part number	Qualification coverage	Production site(s)

1. Applicable specifications and standards
   1.1 Titles and document numbers

Specification number	Specification title

   1.2 Deviations from the requirements

2. Rationale for sample selection and supplementary information

2.1 Rationale for sample selection

2.2 Rationale for waiver of test(s)

2.3 Manufacturing conditions

2.4 Others

2.5 Attachment(s)

Contact information

Company	Department	Name	Telephone number

Format F-4

3. Order of tests and sample size

Test order	Test group	Qualification tests		Sample size	Allowable number of defectives
		Paragraph number	Test item		

Format F-5

4. Test items and methods

Test order	Test item	Conditions and requirements	Specified test method	Actual test method

Format F-6

5. Names and major specifications of test equipment

Test equipment	Relevant test item	Major specification	Calibration status

Format F-7

6. Test site and schedule

Test order	Test item / Year / Month								Test site

Test start date	(dd/mm/yyyy)	Scheduled test completion date	(dd/mm/yyyy)

Format F-8

7. Test site and guide map
   (Provide a detailed description of the test site and guide map.)
   (1) Name of test site
   (2) Address
   (3) Telephone number
   (4) Contact information

(Guide map)

Format F-9

NOTICE OF
QUALITY ASSURANCE MANAGER/REGISTERED INSPECTOR

Document No.
Date:

(Director's name)
Director
Parts Program Group,
Safety and Mission Assurance Department([1])
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

In compliance with paragraphs 3.3.3 and 3.3.4 of JAXA-QTS-2000, I am submitting this form to notify JAXA that the following person is the (quality assurance manager/ registered inspector) for our company and is responsible for the quality assurance of products subject to certification.

1. Name
2. Department
3. Job title
4. Telephone number
5. Fax number
6. E-mail address
7. Product(s) assigned
8. Career in the company
9. Rationale for change (if applicable)
10. Date of change (if applicable)
11. Predecessor (if applicable)

Note: Designate either Quality Assurance Manager or Registered Inspector by striking out the irrelevant title.

Note ([1]): The name of the department/group at the time of submission of this notice shall be stated.

Format F-10

CHANGE REQUEST FOR QUALIFICATION TEST APPLICATION

Document No.
Date:

(President's name)
President
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

In compliance with paragraph 3.4 of JAXA-QTS-2000, I am submitting this form to request a change to the Qualification Test Application (document number) submitted on (dd/mm/yyyy) for the following reason.

1. Product(s)
2. Part number
3. Manufacturer
4. Rationale for change

Format F-12

NOTICE OF QUALIFICATION TEST TERMINATION

Document No.
Date:

(President's name)
President
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

In compliance with paragraph 3.4 of JAXA-QTS-2000, I am submitting this form to notify termination of the qualification tests due to the following reason.

1. Product(s)
2. Part number
3. Manufacturer
4. Approval Number of Qualification Test Application JAXA-QTR- -
   (Date of Approval) (dd/mm/yyyy)
5. Reason for termination

Format F-13

APPLICATION FOR QML CERTIFICATION

Document No.
Date:

(President's name)
President
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

In compliance with paragraph 3.4 of JAXA-QTS-2000, I am submitting this form to request QML certification of the following product (s).
By submitting this application, I agree to be bound by the obligation stated in paragraph 1.4 of JAXA-QTS-2000.

Product(s)		Title and document number of applicable specification	
Production site		Title and document no. of quality assurance program plan	

Format F-14

Review comments and judgment:

Review comments	Example: As a result of a review of items such as development tests, the quality assurance program, the quality assurance program plan and organization, at a minimum, the application is considered to satisfy all requirements. Reviewed by: seal

Judgment	Example: Application No. _____ (issued on dd/mm/yyyy) is judged appropriate. Judged by: seal

The application is approved as follows.

Certification number	Approval date (dd/mm/yyyy)	President's seal for approval

Format F-15

CORRELATION TABLE BETWEEN QUALIFICATION TEST ITEMS AND DEVELOPMENT TEST ITEMS

Qualification test item					Development test item		
Group	Test order	Test item	Requirement paragraph	Test method paragraph	Group	Test order	Test method paragraph
A	1						
	2						
	3						
	4 ⋮						

Review comments and judgment on qualification tests	Example: All the qualification tests have been performed as development tests and it has been confirmed that all the requirements were fulfilled. By: seal

Format F-16

1. Supplementary information

1.1 Supplementary explanations to development tests

This section provides supplementary information indicating that the part is a JAXA-developed part.

