Communication Systems-West

Supplier Quality Requirements

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1. PURPOSE

This document is the Supplier's guide to understanding the L3 Communication Systems - West (CSW) general quality requirements. These general quality requirements shall be met by CSW Suppliers and Suppliers' Sub-tier providers. If there is a conflict between this document and the PO, the requirements of the PO shall take precedence.

1.1. Definition of Key Terms and Acronyms

- **Direct Supplier:** Organization or person that manufactures or provides a good or service directly to L3 (product or service does not go through a distributor).
- **Distributor:** Organization or person that provides a good or service to L3 that was not manufactured by the organization or person.
- **Special Process Supplier:** Organization or person that provides a good or service that qualifies as a Special Process. Special Processes are defined as processes where the resulting output cannot be verified by subsequent monitoring or measurement, and includes any processes where deficiencies become apparent only after the product is in use or the service has been delivered. All Special Processes applicable to the PO will be noted on the PO via specific Quality Codes. Reference QC-001, Supplier Quality Codes (QCs).
- **Quality Management System (QMS):** The managing structure, responsibilities, procedures, processes, and resources to effectively achieve the quality and overall objectives of an organization, in order to satisfy customer needs and expectations.
- **NADCAP:** National Aerospace and Defense Contractors Accreditation Program
- **Buyer:** L3 Technology Communication Systems – West (CSW)
- **SQE:** Supplier Quality Engineer
- **PO:** Purchase Order
- **WS:** Workmanship Standards
- **IS:** Internal Specifications

1.2. Language

The Supplier's submissions of records, reports, specifications, drawings, inspection and test results, and other documentation shall be in English.

1.3. Exceptions

Any exceptions to the requirements in this document must be forwarded to the Buyer via the Request for Exception to Supplier Quality Requirements form SLC-1039. Exception approval status shall be communicated to the Supplier prior to work being started on L3T product.

2. WEBSITE LINKS AND FORMS

L3 CSW has established a web portal on the Internet to provide Suppliers quick access to required documents.

- Link to Supplier Web Portal – provides electronic versions of various Buyer documents
- Link to Workmanship and Specifications Manual (WSM) - refer to Section 3.1 below
- Link to Change/Information Request – refer to Section 4.4 below
- Link to Supplier Non-Conformance Request - refer to Section 4.3 below
- Link to Supply Service Terms and Conditions - provides an electronic version of P.O. Terms & Conditions

- Link to Request for Exception to Supplier Quality Requirements
- Link to Special Process Approved Supplier List

3. TECHNICAL SPECIFICATIONS AND STANDARDS

3.1. Workmanship and Specifications Manual (WSM)

This manual invokes CSW Workmanship Standards (WS), Internal Specifications (IS), and miscellaneous Engineering Specifications as required design, manufacturing, and acceptance criteria when identified on the Purchase Order, Product Definition Data Set (Drawing, Parts List, CAD model, etc.), or Statement of Work. Examples include:

Drawing example: *Workmanship and Marking per item S01*

Parts List example: *Item:* S01 *Part Number:* WSM

The WSM shall be applicable to all CSW procurements when specified in the Purchase Order, Drawing, or Subcontractor Statement of Work (SSOW).

3.1.1. Internal Specifications

These specifications describe allowable technical variations or alternates to drawings, external specifications and/or workmanship requirements. These variations are global in nature, take precedence over CSW released drawings, and shall be utilized, as applicable, when determining workmanship requirements and assuring compliance to requirements.

Example: IS-003 provides direction on class criteria for acceptability to IPC-A-610, IPC/WHMA-620, and J-STD-001 standards.

Note: CSW uses and imposes IPC-A-610, IPC/WHMA-620, and J-STD-001 standards, as applicable. CSW does not provide these standards as part of the CSW WSM. They are copyright protected and the responsibility of the supplier to obtain, when required.

3.1.2. Workmanship Standards

The intent for Workmanship Standards is to establish minimum quality requirements by which product should be built, inspected and tested for manufacture of electronic and mechanical assemblies. Workmanship Standards have been established as separate documents to provide minimum acceptance criteria when CSW design authority drawings are silent on unique characteristics. The acceptance criteria established in the WS are not intended to define design intent, nor are they intended to authorize repair/modification or design change. The WS is a collection of visual acceptability requirements for product designed by CSW.

