


					CURRENT REVISION						
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					Y	C69159	12/26/2023	Phil Brezinski			
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Revision History

Revision	Date	ECO Number	Change Description	Prepared By
T	3/29/2022	C62087	<ul style="list-style-type: none"> Changed to Intelsat Template A004 added Quality Improvement Plan language B003 Added ability to use Intelsat FAI form, Corrected hyperlinks to IAQG B020 Added verbiage to account for specialized packaging requirements. Added FAI Form D13283 to Section 7 	P. Brezinski
U	4/20/2022	C62317	<ul style="list-style-type: none"> Added Table 1 	M. Hill
V	10/31/2022	C64553	<ul style="list-style-type: none"> Added definitions for software and firmware Created Software Production Article Vendor Type Updated B034 LRU Data Delivery Requirements for Failure Analysis Reports Added Clauses B037 Software Configuration Audit and B038 Software Requirements and Testing 	P. Brezinski
W	11/3/2023	C68557	<ul style="list-style-type: none"> Removed remedy language in Clause B013 	P. Brezinski
Y	12/26/2023	C69159	<ul style="list-style-type: none"> Expanded and revised TOC Purpose: Removed word "Airborne" from various areas in document Scope: Updated to include "Services" Acronyms and Definitions: Added acronyms FW, LSP. Clarified definitions of Production Article and Software Production Article. A006: added requirement to provide records in case of no longer supporting product line. B002: Clarified use of Supplier Disclosure Letter B003: removed duplicative verbiage from clause and to align with AS9102 (latest revision). B008: Clarified ESS requirement B010: added submittal requirement for KC control plan. B013: Clarified MTBF Calculations with a "Note" B014: Clarified MRB Authority and requirement for shipping Agile deviation B018: Re-ordered Delivery requirements B022: Added in Source Report D20035 as part of delivery package B032: Notification of Change. Removed verbiage that is duplicative of B003 requirement (FAI) General grammatical and spelling corrections. Updated email Hyperlinks 	P. Brezinski

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1 Purpose

This document defines quality assurance requirements for suppliers providing production articles and service, as required by Purchase Order (PO), to Intelsat Inflight LLC, herein referred to as Intelsat.

2 Scope

This document applies to production and prototype articles and services (engineering test/development articles are excluded) provided by Intelsat approved suppliers; hardware, material, Line Replaceable Units (LRUs), Shop Replaceable Units (SRUs), electrical and mechanical assemblies and sub-assemblies, software, and services. This document is subject to incorporation into contractual documents.

All regulations/specifications/documents referred to herein, and identified for use, must be of the most current revision.

3 Responsibilities


Intelsat Quality is responsible for updating, maintaining, and ensuring compliance to this document.

Intelsat Supply Chain and/or Intelsat Quality is responsible for providing this document to potential and current suppliers.

Intelsat Suppliers are responsible for implementing requirements defined within this document (as applicable). Any exceptions or waivers to these requirements must be documented and approved by Intelsat Quality on any of the following:

- D14560 Supplier Quality System Survey
- D20569 Supplier Evaluation Form
- Contractual Documents
- A signed letter from Intelsat Quality noting the exception or waiver

Suppliers are also responsible for ensuring the competence of personnel performing work and that personnel are aware of their contribution to product or service conformity, product safety, and the importance of ethical behavior.

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4 Acronyms and Definitions


These acronyms and definitions apply to this document.

Term	Meaning
Aircraft Installation Service	Suppliers that provide aircraft installation services for Intelsat systems. These suppliers may install or upgrade/modify existing Intelsat system installations.
Aircraft Maintenance Service	Suppliers that provide aircraft maintenance support services for Intelsat systems. These suppliers troubleshoot, remove and replace Intelsat LRUs, and provide general maintenance and repair services for Intelsat systems.
ALT	Accelerated Life Testing
ASL	Approved Supplier List
ATA	Air Transport Association of America
ATP	Acceptance Test Procedure
BOM	Bill of Materials
C of C	Certificate of Conformity
CAA	Civil Aviation Authority
Calibration Service	Services used to ensure/certify calibration of Intelsat equipment and tools directly related to production article testing/inspection, Intelsat system installation or servicing. Note: Does not apply to calibration services for developmental engineering efforts.
CCA	Circuit Card Assembly
CFE	Customer Furnished Equipment
CMDB	Configuration Management Data Base
COTS	Commercial-Off-The-Shelf. These articles include standard parts and components that are commercially available (i.e. screws, nuts, bolts, rivets, etc.)
Counterfeit Parts	Any parts containing unlawful or unauthorized reproductions, substitutions, or alterations that have been knowingly mismarked, misidentified, or otherwise misrepresented to be an authentic, unmodified part from the original manufacturer, or a source with the express written authority of the original manufacturer, such as an approved aftermarket distributor.
Cp/Cpk	Process capability measurements used to evaluate whether a process is centered and under statistical control
CTS	Component Technical Specification
DFMEA	Design Failure Modes & Effects Analysis
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DPD	Digital Product Definition
DSA	Direct Ship Authorization
EASA	European Union Aviation Safety Agency
ERAI	Electronics Resellers Association International
ERP	Enterprise Resource Planning
ESD	Electrostatic Discharge

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ESS	Environmental Stress Screening
FAA	Federal Aviation Administration
FAI	First Article Inspection
FAIR	First Article Inspection Report
FMEA	Failure Modes and Effects Analysis
FOD	Foreign Object Debris/Detection/Damage
FPY	First Pass Yield
FRACAS	Failure Reporting Analysis and Corrective Action System
FW	Firmware
GIDEP	Government-Industry Data Exchange Program
IAW	In Accordance With
ICOP	Independent Industry Controlled Other Party
Key Characteristic (KC)	<p>An attribute or feature whose variation has a significant influence on product fit, performance, service life, or producibility; that requires specific action for the purpose of controlling variation.</p> <p>KCs for a part, subassembly, or system are those selected geometrical, material properties, functional, and/or cosmetic features; which are measurable, whose variation control is necessary in meeting customer requirements and enhancing customer satisfaction.</p> <p>Process KCs are those selected measurable characteristics of a process whose control is essential to manage variation of part or system KCs.</p>
LRU	Line Replaceable Unit
LSP	Loadable Software Part
LTL	Less Than Load / Less Than Truckload
MRB	Material Review Board
MSA	Measurement System Analysis
MSD	Moisture Sensitive Device
MTBF	Mean Time Between Failure
NAS	National Aerospace Standard
NCR	Nonconformance Report
OCM	Original Component Manufacturer
OEM	Original Equipment Manufacturer
OOT	Out of Tolerance
OTD	On-Time Delivery
P25 Software (Production)	SW that requires FAA 14 CFR Part 25 regulatory approval. See also SW Production Article.
PC	Production Certificate
PFMEA	Process Failure Modes & Effects Analysis
PMA	Parts Manufacturer Approval
P/N	Part Number
PO	Purchase Order
POA	Production Organization Approval