Example:

The qualification test for this application is substituted by the development tests performed under a contract “Development of XXXX” implemented in xxxx (year).
The Qualification Test Application is substituted by the Implementation Plan for Development Test, Approval No. xxxxxx.

1.2 Rationale for deletion of test(s)

This section provides the rationale for deletion of test(s) if the “Results of Development Test” indicate deletion of test item(s).

1.3 Manufacturing conditions

1.4 Others

1.5 Attachment(s)

Contact information

Company	Department	Name	Telephone number

Format F-18

REPORT OF DEVELOPMENT TEST

1. Summary of development tests

Product(s)	Part number	Production site(s)	Contact information

Title and document number of applicable specification and standard	Qualification coverage	Approval number of the Implementation Plan for Development Test

		Development officer
Test site		
Test period		seal

Format F-17

2. Results of development test

Test order	Test item	Conditions and requirements	Test results	Judgment of development test supervisor

Format F-19

Review comments and judgment:

Review comments by witness on qualification test results	
Overall review comments by the witness	This application is considered appropriate. Chief witness: seal Assistant witness: seal

Judgment	Example: Application No._____ (dd/mm/yyyy) is judged appropriate. Judged by: seal

The application is approved.

Certification number	Approval date (dd/mm/yyyy)	President's seal for approval
Certification number of the last certification	Date of the last certification (dd/mm/yyyy)	

Format F-20

1. Supplementary information

1.1 Rationale for deletion of test(s)

1.2 Manufacturing conditions

1.3 Failure rate level

1.4 Others

1.5 Attachment(s)

Contact information

Company	Department	Name	Telephone number

Format F-22

REPORT OF QUALIFICATION TEST

1. Summary of qualification test

Product(s)	Part number	Production site(s)	Contact information

Title and document number of applicable specification and standard	Qualification coverage	Approval number on the Qualification Test Application

		Witness
Test site		
Test period		

Format F-21

2. Results of qualification tests

Test order	Test item	Conditions and requirements	Test results	Judgment by witness

Format F-23

APPLICATION FOR CERTIFICATION RETENTION

Document No.
Date:

(President's name)
President
Japan Aerospace Exploration Agency

Applicant
Address:
Company: seal
Representative: seal
Telephone number:

In compliance with paragraph 3.4 of JAXA-QTS-2000, I am submitting this form with supporting documents to request certification retention of the following product(s).
By submitting this application, I agree to be bound by the obligation stated in paragraph 1.4 of JAXA-QTS-2000.

Product(s)		Title and document no. of applicable specification	
Part no.		Title and document no. of quality assurance program plan	
Effective period of current certification		Approval no. for initial certification (date) of Qualification Test Application	JAXA-QTR- (. .)
Current certification no. (date)		Initial certification no. (date)	JAXA-QTA- (. .)

This application is hereby approved.

Number of certification retention	Date of certification retention (dd/mm/yyyy)	Approval seal of JAXA president

Format F-24

REPORT OF QUALIFICATION AND DELIVERY STATUS

Product(s)	Part number	QML manufacturer
Detail specification number (date of issue)	Qualification coverage	Production site(s)
Manufacturing conditions		

Current certification no. (dd/mm/yyyy)		Name of quality assurance manager	seal
Effective period of current certification		Name of registered inspector	seal

Product	Part number	Quantity of delivered products	Customer	Remarks

Format F-25

REPORT OF QUALITY CONFORMANCE INSPECTION STATUS

Product(s)		Detail specification number	
Part number		Manufacturing conditions	
Lot number (production date)		Inspection period	
Name of quality assurance manager	seal	Name of registered inspector	seal

Inspection item	Criteria for pass/fail	Sample size (allowable no. of defectives)	Test results				Judgment
			No. of defectives	Max.	Min.	Avg.	

Format F-26

REPORT OF QUALITY ASSURANCE PROGRAM UPDATE

Product(s)	Part number	QML manufacturer

Title and document number of detail specification	Production site(s)

Document number and established date of Quality Assurance Program Plan	
Period covered	
Name and department of quality assurance manager	seal

Description of change(s)

Document number	Last update date	Updated contents	Impact(s) on Quality Assurance Program Plan

Format F-27

TRB STATUS REPORT

Document No.
Date:

(Director's name)
Director
Parts Program Group,
Safety and Mission Assurance Department([1])
Japan Aerospace Exploration Agency

Reporter
Company:
Department
Registered inspector: seal
Telephone number:
E-mail address

In compliance with paragraph K.3.6.1 of JAXA-QTS-2000, I am submitting status of TRB activity.