Note: CSW has identified the applicable workmanship and internal specifications within each commodity requirements document for ease of reference. The WSM does not apply to COTS material.

3.2. Engineering Supplemental Documents

These documents are used to provide additional design detail to CSW manufacturing drawings. They may be called out on the face of the drawing as notes, or as reference documents (R01) on the Parts List. They may also provide general information about CSW drawings to help answer common questions. Engineering Supplemental Documents can be used to help reduce repetitive items typically used or called out on different types of drawings.

3.3. Material Type Specifications

These documents define groups of parts (Material Stocks and Commercial Parts) that are allowed under the Material Type Groups. Usage of the Material Types is subject to Internal Specification "IS-013 Substitution of Alternate Size and Shape Materials."

4. GENERAL REQUIREMENTS

The requirements in this section apply to all commodity types.

4.1. Quality Management System (QMS) Requirements

4.1.1. Direct Suppliers

Direct Suppliers shall have a QMS in compliance with the current revision of AS9100 or ISO9001 or a L3 approved QMS.

4.1.1.1. Evidence of Certification

Suppliers certified to AS9100 or ISO9001 shall provide evidence of compliance by a third party auditor.

4.1.1.2. L3 QMS Approval

Suppliers not certified to AS9100 or ISO9001 shall have a QMS approved by L3 and may be subject to a L3 Quality Management System audit.

4.1.1.3. Change in QMS Certification Status

Any changes to the Supplier's registration, such as a change in certification status (e.g. update, withdrawal, or disapproval) or registration body, must be forwarded to the Buyer within 30 days via Change or Information Request (CIR) form SLC-9012.

A change in Supplier name, ownership, or facility location will subject the Supplier's System and Processes to reevaluation by Buyer. The Supplier shall notify their Procurement Representative of any of these changes in writing within 60 days prior to the change occurring.

4.1.2. Distributors

Distributors shall have a QMS in compliance with the current revision of AS9120 or ISO9001 or a L3 approved QMS.

4.1.2.1. Evidence of Certification

Distributors certified to AS9120 or ISO9001 shall provide evidence of compliance by a third party auditor.

4.1.2.2. L3 QMS Approval

Distributors not certified to AS9120 or ISO9001 shall have a QMS approved by L3 and may be subject to a L3 Quality Management System audit.

4.1.2.3. Change in QMS Certification Status

Any changes to the Supplier's registration, such as a change in certification status (e.g. update, withdrawal, or disapproval) or registration body, must be forwarded to the Buyer within 30 days via Change or Information Request (CIR) form SLC-9012.

A change in Supplier name, ownership, or facility location will subject the Supplier's System and Processes to reevaluation by Buyer. The Supplier shall notify their Procurement Representative of any of these changes in writing within 60 days prior to the change occurring.

4.1.3. Special Process Suppliers

Special Process Suppliers shall be approved by L3 and be listed on the L3 Special Process Approved Supplier List located on the L3 Supplier Web Portal.

4.1.3.1. L3 Special Process Supplier Approval

Special Process Suppliers shall pass a L3 audit prior to being utilized for any L3 product. Special Process Suppliers that are NADCAP certified are only required to have the initial L3 audit, subsequent audits can be waived by providing valid NADCAP certification. Special Process Suppliers that are not NADCAP certified shall pass aperiodic audit to maintain approval status on the L3 ASL. The audit cycle is 1, 2, or 3 years and is based on previous audit results.

4.1.3.2. Change in NADCAP Certification Status

Any changes to the Supplier's registration, such as a change in certification status (e.g. update, withdrawal, or disapproval) or registration body, must be forwarded to the Buyer within 30 days via Change or Information Request (CIR) form SLC-9012.

A change in Supplier name, ownership, or facility location will subject the Supplier's System and Processes to reevaluation by Buyer. The Supplier shall notify their Procurement Representative of any of these changes in writing within 60 days prior to the change occurring.

4.1.4. Product Safety & Ethics

All Suppliers must have a process in place to ensure that persons are aware of:

- their contribution to product or service conformity
- their contribution to product safety
- the importance of ethical behavior

4.2. Configuration and Revision Control

4.2.1. Part Number and Revision

The Supplier shall ensure that product shipped to L3 matches the part number and revision listed on the PO.

4.2.2. Revision Changes

All revision changes must be completed through the Buyer and be documented on the PO. Changes via verbal or email direction are not allowed.