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Production Article	Articles being manufactured or procured. (Scope: COTS, Production Article (Active), Production Article (Passive), SW Production Article)
Production Article (Active)	Suppliers that provide electromechanical built assemblies and/or sub-assemblies (i.e. LRUs, SRUs, circuit card assemblies, etc.) This includes suppliers who perform contract maintenance on LRUs.
Production Article (Passive)	Suppliers that provide mechanical built assemblies and/or sub-assemblies (i.e. Installation kits, wire harnesses/bundles, racks, sheet metal parts, machined parts, radomes, composites, etc.)
Prototype Article	Article manufactured IAW released documents to support TC or STC installations
QMS	Quality Management System
RCA	Root Cause Analysis
RPN	Risk Priority Number
SC	Structural Component
SCAR	Supplier Corrective Action Request
SCI	Software Configuration Index
SDL	Supplier Disclosure Letter
SDS	Safety Data Sheet
S/N	Serial Number
SRD	Software Requirements Data; see RTCA/DO-178C for guidance
SRU	Shop Replaceable Unit
Standard Parts	Standard parts are:(a) parts manufactured in complete compliance with an established industry, Agency, competent authority or other Government specification which includes design, manufacturing, test and acceptance criteria, and uniform identification requirements. The specification should include all information necessary to produce and verify conformity of the part. It should be published so that any party may manufacture the part. Examples of specifications are National Aerospace Standards (NAS), Army-Navy Aeronautical Standard (AN), Society of Automotive Engineers (SAE), SAE Sematec, Joint Electron Device Engineering Council, Joint Electron Tube Engineering Council, and American National Standards Institute (ANSI), EN Specifications etc.
STC	Supplemental Type Certificate
SVCR	Software Verification Cases and Results. A combination of Software Verification Cases and Procedures (SVCP) and Software Verification Results (SVR). See RTCA/DO-178C for guidance for SVCP and SVR.
Software Production Article (Active)	Software that resides on a deliverable LRU regardless of regulatory approval requirements, and can be deployed to an LRU without removing the LRU from service as part of an Intelsat SW Package or ISP (Bundle) Note: Firmware (FW) is not part of this definition.
TC	Type Certificate
TO	Transfer Order

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5 Supplier Quality Requirements

5.1 Supplier Quality Requirements are comprised of two parts:

- **Part A** – General Requirements (Applicable to all production article and service suppliers)
- **Part B** – Product/Service Specific Requirements (Applicability defined in Table 1 – Requirements Compliance Matrix)


Table 1 – Requirements Compliance Matrix

Requirements Compliance Matrix	Supplier Type (See Section 4 for definitions)					
	COTS	Production Article (Active)	Production Article (Passive)	SW Production Article	Aircraft Maintenance /Installation Service	Calibration Service
Part A – All Clauses	X	X	X	X	X	X
B001 – QMS Certification		X	X	X		
B002 – Counterfeit Parts Prevention Program	X	X	X			
B003 – First Article Inspection		X	X			
B004 – Certificate of Conformity	X	X	X			
B005 – TSO/PMA Certificate and Airworthiness Approval Tag		X	X	X		
B006 – Foreign Object Debris/Damage Prevention Program		X	X		X	
B007 – Electrostatic Discharge Protection Program		X				
B008 – Environmental Stress Screening		X				
B009 – Failure Modes & Effects Analysis		X	X			
B010 – Key Characteristics		X	X			

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Requirements Compliance Matrix	Supplier Type (See Section 4 for definitions)					
	COTS	Production Article (Active)	Production Article (Passive)	SW Production Article	Aircraft Maintenance /Installation Service	Calibration Service
B011 – Measurement System Analysis		X	X			
B012 – Accelerated Testing		X				
B013 – Mean Time Between Failure		X				
B014 – Supplier Request for Deviation/Waiver	X	X	X			
B015 – Sampling Plan		X	X			
B016 – Handling of Sensitive Items	X	X	X			
B017 – Hazardous Material	X	X	X			
B018 – Delivery	X	X	X	X		
B019 – Packing Slip	X	X	X			
B020 – Packaging, Labeling and Shipping	X	X	X			
B021 – Configuration Change Notification		X	X	X		
B022 – Direct Ship Authorization		X	X			
B023 – Source Inspection		X	X			
B024 – Control of Nonconforming Material	X	X	X		X	
B025 – Failure Reporting Analysis & Corrective Action System		X		X		

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Requirements Compliance Matrix	Supplier Type (See Section 4 for definitions)						
	Requirement (Clause)	COTS	Production Article (Active)	Production Article (Passive)	SW Production Article	Aircraft Maintenance /Installation Service	Calibration Service
B026 – Intelsat Owned Tooling & Gauges		X	X			X	
B027 – Contract Maintenance Providers		X				X	
B028 – Calibration Service							X
B029 – Solder/Solderability of Parts		X	X				
B030 – Special Processes		X	X				
B031 – Prohibited Materials/ Substances	X	X	X				
B032 – Notification of Change		X	X	X		X	
B033 – Structural Components			X				
B034 – LRU Data Delivery		X	X (Radomes only)				
B035 – Traceability for CFE		X	X				
B036 – First Pass Yield Data		X	X				
B037 – Software Configuration Audit				X			
B038 – Software Requirements and Testing				X			

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Part A – General Requirements

A001 – Quality Management System

The Supplier must have a Quality Management System (QMS) that complies with the International Organization for Standardization ISO 9001 – Quality Management System Requirements (equivalent or better – i.e. AS9100 series). Independent Industry Controlled Other Party (ICOP) certification/registration is not required.

Note: Aircraft Maintenance/Installation Service suppliers must have a QMS in accordance with (IAW) CFR 145.211 (Quality Control System) in lieu of ISO QMS requirements.

Note: Clause A001 does not apply to Suppliers required to be accredited IAW Clause B001 per Table 1.

A002 – Evaluation & Approval

The Supplier must undergo an initial evaluation before inclusion to the Intelsat Approved Supplier List (ASL).

The Supplier must undergo recurring (surveillance) evaluation to maintain an Approved status on the Intelsat ASL.


These evaluations may include, but are not limited to, a Quality System Survey review and/or Supplier Evaluation audit and may be completed by either a desktop or on-site assessment. Failure to meet the acceptance criteria of these evaluations may result in conditional approval status, or possible removal/exclusion from the Intelsat ASL.

A003 – Right of Facility Access

The Supplier must allow right of facility access to Intelsat, Intelsat's customers, and governmental regulatory authorities, at any level of the supply chain involved in the order and to all applicable records. The aforementioned parties may conduct on-site process or product audits of the Supplier and/or Supplier's sub-tiers (as necessary) to ensure the requirements of this document, as well as the requirements of the Intelsat Purchase Order, Contract, Statement of Work, drawings, and specifications are being met. Refusal to allow on-site access may jeopardize the Supplier's approval status.

A004 – Performance Measurement

Intelsat monitors Supplier performance and will provide performance information as necessary. Based on the performance information provided, suppliers are expected to take appropriate corrective action to improve their scores when necessary. Intelsat may place any underperforming supplier on a Quality Improvement Plan at its discretion.

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A005 – Purchase Order

The Supplier must have an approved Purchase Order from Intelsat prior to delivery of any articles or services to Intelsat. The Supplier may jeopardize their ability to be considered for future opportunities if they proceed without these arrangements.

Note: Verbal/e-mail authorizations are not considered formal agreements. Verbal/e-mail direction may be used to begin work, but a finalized Purchase Order must be in place in order to deliver to Intelsat.

The Purchase Order may include part numbers, revisions, prices, quantities, and other requirements that govern the purchase and supply of the parts or services.

Multiple Purchase Orders may be released for the same part number. Suppliers must deliver product against the earliest requested date regardless of Purchase Order Number, unless directed in writing by Intelsat.

Quotations the Supplier provides must include additional costs required to supply the item or service (e.g. delivery, packaging, etc.). Regarding price, Intelsat requires the Supplier invoice prices to match negotiated Intelsat prices to ensure timely processing.

Changes may be handled on a case-by-case basis. Invoices which do not match the Purchase Order, or the agreement, may be returned to the Supplier.

A006 – Record Retention


The Supplier must maintain and control accurate quality records documenting conformance to requirements. Records pertaining to Intelsat projects must be retained for a minimum of 10 years unless otherwise specified in the Purchase Order or contract.