1. Subject of report
   Product:
   Detail specification number:
   Certification number:

2. Period covered

3. Report item

Report item	Yes	No	Document no.
1) TRB meeting minutes			
2) Report of Qualification and Delivery Status (Format F-25)			
3) Report of Quality Conformance Inspection Status (Format F-26)			
4) Report of Quality Assurance Program Update (Format F-27)			
5) Failure analysis results and corrective actions on nonconforming products and customer returns (Format F-29)			
6) Critical changes, additions, improvements or trend control in design and structure (incl. materials), production process, test and inspection			
7) Addition of new product(s) and/or package(s) within qualification coverage			
8) Changes to qualification coverage and recertification planning			
9) New certification plan			
10) Others:			

Note ([1]): The name of the department/group at the time of submission of this notice shall be stated.

Format F-28

Nonconformance Information

Date	Part number	Description	Title and number of related document(s)

Format F-29

APPENDIX G

PREPARATION OF APPLICATION DATA SHEET

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Example: Format G-1 ..... G-5
Example: Format G-2 ..... G-7

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APPENDIX G

PREPARATION OF APPLICATION DATA SHEET

G.1 Scope

This appendix provides instructions to prepare the Application Data Sheet as required in paragraph 3.4 in this specification.

G.2 General Requirements

The Application Data Sheet is established to provide users with helpful information such as usage notes. For this purpose, this appendix provides the minimum requirements to prepare the Application Data Sheet.

G.3 General Standards for Preparation

a) Terms defined in JIS shall be used.
b) Unless otherwise specified, an Application Data Sheet shall be prepared for each qualified part to be, or for each detail specification.
c) In addition to data for the qualified parts, data for similar products may be included in the data sheet. In this case, the data shall be clearly identified as such.
d) If changes in content or applicable specifications are necessary, the Application Data Sheet shall be revised. The revised issues shall be provided in a revision record.
e) Error corrections or minor changes may be notified via Change Notice. The Change Notice format is shown in Format example G-2.

G.4 Guidelines for Preparation

The Application Data Sheet shall include the following items as a minimum:

a) Cover page
b) Revision record
c) General
d) Summary of product
e) Usage
f) Performance characteristics in normal operation
g) Performance characteristics in various operating environments
h) Environmental limits
i) Reliability data
j) Storage conditions
k) Handling instructions
l) Others

G.4.1 Cover Page

Cover page shall include the following items:

a) Part description: Part description shall be described identifying the products from their part group.
b) Part number or part type: Part numbers or types shall be described as specified in the applicable specifications.

c) Applicable specification: Document numbers of the generic specifications and detail specifications shall be described.
d) QML Manufacturer: Name of the QML manufacturer shall be described.
e) Year and month: Year and month when the Application Data Sheet was prepared shall be described.

G.4.2 Revision Record

The revision record shall be as specified in item d) of paragraph G.3.

G.4.3 General

This section shall be prepared as follows:

G.4.3.1 Purpose

The purpose of the document shall be stated as shown in the example below.

Example: This Application Data Sheet provides additional detailed information necessary for designing or selecting products than that contained in JAXA QML. Relevant information not covered in this document shall also be considered as necessary. Users are responsible for all aspects pertaining to selection and use of the product(s) specified in this document.

G.4.3.2 Applicable Documents

This section shall provide a list of the document number and the title of applicable specifications that define requirements for the qualified part(s) and other applicable documents such as MIL specifications.

G.4.3.3 Referecne Documents

This section shall provide a list of the document number and the title of reference documents such as technical documents and catalogues that are used to develop the Application Data Sheet.

G.4.4 Summery of Product

This section shall provide a summary of the qualified part(s) such as features, functions, applications and quality levels.

G.4.4.1 External View and Dimensions

The case outlines, dimensions and markings (inspection lot identification code, serial number, trademark and other identifications) shall be shown by photographs and/or figures.

G.4.4.2 Mass

Product mass (normal value) shall be provided.

G.4.4.3 Element Construction

The outline of element construction shall be provided in figures and/or photographs with information such as names of major parts, materials used and finish.

G.4.5 Usage

This section shall provide recommended usage and special instructions for circuit and mounting designs. Handling instructions for other processes such as storage and assembly shall be provided in a separate paragraph.

G.4.5.1 Absolute Maximum Ratings

The ratings or absolute maximum ratings specified in the applicable specifications shall be provided in a tabular format in this section.

G.4.5.2 Remcommended Operating Conditions

The recommended operating conditions specified in the applicable specification shall be provided in a tabular format in this section.

