Verification of Authenticity -Testing Requirements 830585

REVISION RECORD

REV	BY	CHANGES	DATE
1	DB	Initial	Dec 2012
2	DB	All Sections were updated with minor changes	Jan 2013
3	DB	Company Logo and name changed. Section 1.6, 3.2.2, 3.2.9 and 3.2.10.	July 2014
4	SD	Updating requirements for SEM (3.2.6), Solderability (3.2.8) and clarifying other requirements throughout. Added Appendix for sample report format.	Aug 2017
5	SD	Added AS6081 test references. Updated 2.6 for lab accreditation requirement, Added 3.2.11 for customer specific testing	Mar 2020

The processes in this procedure apply to the CW Defense Solutions sites that indicate X in the table below.

Ottawa, Canada	Ashburn, USA	Letchworth, UK	Laindon, UK	High Wycombe, UK	Littleton, USA
X	X	X			
Santa Clarita, USA	Dayton, USA	Cardiff, UK	Neuhasen, Switzerland	Trondheim, Norway	

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1. INTRODUCTION

1.1 Purpose

This specification outlines the CWDS's Procurement process (test requirements and sample size) to be used for the verification of authenticity of components purchased from Independent distributor. All devices must be carefully evaluated to maintain product integrity.

1.2 Scope

This procedure is applicable to CWDS's Independent Distributors, Contract manufacturers, purchasing group, Quality Engineering, Component Engineering and Quality control inspectors.

1.3 Related Documents

Military	
MIL-PRF-19500	Semiconductor Devices, General Specification For
MIL-PRF-38535	Integrated Circuits (Microcircuits) Manufacturing General Specification for
MIL-STD-202	Electronic and Electrical Component Parts
MIL-STD-750	Test Methods for Semiconductors Devices
MIL-STD-883	Test Methods Standards – Microcircuits
Other Publications	
ANSI/ESD S20.20	Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Device)
ARP6328	Guideline for Development of Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition Systems
AS5553B	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
AS6081	Fraudulent/Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition - Distributors
AS9100	Quality Management Systems – Requirements for Aviation, Space and Defense Organization.
IDEA-STD-1010-B	Acceptability of Electronic Components Distributed in the open Market
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
J-STD-002D	Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires

Internal

800046	Component Management
800210	QAP Control of Purchased Material/Services
800215	QAP, Control of Non-Conforming Material
800221	QAI, Receiving Inspection
800224	Failure Reporting and Corrective Action System
800269	QAI, Purchase Order Quality Clauses
809180	QAP Subcontracting
820092	Independent Distributor Procurement Authorization Form

1.4 Order of Precedence

In the event of conflicts, the following order of precedence shall apply:

A) This Specification
B) Other document referenced

(COPIES OF SPECIFICATIONS, STANDARDS, DRAWINGS, AND PUBLICATIONS REQUIRED BY SUPPLIERS IN CONNECTION WITH SPECIFIC PROCUREMENT FUNCTIONS SHOULD BE OBTAINED FROM THE PROCURING ACTIVITY OR AS DIRECTED BY THE CONTRACTING OFFICER.)

1.5 Definitions

1.5.1 Verification of Authenticity

A Process used to evaluate purchased devices to provide confidence that they are from the correct manufacturer and meet the required quality and reliability standards IAW their marking.

1.5.2 Counterfeit Part

The Department of Energy has developed the following definition of a counterfeit electronic part: “A counterfeit electronic component is one whose material, performance, or characteristics are knowingly misrepresented by the vendor, supplier, distributor, or manufacturer.” Examples include:

a. Parts remarked to disguise parts differing from those offered by the original part manufacturer (i.e. original manufacturer, country of origin, specified performance).

b. Defective parts scrapped by the original part manufacturer

c. Previously used parts salvaged from scrapped assemblies

1.5.3 Suspect Counterfeit Part

The term “counterfeit “is not typically used unless the manufacturer of the product states in writing that they have determined the product is counterfeit. Instead of the term “Counterfeit “ the word “suspect” is used, meaning that based on expertise and analysis, one suspects that the part may be counterfeit.

1.5.4 Authorized Supplier

An entity, distributor, reseller or aftermarket supplier that has a formal agreement with the device manufacturer to re-sell their product. This agreement may be a franchise agreement or an authorization to re-sell product. These authorized suppliers procure the material only through the authorized supplier chain and can provide a complete documentation trail back to the manufacturer.