4.3. Nonconforming Material Control

Suppliers and their Sub-tiers shall maintain a documented system for controlling nonconforming material. Nonconforming material must be identified, documented, evaluated, segregated, and dispositioned to prevent its unintended release or use.

a) The Supplier does not have Material Review Board (MRB) authority for CSW/Customer Designed Items unless authorized in writing by the Buyer for specific part numbers. When a nonconformance results in a noncompliance to Purchase Order Requirements, the Supplier may request CSW Preliminary Review of nonconforming material by submitting a Supplier Non-Conformance Request (SNR) form. The Supplier shall not ship nonconforming material, nor deviated material without an approved SNR. If the Supplier is approved to ship nonconforming material for preliminary review by Buyer, then a copy of the approved SNR shall be submitted with the material.

Note: Any MRB action performed as a result of the nonconformance may require the Supplier to reimburse Buyer for the costs associated with processing the nonconforming material.

b) The Supplier may not scrap CSW supplied product or material without authorization from the CSW MRB, via SNR through the CSW Procurement Representative.

c) The Supplier's QMS system shall provide for timely reporting (no later than 5 days after confirmation of the non-conformance) that may affect already delivered product. Notification to the Buyer shall be submitted on Supplier letterhead and include a complete description of the discrepancy against

the specified requirement, as well as all applicable identification and traceability information. Detailed Root Cause Analysis and Corrective Action shall be provided by the Supplier within 30 days.

d) The Supplier shall ensure that their quality management system has the capability to report nonconformance(s) on Critical Safety Items (CSI) in full compliance with Defense Federal Acquisition Regulation Supplement (DFARS) 252.246-7003.

e) Records pertaining to all nonconformance information shall be made available to Buyer upon request.

f) The Supplier shall participate in the Government Industry Data Exchange Program (GIDEP) program in accordance with the requirements of the GIDEP S0300- BT-PRO-010 and S0300-BU-GYD-010.

The Supplier shall be responsible for monitoring and reporting GIDEP Alerts for impact to items delivered to Buyer, and shall take action to eliminate or mitigate any negative effect to an acceptable level.

The Supplier shall generate the appropriate failure experience data report(s) (GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory) whenever failed or nonconforming items are discovered during the course of the P.O.

4.4. Change or Information Request (CIR)

If the Supplier has difficulty with a technical issue or interpretation of requirements during the manufacturing process, or with the contractual requirements of the PO, a Change or Information Request (CIR), Buyer Form SLC-9012 can be initiated by the Supplier to request assistance. CIRs **are not** to be used to disposition, or request disposition of, nonconforming material. CIR Forms are accessible via the CSW Supplier website, and can also be obtained from your CSW Procurement Representative.

4.5. No Changes without Approval

Changes in materials, processes, procedures, design interfaces, or software which affects the form, fit, function, safety, reliability, maintainability, testing, weight, or any other requirement or specified/implied/advertised characteristic of the product or service being delivered shall not be made without prior written approval from the Buyer. Supplier shall submit approval requests to the Buyer using Change/Information Request form SLC-9012.

4.6. Relocation/Transfer of Work

The location of manufacturing shall be the Supplier's facility address referenced on Buyer's P.O. The Supplier shall not subcontract for the design, fabrication, or procurement of the whole or any substantial part of the work specified in the PO without the prior written approval of CSW. The Supplier shall notify their Procurement Representative in writing within 60 days prior to the change occurring. Relocation of this work to a different facility, division, affiliate, or subsidiary of the Supplier's company shall be submitted for approval to L3 CSW Supplier Quality Engineering prior to relocation of the work. In the event of a relocation/transfer of work, requalification of processes may be required.

4.7. Right of Entry

Buyer, its customer, and/or their authorized inspection agency or regulatory authorities shall have the right to send representatives to the Supplier's and its Sub-tier facilities on a non-interference basis to survey the Supplier's Quality Management System and to determine product and/or process compliance with requirements of the PO or this document.

Without additional charges, the Supplier and/or their Sub-tiers shall make their facility and applicable records available for these activities and provide all reasonable support for the safety and convenience of these representatives during their stay at the Supplier's and/or their Sub-tier's plants and facilities. This includes accommodations for any inspection and product acceptance activities at the supplier's and/or their Sub-tier's plants and facilities.