G.4.5.3 Special Instructions on Cirucuit Design

The recommended circuits, interfaces, timing, preventive circuits against root cause of nonconformance specific to the qualified parts, and prohibited usages shall be specified.

G.4.5.4 Recommended Mounting Method

This section shall provide recommended mounting methods for heat dissipation and shielding which should particularly be taken into consideration, and prohibited mounting methods for the qualified parts.

G.4.6 Performance Characteristics in Normal Operation

This section shall provide performance characteristics assured in the applicable specifications.

G.4.6.1 Electrical Characteristics

The electrical characteristics shall be provided by figures or tables as specified in the applicable specifications.

G.4.6.2 Mechanical and Thermal Characteristics

Mechanical and thermal characteristics mentioned below and specified in the applicable specifications shall be provided in a tabular format.

a) Temperature cycling
b) Thermal shock
c) Resistance to soldering heat
d) Moisture resistance
e) Vibration
f) Shock
g) Constant acceleration
h) Terminal strength
i) Others

G.4.7 Performance Characteristics in Various Operating Environments

The electrical characteristics in various operating environments specified below shall be provided in the form of figures or tables.

a) Temperature characteristics
b) Input-output characteristics
c) Drifts at various environmental tests
d) Drifts at life tests
e) Other necessary characteristics

G.4.8 Enviornmental Limits

Evaluation data of various environmental tests conducted as part of the development tests or other tests shall be provided in addition to the environmental limits defined in the applicable specifications.
The main environmental parameters shall include temperature, vibration, mechanical shock, constant acceleration, ESD resistance (if necessary) and radiation hardness (if necessary). Test conditions, sample size and test results shall be provided for each test. The existing data of products with similar structure may be used.

G.4.9 Reliability Data

The following information shall be provided in this section.
If the qualified part data relating to the following issues has not been prepared, the data of equivalent COTS products or products of similar structure may be used. In this case, the data shall be identified as such.

G.4.9.1 Faiure Rate

This section shall provide failure rate or failure rate curve which is predicted by field data, acceleration test data, etc., clarifying operating conditions, confidence level and criteria for pass/fail, at a minimum.

G.4.9.2 Failure Mode

This section shall provide predictable failure modes such as open circuit, short circuit and performance deterioration and their occurrence rate.

G.4.10 Storage Conditions

This section shall provide recommended storage conditions including temperature, humidity and antistatic package.

G.4.11 Handling Instructions

This section shall provide special instructions on lead wires bending, thermal stress due to soldering heat and electrostatic discharge protection, etc.

G.4.12 Others

Address and inquiry information shall be provided in this section.

Example: Format G-1 (Cover page)[1]

JAXA-ADS-2050/Axxx

COMMON PARTS/MATERIALS, SPACE USE,
APPLICATION DATA SHEET FOR

Part Description	Resistors, Fixed, High Reliability, Space Use
Part Number and Type	NASDA RNS90C NASDA RNS90P
Applicable Specification	JAXA-QTS-2050 JAXA-QTS-2050/Axxx

(Month and Year)

Prepared and Established by ABCD Corporation

Issued by Japan Aerospace Exploration Agency

Note:[1] This cover page is an example.

Example: Format G-1 (revision record)[1]

JAXA-ADS-2050/Axxx	J A X A Application Data Sheet	Page	– x –

Revision Record

Rev.	Date	Revised Contents

Note: [1] This record is an example.

Example: Format G-2 (Change Notice)[1]

JAXA-ADS-2050/Axxx Notice 1	J A X A Application Data Sheet	Day Month Year

NOTICE OF CHANGE

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx,
HIGH RELIABILITY, SPACE USE,
APPLICATION DATA SHEET FOR

Page	Paragraph	Line	Change description		Rationale for change
			Before	After	

Note: [1] This change notice is an example.

APPENDIX H

SUPPLEMENTARY REQUIREMENTES FOR TESTS AND INSPECTIONS

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H.3 Requiremnts H-1
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H.3.2 Sampling Plan H-1
H.3.2.1 Lot Tolerance Percent Defective H-1
H.3.2.2 Inspection Lot H-3
H.3.2.3 In-Process Inspection H-3
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H.3.3.3 Resubmitted Lots H-3

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APPENDIX H

SUPPLEMENTARY REQUIREMENTS FOR TESTS AND INSPECTIONS

H.1 Scope

This appendix defines the supplementary requirements for tests and inspections specified in paragraph 4.3 of this specification.