1.5.5 Independent Distributor

An entity that does not have formal agreement with the original component manufacturer to re-sell their products. These entities buy and sell any product from any source, including franchised and non-

franchised distributors and purchase over stock from equipment manufacturers or contract manufacturers. These entities may also be referred to as “brokers” or “non-franchised/non-authorized distributors”. The buying and selling of items through this supply chain is often referred to as using the “grey market”. A certification trail back to the Original Component Manufacturer (OCM) is often not available.

1.6 Procedure Owner

Joint Ownership

Manager of Quality
Director of Performance Excellence
Director of Supply Management
Manager of Component Engineering

All suggestions for change to this procedure are to be submitted to the above.

2. RESPONSIBILITIES

2.1 Management Representative

The Management Representative is responsible for ensuring the implementation of Verification of Authenticity, and that the process is continually reviewed for effectiveness.

2.2 Quality Engineers

- Approval of form #820092 - Independent Distributor Procurement Authorization form.
- Continuously assessing the ability of suppliers to meet the required quality standards.
- Monitoring the quality of products and services purchased from the supplier
- Reviewing and approving Quality Clause Sheets applied by Purchasing in accordance with QAI 800269 - Purchase Order Quality Clauses.
- Participating in the Supplier audit and approval process.
- Assisting with the maintenance of the Approved Vendor List (AVL). This includes QE approval, disapproval and any other changes in approval status as necessitated by the quality review and supplier management process.
- Provide assistance to Quality Control Inspector as required

2.3 Component Engineers

- Approval of form #820092 - Independent Distributor Procurement Authorization form.
- Provide any possible suggestions to use instead of broker supplied materials where feasible.
- Review and approve the verification authenticity- Testing requirement report

2.4 Purchasing Group

- Assess potential sources of supply to determine the risk of receiving non-authentic parts.
- Mitigate risks of procuring counterfeit parts from sources other than OCMs or authorized suppliers
- Include applicable contract/purchase order quality requirements related to counterfeit parts prevention
- Specify contractor flow down of applicable counterfeit parts prevention requirements to their subcontractors.
- Ensuring the POs and their amendments contain a complete and clear description of the material and services ordered, including reference to the applicable quality clauses, specifications, and drawings.
- Procuring material and, or services from approved sources.
- Ensuring that purchases from Independent Distributors are approved via form #820092 - Independent Distributor Procurement Authorization form.

2.5 Quality Inspectors

- Verify receipt of authentic conforming parts
- Verification of purchase order quality clause compliance
- Visual inspection/ and Ensuring that all parts procured from Independent Distributors are routed through X-Ray for verification of die-size if required.
- Identifying and quarantine suspect or confirmed counterfeit parts.
- Initiating Quality Notification (QN) when received material does not conform to the PO-specified requirements

2.6 External - Independent Broker/Testing Facilities

- Responsible for supply of authentic conforming parts
- Acknowledgement of purchase order quality clause compliance
- Verification of authenticity per section 3.2
- Responsible for providing the verification of authenticity report per section 3.2
- Shall be formally accredited to ISO/IEC 17025

3. PROCESS PROVISIONS

3.1 Process Overview

The following mitigation methods shall be applied to reduce the risk of receiving counterfeit electronic components when purchasing from an independent distributor. These methods may not definitively distinguish authentic parts from counterfeit without comparison to known authentic examples or assistance from the original manufacturer. Some original component manufacturers may provide support to users who believe they may have received counterfeit parts. These methods may not reveal potential damage caused by improper handling and storage. Without knowledge and verification of the handling, storage and shipping procedures applied throughout the supply chain, the purchaser takes the risk of acquiring damaged parts. The purchaser shall take care to ensure that components subjected to compliance verification are the same as those to be delivered.