Records must be readily available for onsite visits by Intelsat, Intelsat's customers, and governmental regulatory authorities.

Upon request, records must be made available within 3 business days. In the event of airline or regulatory inquiries (e.g. 14 CFR 21.3), an urgent records request may be made and expected to be fulfilled within 24 hours.

If supplier determines they will no longer be producing or supporting Intelsat product, all records from previous purchases or support service must be provided to Intelsat.

Note: Aircraft Maintenance/Installation Service suppliers are excluded from the 10-year record retention requirement. In accordance with 14 CFR 145.219, Aircraft Maintenance/Installation Service suppliers must retain records for at least 2 years from the date the article was approved for return to service.

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A007 – Sub-Tier Supplier Management

The Supplier must manage all their sub-tier suppliers or subcontractors in accordance with their agreements. The Supplier must flow down all applicable requirements, including customer requirements, statutory requirements, and regulatory requirements, as applicable.

The Supplier must take appropriate action when sub-tier supplier performance poses a risk to Intelsat programs.

A008 – Corrective & Preventive Action

The Supplier should have a Corrective & Preventive Action process in place which includes industry best practice Root Cause Analysis (RCA) problem solving tools (i.e. 8D, DMAIC, 5 Why, Fishbone, etc.).

Supplier Corrective Action Request (SCAR) and Nonconformance Report (NCR):

The Supplier must provide an initial SCAR/NCR containment response within 10 business days of SCAR/NCR issuance, unless otherwise specified in writing by Intelsat. It is essential that corrective action be immediately taken by the supplier when any nonconformance is identified at Intelsat or any of its customers. When this occurs, Intelsat Quality will inform the supplier of the nonconformance. A SCAR/NCR may be issued for purchased components found to be nonconforming through line rejections, testing failures, failed inspection results, Intelsat customer concerns or returns, or obsolete material. Suppliers may jeopardize their ability to be considered for future opportunities if they fail to respond to the SCAR/NCR in a timely manner.

Part B – Product/Service Specific Requirements


B001 – Quality Management System Certification

The Supplier must have an ICOP QMS certification (either ISO 9001 or AS9100 series) by an accredited registrar, or a governmental aviation regulatory authority (e.g. FAA or EASA) Production Certificate (PC) or Production Organization Approval (POA). The scope of the Supplier's certificate of registration, PC, or POA must adequately cover the product(s) or service(s) being provided by the Supplier.

All suppliers to Intelsat who hold third-party certification under the AS9100 series of aerospace quality management system standards (AS9100, AS9110, AS9115, and/or AS9120) must maintain an active profile within the International Aerospace Quality Group – Online Aerospace Suppliers Information System (IAQG-OASIS). These suppliers must grant Level 2 (Audit Results) access to Intelsat within their respective OASIS profile upon request. Granting Intelsat Level 2 access may preclude the need for regular on-site QMS audits by Intelsat Quality. Initial QMS audits may still be required when adding new suppliers to Intelsat's Approved Supplier List. Intelsat Quality will make the final determination.

Additionally, Supplier must promptly notify Intelsat Quality (Quality@intelsat.com) of the following:

- Changes in its quality leadership or senior management
- Renewal, surrender, or revocation of certifications

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- Adverse changes to product accreditations/approvals (e.g., expired, withdrawn, suspended, downgraded)
- Certification body or regulatory agency findings/nonconformances classified as “Major”

B002 – Counterfeit Parts Prevention Program

The Supplier must establish and maintain a counterfeit part prevention plan.

Counterfeit parts are defined as any parts containing unlawful or unauthorized reproductions, substitutions or alterations that have been knowingly mismarked, misidentified, or otherwise misrepresented to be an authentic, unmodified part from the original manufacturer or a source with the express written authority of the original manufacturer, such as an approved aftermarket distributor.


Development of a Counterfeit Part Prevention Plan should utilize AS5553, AS6081, AS6174, or AS6496 as applicable, as a guide to develop and implement the plan. This plan must focus on detection, prevention, mitigation, disposition, and reporting of suspected or confirmed counterfeit parts or assemblies. The Supplier must flow down requirements for a counterfeit parts prevention program to their suppliers, as applicable.

When selecting a source of supply, suppliers must give preferential consideration to Original Component Manufacturer/Original Equipment Manufacturer (OCM/OEM) or their franchised distributors (i.e. OCM/OEM authorized/approved). As may be necessary due to such situations as Diminishing Manufacturing Sources and Material Shortages (DMSMS), suppliers may select an independent distributor (i.e. a broker), however, the independent distributor must be certified to AS6081, or equivalent, and the parts being procured must be certified to have been tested IAW AS6171, or equivalent.

Regardless of the source of supply, documentation must be retained and made available by Supplier that authenticates unbroken traceability to the applicable Original Component Manufacturer/Original Equipment Manufacturer (OCM/OEM) upon request.

If counterfeit parts/assemblies are furnished under any Intelsat PO and are found in any of the delivered goods, the Supplier must promptly replace such with items acceptable to Intelsat. Intelsat reserves all rights to report such to third-party monitoring or reporting entities (e.g. Electronics Resellers Association International (ERAI) at www.era.com and the Government-Industry Data Exchange Program (GIDEP) at www.gidep.org).

Upon discovery of counterfeit or suspect counterfeit parts, the Supplier must notify Intelsat Quality (Quality@intelsat.com) and Intelsat Supply Chain within one (1) business day using a Supplier Disclosure letter (reference Clause B024). The Supplier must be able to provide the supply chain traceability showing how the counterfeit parts were obtained (this includes the supply chain path from the original manufacturing of the parts through any intermediaries and ultimately to delivery to Intelsat).

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B003 – First Article Inspection (FAI)

The supplier must conduct and complete First Article Inspection (FAI), partial (delta) FAIs, and First Article Inspection Reports (FAIR) IAW AS9102 (latest revision) for parts or assemblies ordered by Intelsat.

Note: This clause does not apply to:

- **Development and prototype parts that are not considered as part of the first production run.**
- **Procured standard catalogue items (e.g. MIL Spec hardware), Commercial of the Shelf Hardware (COTS), or deliverable software.**
 - **CAUTION: When these items are included in an assembly, they shall be documented in the index of part numbers in an assembly FAIR.**

The supplier must flow down the requirements of this clause to suppliers or processors who produce design characteristics of the affected parts or assemblies, as applicable.

The supplier must perform a full FAI or a partial FAI for affected part or assembly characteristics, when any changes to product realization processes or engineering/design requirements that invalidate or are not represented in the previous FAI.

Acceptable FAIR Forms for Top Level and Lower-Level FAIRs:

- Forms 1, 2, & 3 as listed in the current revision of AS9102
- Supplier may utilize Intelsat FAI form D13283 upon request
- Supplier FAI forms
 - Supplier forms are acceptable provided they contain all “Required” and “Conditionally Required” information and have the same field reference numbers as AS9102 Forms 1, 2, & 3.

A “Ballooned” or “Bubble” drawing is the preferred method to show that every design characteristic is accounted for, uniquely identified, and that the inspection results are traceable to each unique identifier.

Note: For assemblies, the FAI must be performed on those design characteristics specified on the assembly drawing.

When design requirements are in a DPD format and traditional 2D drawing information is not available for all applicable design requirements, DPD design characteristics required for product realization shall be extracted, verified, and included in the First Article Inspection Report.


A representative of the Supplier’s Quality Assurance Department must sign and date the FAIR report.

Prior to the first shipment of articles related to the FAIR(s), the Supplier must forward electronic versions of the FAIR(s) to Quality@intelsat.com for review (submittal to an agreed upon, alternate electronic location is acceptable).