H.2 General Requirments

Part to be qualified and supplied in compliance with the applicable specifications shall meet the supplementary requirements for the test and inspection specified in the following paragraph:

H.3 Requiremnts

H.3.1 Failure Counts, Failure Rate and Pass/Fail Criteria

When a sample is rejected in one or more tests or inspections, it shall be considered as a single failure.
For failure rate tests, the failure period begins at the last time when the sample was verified as normal.
Unless otherwise specified in the applicable specifications, the sample shall fail if it does not pass all tests and criteria.

H.3.2 Sampling Plan

The sampling plan for characteristics and weather resistance tests shall be in accordance with the method specified in the applicable specifications. Sampling for lot inspections shall be in compliance with the sampling method of acceptance quality level (AQL) defined in JIS Z 9015-1 or the lot tolerance percent defective (LTPD) specified in paragraph H.3.2.1. For weather resistance tests, sampling methods shall be the AQL method of JIS Z 9015-1, the LTPD method, or a fixed number sampling plan regardless of the lot size.

H.3.2.1 Lot Tolerance Percent Defective

The lot tolerance percent defective (LTPD) method is a sampling plan to reject 90% of defective lots. This plan is characterized with sample quantity n, acceptance quantity c and rejection quantity r = c+1. Table H-1 is applicable for the lot size of 100 or more. If the required sample size exceeds the lot size, 100% inspection shall be conducted. Table H-2 is applicable when the lot size is smaller than 10 times the sample size and no greater than 100. Table H-2 is applicable for sample sizes smaller than Table H-1. The sampling plan in Table H-2 is to judge with the acceptance quantity c = 0 using the minimum sample size.

Table H-1. Minimum Sample Size for LTPD Values

Maximum percent defective (LTPD)	20	15	10	7	5	3	2	1.5	1	0.7	0.5	0.3	0.2	0.15	0.1
Acceptance no. (c)	Minimum sample size														
0	11	15	22	32	45	76	116	153	231	328	461	767	1,152	1,534	2,303
1	18	25	38	55	77	129	195	258	390	555	778	1,296	1,946	2,592	3,891
2	25	34	52	75	105	176	266	354	533	759	1,065	1,773	2,662	3,547	5,323
3	32	43	65	94	132	221	333	444	668	953	1,337	2,226	3,341	4,452	6,681
4	38	52	78	113	158	265	398	531	798	1,140	1,599	2,663	3,997	5,327	7,994
5	45	60	91	131	184	308	462	617	927	1,323	1,855	3,090	4,638	6,181	9,275
6	51	68	104	149	209	349	528	700	1,054	1,503	2,107	3,509	5,267	7,019	10,533
7	57	77	116	166	234	390	589	783	1,178	1,680	2,355	3,922	5,886	7,845	11,771
8	63	85	128	184	258	431	648	864	1,300	1,854	2,599	4,329	6,498	8,660	12,995
9	69	93	140	201	282	471	709	945	1,421	2,207	2,842	4,733	7,103	9,468	14,206
10	75	100	152	218	306	511	770	1,025	1,541	2,199	3,082	5,133	7,704	10,268	15,407

Table H-2. Minimum Sample Size for LTPD Values

Maximum percent defective (LTPD)	20	15	10	7	5	3	2	1.5	1	0.7	0.5	0.3	0.2	0.15	0.1
Lot size	Minimum sample size (Acceptance number, c = 0)														
10 or less	7	9	9	All											
11 to 20	9	11	14	18	18	All									
21 to 40	10	12	17	23	27	36	All								
41 to 60	10	13	19	26	32	48	54	All							
61 to 80	10	13	20	28	35	54	69	72	All						
81 to 100	10	14	20	28	37	54	69	90	90	All					
Note: If the minimum sample size is more than the lot size, 100 percent inspection shall be conducted.															

H.3.2.2 Inspection Lot

If lots for delivery consist of multiple production lots, each production lot shall be treated as a separate lot unless otherwise specified.

H.3.2.3 In-Process Inspection

If in-process inspection data obtained during the final phase of the QML manufacturer's production process is equivalent to that of the final inspection, the data may be used as final inspection data.

H.3.3 Disposition of Inspection Lots

Lots for delivery shall be limited to those that have passed the final inspection. Good products of the failed lots may be delivered after defective products have been removed by the inspections specified in paragraph H.3.3.2 or H.3.3.3 when specified in the applicable specifications. Shipping conditions shall be in accordance with the applicable specifications.