Validated Test Reports are stored on the network at the following location:
\\ottfile01.int.cw.local\world\QE\Broker_test_data_AS5553\Ottawa site\!Validated

3.2 Process Detail

3.2.1 Documentation and Packaging Inspection

INSPECTION REFERENCE: IDEA-STD-1010B (Pages 34 – 46)
TEST REFERENCE: AS6081 (Section 4.2.6.4.1)
Sample Size: See Table 6

The organization shall verify receipt of contractual documentation. C of Cs, Supply Chain Traceability information, manufacturer's datasheet, internal part specification, or other documentation shall be examined for originality and applicability to the delivered material, including but not limited to:

a) Lot and / or date codes on the packaging do not match the lot and /or date codes on the parts or is inconsistent with OCM Product Discontinuation Notices (PDNs).
b) Manufacturer's logo or label is absent, or does not match that shown on their website or on previous shipments.
c) Poor use of English, misspelled words, alterations, or changes to the documentation.
d) Barcode symbols do not match the human-readable printed part data.
e) Package materials are inconsistent with the description on the datasheet or otherwise indicated that the parts may not be new or authentic.

3.2.2 External Visual Inspection

INSPECTION REFERENCE: IDEA-STD-1010B (Pages 47 – 55)
TEST REFERENCE: AS6081 (Section 4.2.6.4.2.1)
Sample Size: See Table 6

External Visual inspection is considered to be non-destructive. External Visual Inspection, if properly performed, can lead to a high capture rate of suspect or fraudulent /counterfeit parts. A good deal of fraudulent /counterfeits are parts that have been recycled; i.e., taken off boards or assemblies and reworked in the form of straightening and retinning the leads, remarking by sanding off the original marking, and /or blacktopping to hide the sanding marks and then remarking.

Refer to IDEA specification IDEA-STD-1010 (or equivalent) to examine parts for counterfeiting. Whenever possible, compare the sample being inspected to a part received from the OCM or OCM –approved Authorized (Franchised) Distributor.

The External Visual Inspection consists of two examinations. The first is to ensure that all parts in the lot meet the General Requirements Criteria (Para 3.2.2.1) and appear in good condition. The second

examination is when the samples are selected from a lot to undergo the Detailed Requirements Criteria (Para 3.2.2.2)

3.2.2.1 General Criteria

Verify the following

a. Parts are received in a single shipment
b. Parts are marked or otherwise identified with the identical lot, batch, run, and identification information (e.g., date codes, lot codes, and serial numbers).
c. All parts are identical in appearance to the unaided eye (parts and packaging).
d. Parts appear to have been subjected to the same handling, packaging , and /or storage conditions
e. Parts have maintained their physical placement relative to each other.

3.2.2.2 Detailed Criteria

The samples must be optically examined using minimum a 20x magnification and suitable lighting. The magnification used will depend on the feature size that is being inspected. If feature is not clear enough at 20x, use a stronger magnification as required to provide sufficient detail of possible anomalies. Anomalies may be an indication of suspect counterfeit parts.

1. Verify the following against the device specification or manufacturer's datasheet:

   a. Number of pins per part
   b. Package type
   c. Part Dimensions – Refer to Mechanical Inspection below
   d. Verify pin 1 placement in tape and reel (if applicable)

2. Lead Condition Irregularities:

   a. Non-uniformed color
   b. No tooling marks
   c. Cross-section of TO style packages for possible lead weld extensions
   d. No exposed copper on the ends of the leads
   e. Bent or non-planar leads
   f. Excessive or uneven plating on leads
   g. Missing pins
   h. Discoloration, dirt, or residues on the leads
   i. Scratches (or insertion marks) on the inside and outside faces of the leads
   j. Gross oxidization
   k. Excessive solder on the leads
   l. Non-uniformed thickness

3. CGA Columns and BGA Ball interconnects irregularities:

   a. Discoloration , dirt, or residues on the solder spheres or columns
   b. Crushed or flattened BGA solder spheres
   c. Misaligned columns
   d. Discolored solder spheres or columns
   e. Non-uniformed size and shape of solder spheres

4. Discrepant Markings can be signs of counterfeiting. Look for:

   a. Different marking styles for parts with the same date/lot code
   b. Different country of origin for parts with same date/lot code
   c. Different body molds for parts with the same date/lot code
   d. Different backside marking for parts with the same date/lot code
   e. Previous marking partially visible on the surface

f. If available, compare part logo to a part received from the OCM or OCM Authorized (Franchised) Distributor.

5. Device Packages Irregularities:

a. Uneven thickness of the package
b. Dimples with uneven depth
c. Visible scratch marks or unidirectional abrasions
d. Significant package variation for parts with the same date/lot code
e. Difference in the corner radius between the top and bottom surfaces
f. Cracks or visible damage such as burn marks
g. Color discrepancy between the top and bottom of the part
h. Glue, adhesives, or other residue s on the surface of the package
i. Evidence of color fade on the body of the part
j. Signs or corrosion on body of part or exposed areas of the lead frame

6. BGA Packages Condition irregularities:

a. Solder mask damage
b. Solder on exposed plating away from the solder spheres
c. Scratches in the mask that run underneath a solder sphere
d. Debris or residue between the solder spheres
e. Solder dross on the solder mask
f. Solder mask touchup or repair.