Additional information for completing FAIRs (links are reference only):

Forms: <https://iaqg.org/standards/forms>

FAQ: <https://iaqg.org/standard/9102-first-article-inspection-requirement/>

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B004 – Certificate of Conformity (C of C)

The Supplier must provide a Certificate of Conformity (C of C) for material delivered against an Intelsat PO that states that the supplies or services are of the quality specified and are in conformance in all respects with the Intelsat Purchase Order (contract) requirements, including specifications, engineering drawings, preservation, packaging, packing, marking requirements, and physical item identification.

The C of C must include, at a minimum, the name of the supplier, the address of the supplier, the part number, the part revision, part serial number (if applicable), lot/batch number (if applicable), the Intelsat PO number, shipment quantity, all applicable specifications, the signature and printed name and title of the supplier's authorized quality representative, and the date of execution.

Note: A traceable quality stamp may be used in lieu of a printed name and title; however, a signature is still required.

A manufacturer's C of C or their authorized distributor's C of C must be provided for orders of standard parts and COTS parts in which the standard part or COTS part is an individual line item on a PO. The manufacturer's C of C is *preferred*, however, if it cannot be provided, then the authorized distributor's C of C must identify the manufacturer's name, address, and Distributor Cage Code (if distributor has a Cage Code).

C of C's with any disclaimer statements such as "disclaims any responsibility for manufacturing or functional defects" or "to the best of my knowledge" will not be accepted.


If a Deviation/Waiver or a Ship Short is granted for articles being provided with the order, the Deviation or Ship Short Number must be noted on the C of C.

If the deliverable item contains any Customer Furnished Equipment (CFE), then the C of C must provide the traceability requirements defined in Clause B035.

A physical copy of the C of C must be sent with the shipment. A copy of the C of C must be affixed to the outside of the outermost container and an additional copy placed inside.

B005 – TSO/PMA Certificate and Airworthiness Approval Tag

If the Supplier holds National or Civil Aviation Authority (CAA) certification/approval/authorization (e.g., Federal Aviation Administration (FAA) Technical Standard Order Authorization/Parts Manufacturer Approval (PMA)/Type Certification), and if required by the Purchase Order, the Supplier must provide the original Authorized Release Certificate, FAA Form 8130-3 (Airworthiness Approval Tag) or other CAA equivalent Airworthiness Approval Tag with delivery of each product.

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B006 – Foreign Object Debris/Damage (FOD) Prevention Program

The Supplier must establish and maintain a FOD prevention program. NAS-412 (National Aerospace Standard, Foreign Object Damage/Foreign Object Debris (FOD) Prevention) or AS9146 (Foreign Object Damage (FOD) Prevention Program – Requirements for Aviation, Space, and Defense Organizations) may be used as a guide to develop the program. The program must focus on FOD awareness, prevention, detection, housekeeping, and material handling.

Whenever and/or wherever FOD entrapment or foreign objects can migrate, the Supplier must ensure applicable FOD requirements are flowed down to sub-tier suppliers. Prior to closing inaccessible or obscured areas and compartments during assembly, the Supplier must inspect for foreign objects/materials and ensure no FOD barriers remain embedded or attached (e.g. protective plugs). The Supplier must ensure tooling, jigs, fixtures, and test or handling equipment are maintained in a state of cleanliness and repair sufficient to prevent FOD.


By delivering items to Intelsat, the Supplier must be deemed to have certified to Intelsat that such items are free from any foreign materials that could result in FOD.

B007 – Electrostatic Discharge (ESD) and Moisture Sensitive Device (MSD) Protection Program

If the Supplier provides electric/electronic parts or assemblies, they must document and implement an ESD and Moisture Sensitive Device (MSD) Control Program using ANSI/ESD S20.20, “ESD Association Standard for the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)” and IPC/JEDEC J-STD-033, “Standard for Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices” as a guide.

B008 – Environmental Stress Screening (ESS)

Environmental Stress Screening must be applied to all LRUs IAW Intelsat document D26952 “Environmental Stress Screening Plan”.

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B009 – Failure Modes & Effects Analysis (FMEA)

Note: Articles in production before 8/31/16 (the release date of Rev J of this document) are excluded from this requirement, unless otherwise agreed to in writing with Intelsat.

When supplying items classified as Production Article (Active), or as directed by Intelsat, the Supplier must perform Design Failure Modes & Effects Analysis (DFMEA) on the top level LRU and subsequently on the subsystem level if high risk areas are identified. The DFMEA report must be submitted to Intelsat with identified Risk Priority Number (RPN) values and action plans to address risk items. This must be completed prior to Critical Design Review (CDR). All submissions must be sent to Reliability@intelsat.com for acceptance.

Refer to MIL-STD-1629 and/or SAE J1739 for additional DFMEA guidance.

When supplying items classified as Production Article (Active) or Production Article (Passive), the Supplier must perform Process Failure Modes & Effects Analysis (PFMEA) on the assembly processes. The PFMEA report must be submitted to Intelsat with identified RPN values and action plans to address risk items. This must be completed prior to delivery of the first production article/First Article Inspection (FAI). All submissions must be sent to Reliability@intelsat.com for acceptance.

Refer to SAE J1739 for additional PFMEA guidance.

B010 – Key Characteristics and Process Capability

In addition to any Key Characteristics (KC) flown down by Intelsat, the Supplier must identify product and/or process KCs; attributes or features whose variation have significant influence on product fit, performance, service life, or producibility that require specific actions to control the variation.

KCs for a part, subassembly, or system are those selected geometrical, material properties, functional, and/or cosmetic features, which are measurable, whose variation control is necessary in meeting customer requirements and enhancing customer satisfaction.


Process KCs are those selected measurable characteristics of a process whose control is essential to manage variation of part or system KCs.

A Control Plan must specify the KCs, whether identified by Intelsat or by the Supplier, and how they will be controlled and actioned (if necessary) along with current process capability measurements (Cp, Cpk) for those characteristics. The Control Plan must be completed and submitted to Intelsat prior to production with process capability measurements analyzed during product ramp and thereafter.

Process Capability (Cp/Cpk) reports must be provided quarterly to Intelsat, delivered to Quality@intelsat.com or as otherwise directed by Intelsat.

Process Capability (Cp/Cpk) raw data must be made available upon request.

Refer to AS9103 (Variation Management of KCs) and D22998 (KC Process) for additional guidance.

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B011 – Measurement System Analysis (MSA)

The Supplier must perform Measurement System Analysis (MSA) on all measurement systems used for Key Characteristics. Measurement systems that are not capable must have action plans to address measurement error or variation prior to delivery of the first production article/First Article Inspection (FAI).

MSA should assess:

- Accuracy/Bias – difference from the true value and the value from the measurement system
- Linearity – performance of the measurement system throughout the range of measurements
- Stability (drift) – measurement system is stable and consistent over time
- Resolution/Discrimination – goal is to have at least 5 distinct values or categories of readings or adhere to the 10 to 1 rule. (e.g. If your measurement system requires measurements to the hundredths (.xx), then divide that by 10 and collect and record the data to the nearest thousandths (.xxx)). The measurement system must be sensitive to change and capable of detecting change.
- Repeatability – operator can repeat similar values (Gage R&R)
- Reproducibility – different operators get similar values (Gage R&R)

B012 – Accelerated Testing

Note: Articles in production before 8/31/16 (the release date of Rev J of this document) are excluded from this requirement, unless otherwise agreed to in writing with Intelsat.