H.3.3.1 Identification

The pass/fail result of lot inspection shall be clearly indicated on the inspection slips, storage bags or boxes, or tags attached to the qualified parts for delivery. The marking shall be in accordance with the methods specified in the quality assurance program. In particular, rejected lots shall be clearly identified and segregated from good products for storage or disposal purposes.

H.3.3.2 100% Inspection

The manufacturer may choose to inspect 100% of products of the lot for all tests and inspections specified in the applicable specifications with the exception of destructive inspections. The samples that have passed the inspections may be delivered as products. If the failure rate does not meet the specified LTPD or other criteria specified in the applicable specifications as a result of 100% inspection, the lot shall be considered as a failed lot.

H.3.3.3 Resubmitted Lots

When 100% inspection stipulated in paragraph H.3.3.2 is not chosen, the manufacturer may screen out rejected products from the failed lot and re-submit them for inspection. In this case, the new lot shall be composed of good products from the same lot. The re-submitted lot may be exempted from characteristic inspections if the original lot has passed or was not affected by the screening. Lots rejected in weather resistance inspections shall be treated as rejected lots unless there are re-inspection provisions in the applicable specifications.

APPENDIX K

TRB GUIDELINES

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K.2 General Guidelines K-1
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APPENDIX K

TRB GUIDELINES

K.1 Objective

This appendix provides the guidelines for the Technology Review Board (TRB) that is established and operated by the QML manufacturer in accordance with paragraph 3.3.5 of this specification.

K.2 General Guidelines

The TRB is established to operate the QML system effectively. The TRB shall be a multi-functional team of various experts and is responsible for the supervision of establishment, implementation, maintenance and revisions (changes) of the quality assurance program. The TRB shall also determine a direction of corrective actins, and review and judge the validity of the corrective actions upon completion.
The QML manufacturer shall define and document the following items:

a) Authority (paragraph K.3.1)
b) Responsibility (paragraph K.3.2)
c) Organization and structure (paragraph K.3.3)
d) Tasks (paragraph K.3.4)
e) Review and judgment (paragraph K.3.5)
f) Status report (paragraph K.3.6)

K.3 Detailed Guidelines

K.3.1 Authority

After the quality assurance program has been approved by JAXA, the TRB shall have the authority to review and judge as specified in paragraph K.3.5 without prior approval of JAXA. When the TRB exercises the authority, the following conditions shall be met:

a) The authority exercised by the TRB shall not exceed the qualification coverage.
b) The functions, performance, reliability and quality of products shall be ensured as qualified.
c) The TRB shall not exercise its authority exceeding the scope specified by the QML manufacturer in the Quality Assurance Program Plan.

K.3.2 Responsibility

The TRB established by a QML manufacturer is responsible for the following items:

a) Planning product quality of qualified parts
b) Maintenance of the quality assurance program and approval control of program changes
c) Assessment of the reliability data analyses
d) Planning, assessment and approval of the failure analyses
e) Planning, assessment and approval of the corrective actions
f) Planning, assessment and approval of changes to the tests and inspections defined in the generic specifications and detail specifications
g) Approval of establishment, revisions and cancellation of and changes to the detail specifications

h) Approval of establishment, revisions and cancellation of and changes to the Application Data Sheet
i) Documentation of the TRB organization, structure and operating procedures
j) Implementing TRB tasks (paragraph K.3.4)
k) Review and judgment (paragraph K.3.5)
l) Status report (paragraph K.3.6)

K.3.3 Organization and Structure

a) The manufacturer shall clearly define the TRB members and conditions for TRB formation. The members of the TRB shall be representatives, i.e. responsible officers such as a chief of a department or section who has influence over the quality of the qualified parts including design, technology, production engineering, fabrication, test (or inspection), quality assurance, production control and others. The quality assurance manager and registered inspector shall be included in the TRB. The TRB can include internal and external experts depending on review topics. In addition, JAXA officials may join the TRB as observers at the TRB's request.
b) The manufacturer shall define the decision authority (chairperson) of the TRB. When several decision authorities are designated for different review items, the scope of authority and responsibility for each person shall be clearly defined. When the TRB includes the subcontractors, their scope of authority and responsibility shall be defined.
c) The relationship between the TRB and the internal organization shall be defined in an organization chart in the Quality Assurance Program Plan.
d) When the manufacturer has a standing committee equivalent to the TRB, the committee may be designated as the TRB. In this case, the name and structure of the committee shall be included in the Quality Assurance Program Plan. Review items for the committee shall be clearly defined.