4.8. Records

The Supplier shall control and retain all required records as objective evidence of conformance to requirements of both the Purchase Order and this document. The Supplier shall make records available to Buyer upon request within three business days and at no additional cost. Records shall be retained for a period of 7 years from the time of final PO payment, unless a longer period is specified in the PO.

Where practical, the preferred medium for records is in electronic format. Correction or alteration of records may be made providing the corrections are clearly identified, such as single line strikethrough that is signed/dated by an authorized individual (e.g. do not use white out, correction tape).

Records shall include traceability information from procured material to manufacturing, assembly, and tests and inspections of product delivered to CSW necessary to determine authenticity and conformance to PO requirements.

4.9. Corrective and Preventive Action

The Supplier shall respond to all Buyer Supplier Corrective Action Requests (SCAR), to include containment, impact to delivered product, Root Cause, Corrective Action, and measured effectiveness of actions taken, within the timeframe identified on the SCAR. Failure to respond within the allotted timeframe or an unacceptable response may impact both Supplier's rating and approval status.

4.10. Foreign Object Debris/Damage (FOD)

To preclude introduction of foreign objects into any deliverable item, the Supplier shall maintain a documented FOD prevention program appropriate to the commodity provided to CSW. This program shall be compliant to AS9146 Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space and Defense Organizations during design, manufacture, assembly and shipment of an item as well as use NAS 412 as a guide.

4.10.1. Masking

The Supplier's FOD prevention program shall include operations designed to verify removal and accountability of all items and material used for masking (e.g. tape, cap, or other masking material) in their work sequence/planning processes.

4.10.2. Shipping

The Supplier's FOD prevention program shall include FOD preventative practices for packaging. The Supplier shall ensure that there are no foreign objects received in packaging and packaging containers. Foreign objects in packaging may include staples, foam peanuts, and Styrofoam.

4.11. Supplier Sub-tier Control

The Supplier is responsible for ensuring items procured from its Sub-tiers conform to all the same Quality Codes (reference QC-001), specifications, and requirements of the PO. Sub-tier Special Processes shall be performed only at approved L3 special process suppliers. L3 approved Special Process Suppliers are listed on the L3 Supplier Portal. Manufacturers with design authority have the responsibility to approve and control their special processing sources and are not required to use Special Process Suppliers listed on the L3 Special Process Approved Supplier List.

4.12. Calibration System, Measuring and Test Equipment (M&TE)

The Supplier shall provide and maintain gages and other measuring and testing devices necessary to assure that product(s) conform to the technical requirements. Inspection and test equipment shall be calibrated and maintained in accordance with a nationally or internationally recognized standard (i.e. ISO 17025, ANSI NCSL Z540 or ISO 10012). When required, the Supplier's measuring and test equipment shall be made available for use by the Buyer's representative to determine conformance of product(s) with PO requirements. In addition, if conditions warrant, the Supplier's personnel shall be made available for operation of such devices and for verification of their accuracy and condition. Control and calibration of tooling and M&TE furnished by the Buyer shall be the responsibility of the supplier. The Supplier's

calibration system shall provide recall capability in the event that any M&TE is found to be out of calibration.

4.13. Shelf Life Control

If the Supplier utilizes shelf life material subject to degradation or deterioration over time, the supplier shall establish a shelf life and storage control program to ensure that no material which has exceeded its shelf life is used in the assembly of L3 product.

4.14. Packaging, Preservation, and Storage

Finished parts shall be adequately protected in accordance with best commercial practices to prevent damage during handling, shipment, and storage. Parts shall be individually wrapped, bagged, or otherwise protected to prevent part-to-part contact/damage when packaged within a larger pack. Special handling, shipping, and storage requirements will be delineated in the applicable Procurement documents. ESD precautions shall apply, as applicable by commodity being provided.

Anti-Static and Static Dissipative packing material must comply with the Contact Corrosivity Testing in accordance with MIL-STD-3010 Method 3005 (formerly Federal Standard 101, Method 3005). This anti-static and static dissipative packing material may not be used in direct contact with Optics and Polycarbonates.

4.15. Tooling Requirements

Special tooling (supplier manufactured or CSW furnished) critical to process or used as a media of inspection, must be described in the Supplier's process. Process tooling shall be subject to periodic inspection to ensure it is still capable of producing conforming product. The tools used for inspection must be controlled as part of the supplier's calibration system prior to use in production.