Supplier must perform a Highly Accelerated Life Test (HALT) on their product to determine design margin and potential design weakness(es). The HALT procedure must be submitted to Intelsat prior to Preliminary Design Review (PDR). The HALT report must be submitted to Intelsat prior to the start of Qualification testing. HALT results must be mutually reviewed by Intelsat and the supplier to determine any subsequent need for redesign.


Supplier must perform an Accelerated Life Test (ALT) on their product to determine potential end-use failure modes and predict the useful life of the product. The ALT procedure must be submitted to Intelsat prior to Critical Design Review (CDR). The ALT report must be submitted to Intelsat prior to the Production Readiness Review (PRR).

All document submissions must be sent to Reliability@intelsat.com for acceptance.

For additional guidance, refer to:

Accelerated Reliability Engineering HALT and HASS, Gregg K. Hobbs, Hobbs Engineering Corporation.

HALT, HASS & HASA Explained: Accelerated Reliability Techniques, Harry W. McLean, ASQ Quality Press.

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B013 – Mean Time Between Failure (MTBF)

All Intelsat Suppliers must comply with the MTBF requirements as stated specifically in the contract, exhibits, or statement of work(s). If the requirements are not specified in those parts of the agreement, then Supplier must comply with the following:

MTBF Analysis & Reporting – The Parties agree as follows: (i) Intelsat may, at its discretion, provide periodic reports of Supplier’s MTBF performance with respect to the Products; and (ii) Suppliers must provide Intelsat with access and available data required to analyze MTBF of Products for the returned/repared Products including but not limited to:

Analysis of MTBF; and Analysis reports including but not limited to summary of warranty returns, confirmation of fault or No Fault Found, root cause analysis, and corrective actions.

Supplier must provide quarterly electronic reports to Intelsat detailing the required information as specified above, throughout the applicable warranty period.

NOTE:

Measured MTBF = Total Flight Hours x Component Quantity / Number of Verified Failures.

A “Verified Failure” means a failure corrected by (i) pulling and replacing an LRU which has been verified as a failure or (ii) download of a critical software patch or release to restore functionality.

For avoidance of doubt, No Fault Found Products and Product upgrades are not considered a “Verified Failure”.

B014 – Supplier Request for Deviation/Waiver

Note: In accordance with Clause B024, Intelsat Suppliers are NOT granted Material Review Board (MRB) authority at any level of the BOM.


The Supplier’s adherence to approved design data is essential to continued, repeatable quality & reliability.

A Deviation request is used to obtain temporary authorization, prior to manufacture, to depart from a requirement of an item’s current approved configuration. The use of materials/part numbers not explicitly listed on the Bill of Materials (BOM) are prohibited from being used and delivered without Intelsat Deviation approval. The deviation must be for a specific number of units or time period.

A Waiver request is used to obtain authorization to ship an item which is known to depart from a requirement but is considered suitable after repair by an approved method or after a “Use-As-Is” disposition.

Requests for Deviation/Waiver must be made in Agile (Intelsat’s CMDB), at least 10 business days prior to expected delivery. All deviation requests must have substantiation data (e.g. drawing red lines, material specifications, etc.) attached to the Agile deviation submittal.

The Intelsat Deviation Number must be noted on Supplier’s Certificate of Conformance (reference clause B004) and a copy of the approved Agile Deviation printout must accompany all shipments of affected product.

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B015 – Sampling Plan

In the event a sampling plan is utilized, the sampling process must be based on either:

- American Society for Quality (ASQ) Zero Acceptance Number Sampling Plan (C=0), Table 1a with an AQL=1.0
- ANSI/ASQ Z1.4, Table 1 with General Inspection Level II and AQL=1.0
- Other Intelsat accepted methodology or Intelsat Customer directed method

B016 – Handling of Sensitive Items

Age (Shelf Life): Upon shipment, shelf life remaining must meet the minimum shelf life specified on the Purchase Order. If no shelf life is specified, the product must have a minimum of 6 months or 50% of the shelf life remaining upon shipment, whichever is less.

Note: Expiration dates must be clearly noted on the material.

For orders where the procurable item Part Number listed on the PO is age sensitive then the expiration date must be marked on the item container and packing slip.

When the procurable item contains multiple age sensitive items (i.e. a kit), the outermost container must note the most restrictive shelf-life/date of expiration of all applicable items within the container (reference Clause B020).

Light or temperature sensitive: Items which require special storage, such as light or temperature sensitive materials, must be shipped with consideration of this sensitivity and must be clearly identified on the outside of the packaging material, as well as on the packing slip.

Electro-Static Discharge (ESD): Items that are ESD sensitive must be handled and packaged to prevent ESD damage utilizing MIL-STD-1686, ANSI/ESD S20.20, or EIA/JEDEC JESD625 as a guideline. ESD sensitive items must be shipped in ESD protective packaging and be clearly marked, as well as noted on the packing slip.


Moisture Sensitive Device (MSD): Items that are moisture sensitive must be handled and packaged to prevent damage utilizing IPC/JEDEC J-STD-033 as a guideline. MSD items must be shipped in MSD protective packaging and be clearly marked, as well as noted on the packing slip.

B017 – Hazardous Material

The Supplier must comply with all local, State, and Federal Health, Safety, and Environmental regulations.

Shipping of all hazardous materials must be prepared in accordance with the appropriate Federal Hazardous Materials Regulations. These regulations can be found in Title 49 of the Code of Federal Regulations (49 CFR). 49 CFR changes periodically and it is the Supplier's responsibility to comply with the most current standard.

The supplier must ensure that the proper Dangerous Goods-Hazardous Materials/Safety Data Sheet (SDS) markings are placed on the shipping or storage containers, and proper documentation is supplied. SDS sheets should be included in initial shipments and upon request.

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B018 – Delivery**Delivery Schedules**

It is the supplier's responsibility to ensure goods are received at the required location on or by the date specified on the agreed documents. The acceptable time frame for shipments must be addressed specifically in these documents. Suppliers may be required to provide corrective action plans whenever this requirement is not being met. It is the supplier's responsibility to inform Intelsat Supply Chain personnel immediately of any potential difficulties in meeting shipping requirements. Alternative plans may be available which avoid downtime. Intelsat expectation is that all shipping requirements must be adhered to (including during holiday or other supplier shutdown periods) unless prior written arrangements are made.

Short Shipments

Short shipment requests must be communicated to the appropriate Supply Chain Buyer as soon as the issue is known, but no less than 5 business days prior to expected delivery. These requests must require Intelsat approval of the Ship Short condition. Short shipments may result in a price reduction on the PO, require a supplier corrective action plan, and result in poor delivery performance ratings. Subsequent shipments of the parts needed to make the original "ship short" whole, must be at the Supplier's expense.


Note: The Intelsat Ship Short Number must be noted on Supplier's Certificate of Conformance (reference clause B004).

B019 – Packing Slip

Material shipped must be identified on a Packing Slip or Bill of Lading. A physical copy of the Packing Slip or Bill of Lading must be affixed to the outermost container and an additional copy placed inside the container.

The following information must be noted on these documents:

- Shipment Method, Carrier Name, Tracking Information, and Date
- Ship to Address (PO and Packing Slip Ship to Address must match)
- Single Line Item for Each Part Number Shipped
- Part Number, Revision, and Serial Number (as applicable), traceable to the line item
- Description of the Product
- Identification of any Sensitive Item information (see clause B016)
- Purchase Order Number(s) and Line-Item Number for each item being shipped
- Order Release Number (if applicable)
- Quantity Ordered, Quantity Shipped, and Unit of Measure
- Number of containers of each part number shipped with the extended quantity noted. (ex. 10 containers @ 100 pieces, total 1000)
- Total number of cartons/skids and weight

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B020 – Packaging, Labeling, and Shipping

Articles supplied to Intelsat must be packaged to prevent loss and to provide physical, chemical, and cleanliness protection to prevent damage to or deterioration of the parts.