K.3.4 Tasks

a) Maintenance of the technology based on the quality assurance program and the quality and reliability of qualified parts manufactured in accordance with the program
b) Assessment and monitoring of the quality and reliability of the qualified parts
c) Maintenance of the qualification coverage defined in the quality assurance program
d) Maintenance and control of the design, materials, and manufacturing process flowchart of qualified parts
e) Approval of manufacturing process flow charts, failure modes, FMAT and control plans for each individual process of qualified parts
f) Review of education and training plans defined in the quality assurance program
g) Maintenance of review records and report of the records to JAXA
h) Assessment and approval of the failure analysis results and emergency reports of failed parts
i) Assessment and monitoring of the effectiveness of corrective actions

K.3.5 Review and Judgment

K.3.5.1 General

The manufacturer has the authority and responsibility to review the following items, as a minimum to maintain the quality of the qualified parts. Records of the TRB reviews and decisions shall be organized and maintained in a manner that any record can be readily available to JAXA upon request.

a) Establishment, implementation assessment and change control of the quality assurance program (paragraph K.3.5.1.1)
b) Establishment, maintenance and revisions of the Quality Assurance Program Plan (paragraph K.3.5.1.2)
c) Establishment, revisions and cancellation of, and changes to the detail specifications (paragraph K.3.5.1.3)
d) Establishment, revisions, and cancellation of, and changes to the Application Data Sheet (paragraph K.3.5.1.4)
e) Conformance with the qualification coverage (paragraph K.3.5.1.5)

K.3.5.1.1 Estblishement, Implementation Assessment, and Change Control of Quality Assruance Program

The TRB shall review a minimum of the following items, determine changes and corrective actions and assess their validity.

a) Reliability and quality control
b) Design reviews
c) Compliance with specification and standards
d) Establishment and maintenance of criteria for critical processes including changes
e) Standards for technical skills certification
f) Selection, control and renewal of the manufacturing, testing and inspection equipment including the changes on the production or test sites
g) In-house and external quality audits and the corrective actions
h) Education and training plans
i) Establishment and optimization of manufacturing, test and inspection conditions
j) Change control of the quality assurance program
k) Failure analysis and corrective action plans for nonconformance
l) Deletion of test(s) at requalification

K.3.5.1.2 Establishment, Maintenance and Revisions of Quality Assurance Program Plan

When the Quality Assurance Program Plan is established or revised, the TRB shall assess and maintain the validity of the items a) to l) in paragraph K.3.5.1.1 as a minimum.

K.3.5.1.3 Establishment, Revisions and Cancellation of and Changes to Detail Specifications

The TRB shall assess the validity of the establishment, revisions and cancellation of and changes to the detail specifications.

K.3.5.1.4 Establishment, Revisions and Cancellation of and Changes to Application Data Sheet

The TRB shall assess the validity of the establishment, revisions and cancellation of and changes to the Application Data Sheet.

K.3.5.1.5 Comformance with Qualification Coverage

The TRB shall determine compliance of new products or proposed changes to the design, structure or materials with the qualification coverage specified in the applicable specifications.

K.3.5.2 Preparation for Review

The manufacturer shall define requirements on preparing materials required for TRB reviews. The materials shall include the followings as a minimum:

a) Specification numbers of the generic specification and the detail specifications
b) Part number
c) Document number of the Quality Assurance Program Plan
d) Scope of review (title of documents which constitute the quality assurance program, tests and inspections)
e) Materials supporting review items to be accepted (e.g., assessment items and the results, manifest theories, determination of similar items conducted in the past)
f) Area to be affected (functions, quality and reliability of qualified parts)
g) Effective date
h) Conformance with the qualification coverage

K.3.5.3 Implementation of Review

a) The TRB shall conduct reviews at the following occasions as a minimum:
   1) At the time of establishing and changing the quality assurance program (including the Quality Assurance Program Plan)
   2) At the time of planning the measures and evaluating the corrective actions based on nonconformance investigation results
   3) At the time of management review (based on the implementation status of the quality assurance program, results of internal audit and customer complaints, at a minimum)
   4) Before the restart of production in the case of exemption of the submission of TRB status report (to check whether any changes were made)

   In addition to the above occasions, TRB review shall be conducted periodically (once a year as a minimum) in order to check whether there are any changes made to the quality assurance program.
b) The review shall be conducted in accordance with the operating procedures that specify methods, procedures and checklists. The checklist shall include an item, “impact on customers” specifically performance, quality, price and delivery date, etc.
c) The manufacturer shall stipulate that the reviews are conducted on the basis of the materials prepared in accordance with paragraph K.3.5.2.
d) At the review, the followings shall be taken into the consideration:
   1) Information and results of process improvement