3.2.3 Mechanical Inspection

INSPECTION REFERENCE: IDEA-STD-1010B (Pages 62 – 63)
TEST REFERENCE: AS6081 (Section 4.2.6.4.2.2)
Sample Size: See Table 6

Mechanical (dimensional) inspection may reveal the structure of a part has been altered (i.e. thinned due to resurfacing) whereas original material will have little to no variation from the mfr's datasheet. It may also more simply reveal that the material has been damaged due to improper handling and should not be used. Material shall be inspected as per the mfr. datasheet and documented as per the requirements in Table 6.

3.2.4 Inspection of Remarking and Resurfacing

INSPECTION REFERENCE: IDEA-STD-1010B (Pages 56 – 61)
TEST REFERENCE: AS6081 (Section 4.2.6.4.3)
Sample Size: See Table 6

External visual inspection may reveal evidence of remarking where the original marking was removed by chemical or mechanical means and the marking area was resurfaced or masked with a material that may or may not match the original surface. Any removal of the original surface finish or ink markings is an indication the part may be fraudulent / counterfeit.

3.2.4.1 Solvent Tests for Remarking

Resistance to Solvents
3:1 Mineral Spirits / Alcohol Solution

Table 1

CW Permitted Exemptions:
a) Laser marked devices – solvents have no effect on laser markings

3.2.4.2 Solvent Tests for Resurfacing

1) Acetone
2) Dynasolve 750 Test
Chemical – Dynasolve 750 or equivalent
Temperature – 105 C
Time exposed in solution 45 minutes

Table 2

CW Permitted Exemptions:
a) Metal lidded packages – solvents remove almost all markings

3.2.4.3 Scrape Test

Resistance to Scrape test
Scrape Test – Xacto Knife, evidence of resurfacing

Table 3

CW Permitted Exemptions:
a) Metal lidded packages – Scrape testing on metal has no affect

3.2.5 X-Ray Inspection (Radiological)

INSPECTION REFERENCE: IDEA-STD-1010B (Pages 68 - 69)
TEST REFERENCE: AS6081 (Section 4.2.6.4.4)
Sample Size: See Table 6

X-Ray inspection is considered to be non-destructive if the radiation exposure to the parts does not exceed the manufacturer's specification. Parts that are exposed to radiation levels that exceed the manufacturer's specifications shall not be returned to the lot after testing and maybe used for subsequent destructive testing. Acceptable radiation levels may be validated prior to performing X-ray inspection.

X-ray inspection shall be performed to verify that the internal package or die construction is consistent within the lot being inspected and versus OCM-supplied data and/or with a known authentic part of the same or proximate date and lot code, as available. Analysis should include comparison of:

X-Ray Inspection
Die Size
General Shape
Lead frame Construction
Wire Bond Gauge
Routing

Table 4

3.2.6 SEM (Scanning Electron Microscopy)

TEST REFERENCE: AS6081 Section 4.2.6.4.3
Sample Size: See Table 6

The SEM Evaluation is considered to be destructive.

SEM can produce very high-resolution images of a surface, revealing extremely fine details. This analysis is a form of visual test that compares the surfaces of a part within the lot being inspected and from the test lot against the virgin surface of a known authentic part of the same or proximate date and lot code, as available. The purpose is to reveal evidence of package resurfacing or marking removal, performed by microblasting or any other advanced techniques for resurfacing or remarking. The inspection shall be conducted at a sufficient high resolution to

a. compare surface characteristics to the virgin surface of a known authentic part of the same or proximate date and lot code, as available
b. to detect the presence of abrasive particle media that randomly and invariably embeds itself into the softer surfaces of plastic encapsulated microcircuits (PEMs).

Please note that the surface of ceramic and metallic packages is always changed with a microblasting process, but the inspection of embedded particles in ceramic or metallic package surfaces may be less definitive for these harder surfaces. Also note that the inspection for the presence of embedded abrasive particle media can be augmented with EDS/EDX element analysis to identify the material(s) if desired.