Packaging must meet or exceed the guidelines established per Air Transport Association of America (ATA) Specification 300 Specification for Packaging of Airline Supplies (also known as Airlines for America (A4A)).

Wiring Harness Kits must be packaged in separate unit containers. Multiple wire harnesses may be placed in the same intermediate container; however, they must be packaged in such a way to preclude latent damage such as crushed or pinched wiring. Wire harness connectors must be protected from damage by use of plastic caps (ESD caps required for ESD sensitive harnesses) or other protective means.

Structural kit items must be packaged in separate unit containers. Multiple structural items may be placed in the same intermediate container; however, they must be packaged in such a way to preclude damage during shipping such as scratches, dings, gouges, chipped paint, or damage to corrosion preventative finishes.

Intelsat may require certain items to have special packaging requirements, i.e. specialized crates or boxes. These items include, but are not limited to, Composite Radomes, Composite Skirt Seals, Fuselage Adapter Plates, other large irregular shaped parts, or any other item identified by Intelsat. Intelsat will identify the required packaging for these items in a SOW, Purchase Order, or other contractual means.


Sensitive items (age, light, temperature, ESD, and MSD) must be packaged in accordance with the Sensitive Items clause B016 of this document.

Intermediate Containers contain at least 2-unit containers. Intermediate Containers must be of cardboard construction at a minimum. If designed to provide shipping protection, Intermediate Containers must be double walled and palletized for shipping, otherwise Intermediate Containers must be over packed for shipment in an appropriate double walled shipping container (e.g. Gaylord Box).

Any Less Than Truckload (LTL) shipments and container(s) weighing more than 50 pounds must be palletized.

Suppliers are responsible to ensure shipping containers or pallet loads meet the following criteria:

- Shipping Containers must meet or exceed ATA Specification 300, Category II (testing of Category II Shipping Containers is not required)
- Even, level pallet loads (not pyramided)
- Proper securing must be used to ensure the pallet is stable (e.g. straps, stretch wrapped, corners, boxed, etc.)
- “Do Not Stack” or “No Stack” cones must be used on top of palletized loads and Gaylord Boxes.
- Containers must not exceed pallet dimensions (i.e., containers must not overhang the pallet)
- Wood pallets and crates must be ‘heat-treated’ to protect against wood infesting insects. International pallets require a conformance ID stamp to pass Customs.

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Labeling/Marking of sub-kits, kits, and containers must be IAW marking requirements listed in the ATA Specification 300 chapter for "Packaging of Kits". The marking must also include Part Number, Part Revision, Serial or Lot number as well the marking required by ATA Specification 300.

- Label exterior containers with the following:
 - Part Number, Revision, & Description
 - Supplier Name
 - Intelsat Purchase Order Number
 - Container X of Y (i.e., Container 1 of 4, Container 2 of 4, etc.)
 - Most restrictive shelf-life/date of expiration of all applicable items within the container
 - If shipping to a third-party logistics provider, identify "Intelsat" on the label (i.e. Intelsat c/o EA Logistics)
- Label each intermediate container (i.e., sub-kit, container, bag) with the following:
 - Supplier name
 - Intelsat Purchase Order Number
 - List all Part Numbers (including sub-kit Part Number, if applicable), Revisions, Description, and Quantities in the intermediate container
 - Lot Number or Serial Number
 - Most restrictive shelf-life/date of expiration of all applicable items within the container
- Label each unit container (i.e., container, bag) with the following:
 - Part Number
 - Revision
 - Description
 - Quantity
 - Lot Number or Serial Number (as applicable)
- If Direct Shipping product (reference clause B022), add a label to each crate/skid that includes the following information:
 - Top Level Kit Part Number (provided via Intelsat PO update) or LRU Part Number
 - Top Level Kit Serial Number (if provided via Intelsat PO update) or LRU Serial Number
 - Intelsat Customer (Airline) Purchase Order Number (provided via Intelsat PO update)
 - Intelsat Customer Transfer Order Number (provided via Intelsat PO update)
 - Intelsat Purchase Order Number

For questions, please contact your Intelsat Supply Chain representative for clarification.

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B021 – Configuration Change Management

Note: Due to contractual, regulatory, and OEM requirements, Intelsat is required to review and approve all changes at any level of the BOM for all components that are used in Intelsat systems which are approved for use by Type Certificates (TC) or Supplemental Type Certificates (STC). Additional change guidance is available in Intelsat document D35009

Intelsat requires that all parts supplied meet drawings and specifications and that NO alternate parts be utilized unless specifically allowed for on the Intelsat approved drawing.

The Supplier must notify Intelsat of any proposed design data and/or test procedure/report change (major or minor) to any LRU, production article, or installation design and receive approval from Intelsat prior to delivering any product incorporating the change.

These design data and test procedures/reports include but are not limited to the following:


- LRU Outline Drawing and associated 3D model
- Top Level Assembly Drawing(s) / BOM
- Software Configuration Index (SCI) (Firmware and Part25 SW changes only)
 - Note: For loadable software, coordinate with Intelsat Program Management
- LRU Acceptance Test Procedure (ATP)
- LRU Environmental Stress Screening Procedure (ESS)
- Component Technical Specification (CTS)
- Certification Test Report Analyses
- Qualification Test Reports and Analyses (e.g. Environmental, EMI, Structural, Flammability, Fungus, Similarity Assessments, Safety Assessments)

When a design data change is proposed, the Supplier must submit an ECR in Intelsat's Agile Configuration Management system to update design data and test procedures/reports in accordance with D14549 (Procedure, Engineering Change Request) and attach any substantiating evidence (e.g., drawing redlines, BOMs, test reports, similarity assessments, etc.). Part design change must have ECRs submitted against the affected, procurable part number. It is expected that part design changes will drive part revision changes.

If the submitted Change Request is deemed acceptable, an Intelsat Engineering Change Order must be issued by Intelsat and "Released" in Agile prior to the Supplier delivering any product incorporating the change.

Note: Intelsat acceptance of the Change Request is not authorization to deliver the proposed change in any product provided to Intelsat.

Regardless of ECO status, suppliers are expected to build and deliver **only** item configurations listed on the approved and accepted Purchase Order. Suppliers may utilize a "Use-As-Is" disposition to allow shipment of earlier item revisions only if allowed by the "On Order" disposition in the applicable Agile ECO. In the event suppliers would like to supply later item revisions, a deviation would be required (reference clause B014).

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B022 – Direct Ship Authorization (DSA)

The Supplier must receive formal approval from Intelsat Quality, in accordance with D20035, Procedure, Direct Ship Authorization, prior to shipment of any production article(s) shipping to locations other than Intelsat's Itasca, IL facility or any Intelsat third party logistics provider. The Intelsat PO must identify the required *Ship To* address.

A DSA letter (D19399) from Intelsat Quality must be granted for every approved DSA shipment.

The Supplier must notify Quality@intelsat.com at least 5 business days in advance of any expected direct shipment.


Standard Hardware as defined in this document is excluded from this clause, however, any standard hardware ordered as a standalone line item on an Intelsat PO must ship with a C of C compliant with clause B004.

All DSA shipments must be labeled in accordance with clause B020.