2) Implementation and analysis results of the qualification test and quality conformance inspection
3) Trend and analysis on yields during the manufacturing process and failure modes
4) Nonconformance information and failure analysis results of the qualified parts and similar products in the past
5) Past record on the production of the qualified parts or similar products
6) Information on complaints from JAXA and other customers

e) Special caution shall be exercised on the following items during a review:
1) Validity of rationale to accept review items
1.1) Have the changes been reviewed thoroughly? (Has it been objectively confirmed that the equivalent level of performance, quality and reliability are maintained after the change(s)?)
1.2) Has the root cause of the nonconformance been identified?
1.3) Has the action against nonconforming products been properly taken? Has the preventive measure been properly implemented?
1.4) Have the review results been deployed throughout the company?
2) Conformance with the generic specification and detail specification
3) Conformance with the qualification coverage

K.3.5.4 Judgment

a) The judge shall approve or disapprove requested changes based on results of a review conducted in compliance with paragraph K.3.5.3.
b) Judgment shall be made objectively and reasonably. Specifically judgment shall be made quantitatively and qualitatively based on the various evidences including evaluation test data, control methods of manufacturing conditions and established theories.

K.3.5.5 Action after Review

a) Meeting minutes of TRB shall include the following at a minimum:
1) Date of TRB meeting
2) Details of review
3) Results of review
4) Action items
5) Relevant detail specification number
6) Relevant part number
b) The QML manufacturer shall archive review materials and results as quality records. The records shall be archived for 8 years from the shipping date of the qualified part(s) for which the review results were applied, and shall be available to JAXA upon request.
c) If the TRB decides to change the qualification coverage, the QML manufacturer shall apply for requalification to JAXA in accordance with paragraph 3.4.3.
d) If the TRB decides to modify the detail specifications and/or Application Data Sheet, the QML manufacturer shall take the necessary action in accordance with Section 6.

K.3.6 Status Reports

K.3.6.1 Periodic Reports

The QML manufacturer shall submit a TRB Status Report to JAXA around the date which is one year from the certified date and every year after that. This report shall include all changes and the Grade of the changes (level of impacts on quality, reliability, performance and interchangeability of the qualified parts due to the changes). The report shall contain the following information at a minimum.

a) TRB meeting minutes
b) Report of Qualification and Delivery Status (paragraph F.3.6.4)
c) Report of Quality Conformance Inspection Status (paragraph F.3.6.2)
d) Report of Quality Assurance Program Update (paragraph F.3.6.5)
e) Failure analysis results and corrective actions of nonconforming products and customer returns
f) Major changes, additions, improvements and trend control in design and structure (including materials), fabrication process, test and inspection
g) Addition of a new product(s) and/or package(s) within the qualification coverage
h) Changes to qualification coverage and recertification plan
i) Newly proposed certification plan

Reports may be in any form such as a copy of TRB meeting minutes and the summary of major action items. Report of Quality Conformance Inspection Status is not required if submitted within the valid certification period.

K.3.6.2 Exemption of TRB Status Report

Preparation and submission of TRB status report can be exempted up to one year from the due date if there was no production, shipment of the products, and no changes to the quality assurance program. In this case, the QML manufacturer shall notify JAXA in the form of a technical correspondence.
When the products will be manufactured again, TRB shall be held in accordance with paragraph K.3.5.3 a) 4).
When the production has restarted, the TRB status report shall be submitted by the date which is one year from the previous due date.

K.3.6.3 Emergency Notification

If one of the following issues occurs, it shall be immediately reported to JAXA:

a) Emergency notification (paragraph 3.6.2)
b) Failure analysis (paragraph 3.6.1) and corrective action (paragraph C.4.9)
c) Major change(s) to the facilities, production process, material and subcontractor and others (paragraph C.4.11)

APPENDIX Z

PROCEDURE AFTER REVISION OF QTS-2000

This document is the English version of JAXA QTS/ADS which was originally written and authorized in Japanese and carefully translated into English for international users. If any question arises as to the context or detailed description, it is strongly recommended to verify against the latest official Japanese version.

APPENDIX Z

PROCEDURE AFTER REVISION OF QTS-2000

The QML manufacturer shall incorporate the items specified in JAXA-QTS-2000D into the quality assurance program, within six months from the established date of JAXA-QTS-2000D, which shall then be reviewed by JAXA. JAXA will provide consultations to the QML manufacturer about necessary dates and period such as the time to be needed for the manufacturer to incorporate the items into the quality assurance program implemented by the manufacturer, the period of JAXA review, and the effective date.