4.16. Identification Marking

Identification marking (also called part marking) is required for all products being delivered to CSW. Where the drawing clearly specifies the pertinent part marking requirements, the Supplier shall mark the parts in accordance with the drawing. Otherwise identification marking shall be as described below:

a) Products Manufactured to CSW Engineering Drawings (e.g. build-to-print).

Parts described by these drawings shall be marked with the following minimum information:

- Design activity CAGE code (06401)
- Part number with suffix (e.g. 60090485-000)

  Note: The "-000" suffix format is from part numbers assigned in CSW legacy system. Newer CSW part have no suffix (e.g. 1000402017).
- Serial number or other traceability number, as applicable
- Part revision letter
- The letters "MFR" followed by the manufacturer's CAGE code, entered on a line below the other required information

Example Marking Label:

06401 60090485-000 SN 001 Rev. B **MFR - XXXXX**

b) Products Manufactured to CSW Control Drawings (e.g. supplier retains design authority). These are identified with the word "Control" above the title block (e.g. Vendor Control, Source Control, or Procurement Control).

Parts described by these drawings shall be marked with the following minimum information:

- Part number with suffix (e.g. 60090485-000)

  Note: The "-000" suffix format is from part numbers assigned in CSW legacy system. Newer CSW part have no suffix (e.g. 1000402017).

- Serial number or other traceability number, as applicable
- Part revision letter

Example Marking Label:

60090485-000 SN 001 Rev. B

When products cannot be marked due to lack of marking space or the marking would have a deleterious effect on the product, the marking shall be applied to a supplemental container (i.e. bag, box, etc.), or via an attached tag. This marking will contain the same nomenclature as shown above if it is the only means of providing product identification.

4.17. Counterfeit Part Mitigation

The Supplier shall maintain a Counterfeit Part risk mitigation process internally, and with its suppliers, using SAE AS5553 as a guide. Supplier shall provide evidence of their risk mitigation process upon request.

The Supplier shall provide unique traceability identifiers (i.e. Date Code / Lot Code, Serial numbers) for all items delivered to L3 which contain an item procured from sources other than Original Equipment Manufacturer or Original Component Manufacturer or their Authorized Distributors.

The Supplier shall not provide electronic components, or assemblies containing electronic components, procured from Independent Distributors without prior approval from Buyer. When prior approval is issued by the Buyer, only L3 CSW authorized independent distributors may be used. Completion of L3 CSW prescribed counterfeit risk mitigation testing will be required prior to the use of all products from independent distributors.

4.18. Prohibited Materials

Unless otherwise specified on the drawing or PO, the use of zinc, cadmium, mercury, or pure tin (>97% Sn) is expressly prohibited. The Supplier shall communicate these restrictions to their Sub-tiers as required.

END OF DOCUMENT

Revision History Summary

Revision #	Description of Change	Date
New	Initial Release	07-28-2010
01	Added clarification to several sections. Added Incorporation of Commercial Product to Section 2. Added Lead-Free finishes to section 2.15. Added record to section 2.17c. Added Counterfeit Parts to section 2.20. Updated date for AS9100/ISO 9001 registration in section 2.1. Modified Table numbers and placements. Modified Specifications and Standards. Changes are indicated with blue text.	10-12-2011
02	Modified Section 3.3. Changes are indicated with blue text.	11/8/2011
03	Modified several sections throughout. Changes are indicated with blue text.	08/28/2012
04	Updated oversight and requirements for special processes. Changes are indicated with blue text.	12/6/2012
05	Modified and updated to coincide with SAP.	02/03/2015
06	Complete rewrite and reformatting.	01/07/2016

Revision #	Description of Change	Date
NA	Updated hyperlinks throughout and removed reference to SLC-3892 in section 5.3.a. No revision upgrade necessary.	01/17/2017
07	Added flowdowns for product conformity, product safety, and ethical behavior to comply with AS9100D. Removed Section 24, Quality Codes. Formatted for current document template.	09/01/2017
08	Update many sections to convert SQR-001 to the L3 General Quality Code.	1/23/2018
09	Remove Shelf Life section (moved to individual Quality Codes). Update FOD specifications. Update Special Process Audit frequency.	03/08/2018
NA	Corrected spelling error in section 4.8 (alternation to alteration). No revision upgrade necessary.	4/23/2019