All DSA shipments must have the entire paperwork package provided with the shipment and scanned and emailed to CA_Purchasing@Intelsat.com and Quality@intelsat.com. This package must consist of:

- 8130-3 (as applicable)
- Form 1 (as applicable)
- Supplier issued C of C
- Intelsat issued C of C
- Intelsat issued DSA Letter (D19399)
- Source Inspection Report (D20035)
- Packing List (Intelsat Part Numbers and Serial Numbers must be listed)
- Intelsat Kit Document (i.e. K13114-xxxxx) (as applicable)
- Weights and Dimensions
- Bill of Lading (signed by the carrier and shipper) showing Intelsat PO# and Intelsat's Customer (Airline) PO#

Note: An Intelsat provided C of C for a DSA shipment does not relieve the supplier of their responsibilities to ensure all product conforms to approved documentation and requirements.

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B023 – Source Inspection

Intelsat reserves the right to conduct Source Inspection at any time as stated on a PO and the supplier is expected to support these inspections. Additionally, Source Inspection is required on Direct Shipments where delegated inspection has not been authorized by Intelsat Quality. For Direct Shipments, Delegated or Source Inspection will be identified on the DSA letter (D19399) issued by Intelsat Quality.

The Supplier must notify Quality@intelsat.com at least 5 business days in advance of any inspection readiness.

B024 – Control of Nonconforming Material

Intelsat Suppliers **ARE NOT** granted Material Review Board (MRB) authority to issue “Repair” or “Use-As-Is” dispositions **at any level of the BOM** for products sold to Intelsat unless authorized in writing by Intelsat.

The Supplier must have a Control of Nonconforming Material process in place which identifies, controls, and prevents the unintended use or delivery of nonconforming material.

All materials furnished to Intelsat must conform to contractual requirements, approved type design, and specifications. All materials are subject to inspection and acceptance upon receipt.


To obtain Intelsat approval to ship unit(s) with known nonconformance(s), utilize the Supplier Request for Deviation Process (refer to clause B014 of this document).

If a nonconformance has been identified on parts already shipped to Intelsat, Supplier is required to notify Intelsat Quality (Quality@intelsat.com) immediately via the Supplier Disclosure Letter (SDL) form D20158. Please utilize these forms and follow the instructions found therein for further details and requirements.

A disclosure letter in supplier format may be used as long as the information required on Intelsat Form D20158 is captured.

B025 – Failure Reporting Analysis & Corrective Action System (FRACAS)

The Supplier must provide inputs to the Intelsat FRACAS system upon request. This includes but is not limited to responding to failures and/or non-compliances for which the supplier is responsible, identifying the failure mode, containment action(s), RCA, corrective action(s), and preventive action(s). The Supplier must provide all required objective evidence needed to validate the effectiveness of the corrective action(s) taken.

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B026 – Intelsat Owned Tooling & Gauges


Unless otherwise agreed upon in writing, all supplies, materials, facilities, tools, jigs, dies, fixtures, patterns, and equipment furnished to the supplier by Intelsat for the performance to a Purchase Order, or for which the supplier has been reimbursed by Intelsat, must remain the property of Intelsat. The supplier must bear the risk of loss and damage to such property, normal wear excepted. Such property must always be properly stored and maintained by the supplier, must be identified as Intelsat property, must not be commingled with the property of the supplier or with that of a third party, must not be moved from supplier's premises without Intelsat prior written approval, and must, upon request of Intelsat to Supplier, be properly packed and marked in accordance with the requirements of the carrier selected by Intelsat to transport such property. In general, the requirements for supplier's use of Intelsat property include:

- Inspection & measuring equipment must be specified in the control plan and be traceable to the inspections performed.
- All inspection & test equipment must be included in a comprehensive calibration program, conducted prior to initial use and at prescribed intervals. Reaction plans must be in place and followed when a piece of inspection/test equipment is deemed out of calibration.
- Supplier is responsible for the proper use, maintenance, and calibration of all tooling, testing, and inspection equipment.
- All equipment must be clearly identified, including part number, revision level, calibration date, and have an Intelsat identification number.
- Records of maintenance must be kept by the supplier until such time that the part is no longer considered "active" (part remains "active" until tooling scrap authorization is given by Intelsat).

Intelsat reserves the right to inspect any tooling, testing, and/or inspection measuring equipment at the supplier's location.

B027 – Contract Maintenance Providers

Suppliers (certificated and noncertificated) based in the U.S. performing repair and/or contract maintenance on aircraft or aircraft components (i.e. LRUs) for Intelsat and our airline customers are required to participate in a U.S. Department of Transportation anti-drug and alcohol misuse prevention program compliant with CFR Title 14 Part 120, Subparts D, E, and F.

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B028 – Calibration Service

Calibration service suppliers must:

- Have a quality management system accredited to ISO/IEC 17025, General Requirements for the Competence of Testing and Calibration Laboratories and/or ANSI/NCCL Z540, General Requirements for Calibration Laboratories and Measuring and Test Equipment.
- Perform calibration against measurement standards traceable to internationally recognized standards; where no such standards exist, the basis used for calibration or verification must be recorded.
- Achieve traceability through calibrations by the National Institute of Standards and Technology or other National Measurement Institutes.
- Calibrations must be per the OEM's specification or of greater accuracy.
- Identify measuring equipment to determine its calibration status.
- Protect equipment from damage and deterioration during handling, maintenance, and storage.
- Safeguard equipment from adjustments that would invalidate the measurements result.
- Provide to Intelsat a Certificate of Calibration for each piece of measurement equipment, which includes details of equipment type, unique identification, frequency of checks, check method/acceptance criteria, environmental conditions under which the calibration was performed, specifications to which the item was calibrated, the calibration standards used (which are traceable to NIST), date calibrated, due date, and any out-of-tolerance (OOT) conditions, including "before" and "after" calibration data for those devices found OOT.

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B029 – Solder/Solderability of Parts


As applicable, drawing and specification requirements supersede these requirements:

- **Electronic and Circuit Card Assemblies** - Electronic and electronic Circuit Card Assemblies (CCA) must be soldered to the requirements of IPC J-STD-001, Class 3. The Supplier must implement and maintain a system that includes adequate process controls to assure conformance to the soldering, cleanliness, acceptance, material handling, storage, and shipping requirements. The item must meet the cleanliness requirements of IPC J-STD-001, cleanliness designator C-22. Rework, if required, must be in accordance with IPC 7711/7721.
- **Component & PCB Solderability** - The Supplier (manufacturer or distributor) must ensure that all parts: leads, lugs, terminal, wires, and terminations cited on this PO must meet the component solder requirements of IPC J-STD-001 and the solderability requirements of IPC J-STD-002, and Printed Circuit Boards must meet the solderability requirements of IPC J-STD-003.
- **Pre-Tinning** - Component leads or the like must be tinned per IPC J-STD-006 and properly cleaned to remove flux residue. Leads must meet the solderability requirements of IPC J-STD-002, Category 3.
- **Fluxes, Solder, and Solder Paste** - Fluxes, solder alloys, and solder pastes must meet the IPC J-STD requirements: J-STD-004 for Fluxes, J-STD-005 for Solder Pastes, and J-STD-006 for Solder Alloys.
- **Conformal Coating** - To mitigate the risk of tin whisker growth, conformal coating should be applied to CCAs to the requirements of IPC J-STD-001, Class 3.

B030 – Special Processes

A special process is an operation performed on an item where the resulting output cannot be verified by subsequent monitoring or measurement. Special processes have verifiable controls inherent to the process (i.e., plating, composites, nondestructive testing, etc.). Special processes must be performed in accordance with specification(s) stated on the drawing and procurement documents.