3.2.7 XRF (X-RAY Fluorescence) - Lead Finish Evaluation

INSPECTION REFERENCE: IDEA-STD-1010B (Page 67)
TEST REFERENCE: AS6081 (Section 4.2.6.4.5)
Sample Size: See Table 6

The Lead Finish Evaluation with XRF is considered to be non-destructive.

Note: The use of portable XRF equipment is not accurate enough and are therefore deemed unsuitable for this testing. Only the use of more accurate fully enclosed desktop SEM equipment (i.e. Fischer XDAL series) shall be used for this testing.

Lead Finish Evaluation shall be performed by XRF to determine lot consistency compared to the manufacturers datasheet and/or a manufacturers material declaration datasheet (MDDS). Individual scan data shall be documented as per Table 6. The initial method of detecting re-plated leads is the External Visual Inspection, not the Lead Finish Evaluation. Lead Finish Evaluation is not considered a stand-alone test. It augments the findings of External Visual Inspection. During the External Visual Inspection, leads shall be inspected for any finish abnormalities in accordance with IDEA-STD-1010B. This could include color variations, exposed copper on the ends of the leads, damaged leads, plating thickness variations, scratches and /or insertion marks, oxidization, corrosion, presence of solder and/or flux. This evaluation shall always be performed prior to XRF Lead Finish Evaluation. The parts selected for the XRF Lead Finish Evaluation shall not be randomly selected, rather, they shall be specifically chosen based on the visual inspection results and the sublots created based on that inspection and shall include a representative sample from each variation observed during detailed External Visual Inspection.
Data will be considered accurate when the average measurement quality (Mq) index is < 3, indicating most of the material has been identified and the scan is sufficiently accurate. The Mq index. shall also be provided with each set of XRF scan data.

TEST REQUIREMENT	TEST PERFOMED	Specification / Acceptance Criteria
XRF Lead Finish Evaluation - Authenticity Inspection	XRF	Manufacturer's Data Sheet compliance and a measurement quality index of 3 of less

Table 5

3.2.8 Solderability

INSPECTION REFERENCE: J-STD-002D (or newer)
Sample Size: See Table 6

It is critical for a device to make good, reliable electrical and mechanical connection to the circuit card whether that be by hot air reflow or wave soldering processes. Contamination from dust, dirt, oils from human contact or residual cleaners on the component solder terminal can result in a poor solder connection and are not easily visible or detected. Oxidation, caused by improper or inadequate storage of aged material, can also be hard to visually detect and can also result in a poor solder connection.
A trusted method to ensure that a reliable solder connection is possible is by performing force wetting balance testing (J-STD-002D Section 4.3) on the solder joints including BGA style packages. Some packages may be too large or too heavy for the force measurement test equipment and in those cases, a more common "dip and look" test (J-STD-002D Section 4.2) shall be employed instead but only if it not physically possible to perform force measurement analysis first.

CW Permitted Exemptions: None

3.2.9 Delid/Decapsulation Physical Analysis

INSPECTION REFERENCE: IDEA-STD-1010B (Pages 75 - 82)
TEST REFERENCE: AS6081 (Section 4.2.6.4.6)
Sample Size: See Table 6

Delid/Decapsulation Physical Analysis is considered to be destructive.

A representative sample size (per Table 6) from each homogeneous lot shall be delidded/decapsulated and examined for those parts for which a delidding/decapsulation is relevant for such a part type to verify that the die markings and internal package or die construction is consistent with a known authentic part, as available. Any discrepancies in the die marking may be indicative of a fraudulent/counterfeit part and should be resolved through communication with the OCM if possible.

Each die shall be optically examined at a suitable magnification depending on die feature size and the process technology used. Die Marking verification – All die markings shall be documented (date, manufacturer. Logos. Mask set ID). When present, the die marking shall be consistent with the manufacturer's data in the form of:

a. Data obtained directly from a known authentic part,
b. Mask ID data found on the inspected chip uniquely matching the intended part (e.g., the examined of Mask ID =the manufacturer's part number)
c. OCM supplied data.

When die markings are not present, die layout and features shall be compared between multiple samples, and in such cases may include comparison to a known authentic part. Presence of contamination, damage, defects, and double (security) wire bonds are possible indicators of a fraudulent /counterfeit device and shall be documented.