Special processes should be performed by a Nadcap approved contractor (formerly NADCAP, National Aerospace and Defense Contractors Accreditation Program). The special processor should be approved by Nadcap for the special process on the date which the special process is performed. If a Supplier's sub-tier supplier performs the special process, the Supplier is responsible to flow down the requirements on sub-tier POs. Supplier's utilization of Nadcap approved sources does not relieve the Supplier from the obligations to ensure subcontracted sources are in full compliance with applicable specifications. Certificates of Compliance for special processes which state the Purchase Order number, part number, specification number, specification revision, and the date the special process was performed must be maintained on file and made available upon Intelsat's request.

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B031 – Prohibited Materials/Substances

Note: Articles in production before 3/24/17 (the release date of Rev K of this document) are excluded from this requirement, unless otherwise agreed to in writing with Intelsat.


Unless otherwise authorized in writing, Intelsat prohibits certain materials/substances being contained in or on the product being supplied by the Supplier. Intelsat further prohibits these materials/substances from being used during the following type of activities/processes, including, but not limited to: manufacture, processing (inclusive of Special Processing), assembly, integration, test, inspection, rework/repair, servicing, maintenance, handling, and packaging. This requirement extends throughout Supplier's entire sub-tier supply chain for all items and processes comprising the product being supplied by the Supplier to Intelsat and must be flowed down by Supplier and Supplier's sub-tiers as necessary. In the event of conflict between Intelsat's engineering drawing, specification, or this clause, the engineering drawing must take precedence.

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

Supplier must comply with the latest European Community (EC) Regulation No. 1907 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) for the product being provided by the Supplier to Intelsat. Upon Intelsat's request, the Supplier must provide to Intelsat satisfactory supporting evidence demonstrating Supplier's compliance with their obligations with regards to REACH.

Restriction of Hazardous Substances Directive (RoHS)

Supplier must comply with the latest European Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (commonly referred to as the Restriction of Hazardous Substances Directive or RoHS) for the product/service being provided by the Supplier to Intelsat. Upon Intelsat's request, the Supplier must provide to Intelsat satisfactory supporting evidence demonstrating Supplier's compliance with their obligations with regards to RoHS.

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B032 – Notification of Change

The Supplier must make Commercially Reasonable Efforts to notify Intelsat in writing when any of the following occur (including sub-tier changes that could impact the Supplier's commitments):


- Merger/acquisition, relocation, or closure of the Supplier's facility, including manufacturing facilities
- Major changes in Enterprise Resource Planning (ERP) system

Upon receipt of written notification from Supplier, Intelsat expects, and Supplier must provide, adequate assurances, including a comprehensive plan, detailing how Supplier intends to meet its performance obligations and delivery of conforming product based upon Intelsat's expected demand, and at a minimum, must include the following.

- Purpose of relocation, work transfer, or other change
- Address of new location (as applicable)
- Risk identification and mitigation plan specific to Intelsat's contracted products
- Schedule of move, minimizing impact to Intelsat
- Coordinator / Point of Contact for the relocation or work transfer

All notifications must be provided to: Quality@intelsat.com

Note: Technical Data changes and revisions to be IAW clause B021.

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B033 – Structural Components (SC)

Beginning 01 July 2019 all identified product shipped to Intelsat must be subject to this clause. This clause applies to all product manufactured by the Supplier or their sub-tier. No Exceptions.

A structural component is a component of structure that attaches the Intelsat Inflight Connectivity System components to an aircraft's primary structure.


Component parts identified on Intelsat's Drawings as the following, are considered Structural Components:

- Doublers
- Triplers
- Lugs
- Intercostals
- Brackets or Fittings
- Gussets
- Adapter Plate
 - For adapter plate dimensional inspection, primary attention must be given to any Adapter Plate splice area, the center area of the Adapter Plate (area between the antenna mounts) and any component of the Adapter Plate identified as a bracket, splice, or crossbar.

For the purposes of this clause, identified Structural Components must be inspected to confirm that the parts meet the characteristics of length, width, depth, and thickness dimensions listed on Intelsat drawings. Inspections may be conducted on 100% of product or using a sampling plan IAW clause B015.

Supplier must provide current process capability measurements (Cp, Cpk) for those characteristics on a quarterly basis via email to Quality@intelsat.com (submittal to an agreed upon, alternate electronic location is acceptable). Raw data must be supplied, upon request. Supplier format for results is acceptable but must contain data requested above.

Supplier is expected to utilize the aforementioned data to maintain and adjust, as required, the manufacturing processes utilized in the production of the above listed components in order to maintain a stable process under statistical control.

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B034 – LRU Data Delivery Requirements

All new LRUs shipped to Intelsat must have a corresponding ATP test data sheet shipped with the unit.

All returned and/or repaired LRUs must have a corresponding ATP test data sheet shipped with the unit as well as a corresponding Failure Analysis Report (i.e. teardown report, strip report, etc.).

All Failure Analysis Reports (i.e. teardown report, strip report, etc.) for returned and/or repaired LRUs must reference the applicable technical data used for the documented repair.

All returned and/or repaired LRU paperwork (i.e. Failure Analysis Report, C of C, 8130-3 (if required)) must reflect the P/N and S/N stated on the repair Purchase Order (PO) or Transfer Order (TO).

B035 – Traceability Requirements for Customer Furnished Equipment (CFE)

Supplier must provide traceability on the C of C (reference Clause B004) for any deliverable item containing CFE to the Intelsat Lot Number and/or S/N of any CFE being provided back to Intelsat in that shipment.

For example, modems provided as CFE must have the modem S/N and Intelsat Lot Number listed on the C of C for the deliverable LRU which it is installed in.

For example, kits sent back for rework as CFE on a Transfer Order (TO) must list the Intelsat Lot Number on the C of C when the kit is shipped back to Intelsat.


B036 – First Pass Yield Data

Supplier must monitor First Pass Yield (FPY) data for all product provided to Intelsat and take appropriate corrective action to address performance issues.

- Production Article (Active) (i.e. LRU) suppliers must monitor FPY by deliverable part number.
- Production Article (Passive) (i.e. kit) suppliers must monitor FPY by deliverable part number or aggregated by all product provided to Intelsat. Supplier must have the ability to further refine the yield data by product type in order to determine where appropriate corrective actions are needed.

FPY data must be provided monthly to Intelsat, delivered to Quality@intelsat.com or as otherwise directed by Intelsat.

FPY raw data must be made available upon request.

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B037 – Software Configuration Audit

Supplier must support Intelsat Configuration Audits upon request. Intelsat will utilize AS9115 as guidance to develop an audit plan. Audit parameters to be agreed to prior to audit start.

B038 – Software Requirements and Testing

Note: SW Articles in production before 10/31/22 (the release date of Rev V of this document) are excluded from this requirement, unless otherwise agreed to in writing with Intelsat.

For each SW Production Article, supplier must have a requirements document, a test plan, and a test report document. Test cases must be linked to contract requirements.


Suppliers can utilize RTCA/DO-178C as guidance which also meets AS9100. RTCA/DO-178C identifies Software Requirements Data (SRD), Software Verification Plan (SVP), Software Verification Cases and Procedures (SVCP), and Software Verification Results (SVR). It is acceptable to combine the SVCP and SVR into a single Software Verification Cases and Results (SVCR) document.

6 Related Documents

Document Title	Number
Procedure, Engineering Change Request	D14549
Procedure, Direct Ship Authorization	D20035
Process, Key Characteristics	D22998
Environmental Stress Screening Plan	D26952
LRU Change Guidance	D35009

7 Forms and Records

Form/Record Title	Number
Form, Supplier Quality System Survey	D14560
Form, Direct Ship Authorization Letter	D19399
Form, Supplier Disclosure Letter (SDL)	D20158
Form, Supplier Evaluation	D20569
Form, First Article Inspection	D13283

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