3.2.10 Summary of Test Samples Required for Authenticity Testing

Inspection / Test	Requirement	Test Sample Size (≥ 10 pcs) (from each date code)	Test Sample Size (1 -9 pcs) (from each date code)	Documentation Requirements
Documentation and Packaging Inspection	IDEA-STD-1010B (Pages 34 – 46)	All	All	Photos as required to provide sufficient detail
External Visual Inspection (excludes Mech. Insp.)	IDEA-STD-1010B (Pages 47 – 55)	122 parts or all devices whichever is less.	All	Photos as required to provide sufficient detail
Mechanical Inspection	IDEA-STD-1010B (Pages 62 – 63)	20 parts or all devices, whichever is less	All	20 part records, or all devices, whichever is less
Solvent Test for Remarking	IDEA-STD-1010B (Pages 56 – 61)	3 parts	1 part	1 photo per test sample
Solvent Tests for Resurfacing		3 parts	1 part	1 photo per test sample
Scrape Test		3 parts	1 part	1 photo per test sample
X-Ray Inspection	IDEA-STD-1010B (Pages 68 - 69)	45 parts or all devices, whichever is less	All	1 photo for each of 3 parts or all, whichever is less
Scanning Electron Microscopy (SEM)	AS6081 Section 4.2.6.4.3 C	1 part	1 part	1 photo per each of top surface, side view and corner view
XRF Lead Finish Evaluation	XRF to determine lot consistency compared to the manufacturer's datasheet Average Mq (measurement quality) < 3	3 parts	3 parts or all devices, whichever is less	1 detailed analysis per test sample
Solderability	JEDEC J-STD-002D (or newer)	3 parts	1 part	1 photo per test sample
Delid/Decapsulation Physical Analysis	IDEA-STD-1010B (Pages 75 - 82)	3 parts	1 part	1 photo per test sample

Table 6

3.2.11 Customer Specific Test Requirements

Any additional test requirements, flowed down by customers, shall be managed separately. All material will, at the bare minimum, fully comply with the requirements of this procedure as validated by Curtiss-Wright. All customer specific testing will be approved by the customer themselves. A special CW part # will be assigned for the customer specific material and the additional test and approval artifacts will reside under the customer specific part #.

3.2.12 Third Party Finished Assemblies

Manufacturers of third party circuit cards, systems or other assemblies are fully responsible for ensuring that no potentially counterfeit material shall end up on product shipped to Curtiss-Wright. Any third party supplier of finished product to Curtiss-Wright shall have their own AS5553 approved prevention process and shall manage all test artifacts for materials, used on the finished assemblies, such that they can be provided to Curtiss-Wright if ever required. Curtiss-Wright does not need to approve or validate test artifacts prior to shipment.

3.2.13 Control of Damaged, Suspect, Fraudulent, or Confirmed Counterfeit Parts

The following steps shall be implemented for damaged, suspect, fraudulent, or confirmed counterfeit parts:

a. Physically identify the parts as damaged/suspect/fraudulent /counterfeit product (e.g., tag, label, mark), in accordance with Curtiss Wright Non-conforming Material procedure 800215.

b. Segregate the parts from acceptable non-suspect parts and place in MRB Quarantine lockup.

c. Suspect/fraudulent/counterfeit parts shall not be returned to the supplier for refund, credit, or replacement.

d. Notify the supplier of the findings and provide the supplier with the opportunity to verify said findings. If the supplier requests the parts to be returned, Organization and supplier shall establish a mutually agreeable sample of the suspect parts to be returned for the purpose of evaluation and testing. In the event that a mutually agreeable sample size cannot be established, the default return sample size shall be less than 10 parts or 50%, of each suspect lot/date code.

e. The results of the evaluation may produce a variety of situations and results. The contractual agreement between the parties will dictate the outcome, but in any event, damaged, suspect, fraudulent, and confirmed counterfeit parts shall not be returned to the supplier.

f. Document any non-conforming materials within the verification of authenticity report.

3.2.14 Process Implementation

Note: The content of this procedure shall be implemented in accordance with the release date of January 31st, 2013. Testing performed prior to the release of 830585 shall be found to be acceptable as long as test results comply with AS5553 requirements and Curtiss Wright procedure 821250 “Risk Management of Counterfeit Material.

4. PERSONNEL TRAINING

- Quality Engineers, Component Engineers, Quality Inspectors, CM Specialist, and purchasing groups are required to be trained on this procedure.
- Method of training is a training presentation related to this procedure 830585.
- Retraining will occur on an annual basis or upon a major re-write of the procedure.
- Method of Assessment (Observation, Interview)

5. APPENDIX

5.1 Sample Report Format

5.1.1 Header Box

CW Part #	17xxxx-xxx-B00	Package Type	CBGA-360
CW Batch #	0724	Qty. Received	100
CW PO #	4021234	Qty. Destroyed	3
CW MRR #	5000555111	Qty. Rejected	0
Mfr.	IBM	Identified Lot Codes	K1234X, K1245X
Mfr. Part #	IBM25PPC750LGB500A2T	Date Code	0524
Report Date	July 5, 2017	CW Procedure/Revision	830585 Rev. 5
Report ID	12345	Authenticity Disposition	PASS

5.1.2 Test Analyses Performed/Summary

Analysis Performed	Vendor Ref Procedure	Test Sample Qty	Result
Documentation and Packaging Inspection	SOP 999-11	100	PASS
External Visual Inspection - General	SOP 999-12	100	PASS
External Visual Inspection – Detailed (excludes Mech. Insp.)	SOP 999-13	100	PASS
Mechanical Inspection	SOP 999-14	20	PASS
Solvent Test for Remarking	SOP 999-15	3	PASS
Heated Solvent Test for Resurfacing	SOP 999-16	3	PASS
Scrape Test	SOP 999-17	3	PASS
X-Ray Inspection	SOP 999-18	100	PASS
Scanning Electron Microscopy (SEM)	SOP 999-19	1	PASS
XRF Lead Finish Evaluation	SOP 999-20	3	PASS
Solderability	SOP 999-21	3	PASS
Delid/Decapsulation Physical Analysis	SOP 999-22	3	PASS

5.1.3 Signature Box

Lead Inspector	xxxxxxxx	Date
Approved by	xxxxxxxx	
QA Manager	xxxxxxxx	

5.1.4 Summary

In this section, please document all findings or observations, any review of external data, references to other sources of information (internal or otherwise). For each of the required tests, state if there were any anomalies detected and if they are noteworthy or not and state why.

5.1.5 Test Equipment List

Mfr	Model	Description	Serial #	Calibrated	Calibration Due

For each of the following, refer to Section 3.2 for the detailed set of inspection requirements and for documentation requirements per Table 6

5.1.6 Documentation and Packaging Inspection

Insert Photos of CW supplied material, any label or identification tags, etc.

5.1.7 External Visual Inspection – General and Detailed

Provide a checklist of everything that was inspected, not inspected and not applicable. Provide as many photos as required to accurately document this material

5.1.8 Mechanical Inspection

Provide an image reference from the mfr. documentation showing the required dimensions and references. Provide a summary table of the measurement results for each of the required test samples. For each dimension on each part, indicate if it is within required specifications.

5.1.9 Solvent Test for Remarking

Provide an image for each test sample after the solvent test was performed. Note any observations from this test.

5.1.10 Solvent Tests for Resurfacing

Provide an image for each test sample after each of the acetone and heated solvent test were performed. Note any observations from this test.

5.1.11 Scrape Test

Provide an image for each test sample after the scrape test was performed. Note any observations from this test.

5.1.12 X-Ray Inspection

Provide a checklist of everything that was inspected, not inspection and not applicable. Provide images of each test sample and make any comments/observations on each.

5.1.13 Scanning Electron Microscopy (SEM)

Provide a high magnification (approx. 5000x) image of the top surface and low magnification (approx.. 100-200x) images of the corner and side of the device. Make any comments regarding any evidence of microblasting, resurfacing, remarking or any other anomalies

5.1.14 XRF Lead Finish Evaluation

For each test sample, provide an image of the surface being inspected, the lead composition being scanned for, part date code, results of XRF scan with Mq for each scan, and the measured spectrum

5.1.15 Solderability

Indicate which of applicable tests was used. The standard “Dip and Look” testing in only acceptable when Force Wetting Balance Testing is not physically possible. Provide an image for each test sample after the solderability test was performed. Make any comments regarding the findings from this test

5.1.16 Delid/Decapsulation Physical Analysis

Provide a high magnication image for each test sample after the Delid/Decapsulation test was performed. Note any distinguishing features, layout and/or markings that would correlate with the device being examined.