

Rev.	Description	Date
-	Original Issue	Jan. 31, 1996
A	Revised	Jan. 31, 1998
B	Revised	Jan. 11, 2002
C	Revised	Feb. 8, 2005
D	Revised	Oct. 10, 2010
E	Marked Up	June 17, 2015

**luff RESEARCH**  
**QUALITY CONTROL MANUAL**

Approved by:

Richard Scheer  
Richard Scheer  
General Manager

# **LUFF RESEARCH QUALITY MANUAL**

## **1. SCOPE**

The purpose of this manual is to establish a quality control program. This program will ensure that through the design, manufacture and test stages of a product development, our corporate objective of superior products are met. The objective of this quality control program is to ensure that our products meet and exceed performance specifications and that they will perform reliably throughout the life of the product. This quality program is designed to meet the intent of ISO9001 and ANSI/ASQC Q9001.

## **2. MANAGEMENT RESPONSIBILITY**

### **2.1 Quality policy**

Luff Research is committed to providing high quality, high performance, and reliable products. These objectives are gained thorough an understanding of the customer requirements and then controlling all our operations to assure compliance. In order to achieve this, we recognize the importance of making all personnel aware of and responsible for the factors under their control that affect quality. We further recognize our responsibility to provide adequate training and prescribed procedures to our personnel to implement this document.

### **2.2 Organization**

#### **2.2.0 Organization Chart: Figure 1.**

#### **2.2.1 Management representative**

A member of management with the title: Quality Control Manager shall be responsible for the implementation and maintenance of this document and the supporting quality system. This individual shall also be responsible for conducting or overseeing subcontractor surveys and audits, the annual quality audit / reviews and functioning as the primary Quality interface with customers and suppliers involving contract reviews and customer service. In addition, this individual shall be responsible for overseeing the established system for production quality and implementing enhancements and improvements to the quality control system.

#### **2.2.2 Quality Coordinator & Test Operator**

The Quality Coordinator & Test Operator shall be responsible for the coordination and resolution of nonconformance dispositioning and corrective action activities. In addition, this individual shall be responsible for generating and conducting test plans for each product and the recording of the results.

#### **2.2.3 Drafting Control Representative**

The Drafting Control Representative shall conduct drafting design checks to procedures prescribed in the design control plan and verify overall compliance of design control plans. In addition, this individual shall be responsible for configuration control.

#### **2.2.4 Receiving Inspection Representative**

The Receiving Inspection Representative shall be responsible for conducting (or verifying) and recording receiving inspection activities performed to prescribed procedures. In addition, this individual shall be responsible for maintaining traceability requirements (key IC's certificates of conformance attached to traveler), documenting all receiving nonconformance, verifying kit completeness and controlling the segregation of inspected, rejected and not inspected received materials.

#### **2.2.5 Assembly Inspection Representative**

The Assembly Inspection Representative shall be responsible for conducting (or verifying) and recording in process inspection activities performed to prescribed procedures. In addition, this individual shall be responsible for documenting all in process nonconformance.

#### **2.2.6 Shipping Inspection Representative**

The Shipping Inspection Representative shall be responsible for conducting (or verifying) and recording final inspection activities performed to prescribed procedures. In addition, this individual shall be responsible for verifying the completeness of travelers, documenting final inspection nonconformance and verifying that the packaging was performed to prescribed procedures.

## **3. QUALITY SYSTEM**

### **3.1 General**

A quality system that provides procedures, equipment and personnel in support of this document shall be maintained. This system shall cover all activities impacting quality beginning with contract reviews and continuing through customer service.

### **3.2 Quality system procedures**

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This document in conjunction with the attachments referenced within it shall be the basis by which the Luff Research quality system shall operate. The manufacturing flowchart shown in Attachment #1 diagrams the production steps used to ensure quality.

## **4. CONTRACT REVIEW**

During contract award, a review with the customer shall be conducted to clarify and agree to all requirements. Specific items to be addressed shall include: operating characteristics, testing requirements, certification requirements, warranty terms and delivery terms. Minutes of the review shall be taken and distributed to all parties. Open items with resolution plans shall be included in the minutes. Subsequent reviews to discuss open items, progress and potential problems shall be conducted with minutes also taken and distributed to all parties. A file containing the minutes of review meetings and written records of all other contractual discussions shall be maintained for each contract.

## **5. DESIGN CONTROL**

### **5.1 Design control plan**

A design control plan addressing specific customer requirements, key design characteristics, product identification and tractability requirements, unresolved customer issues, documentation releases, initial qualification test plans, product test plans and supporting calculations / analyses shall be established for each product. The documentation releases shall include: the performance specification, mechanical design drawings, schematics, PCB layouts, assembly drawings, parts lists and frequency control drawings. Schedules and responsibility for each item shall be included in the plan. Drawing numbers shall be assigned in accordance with Luff Research Inc. Drawing Number Assignments specifier sheet.

### **5.2 Design review**

The Drafting Control Representative shall conduct periodic reviews of the design control plan relating to completeness and schedule commitments. The frequency of these reviews shall be agreed upon with the customer who will be forwarded reports of the findings.

### **5.3 Design verification**

First article inspections and initial qualification tests in accordance with the design control plan and Manufacturing Flowchart (Attachment #1) shall be conducted.

### **5.4 Design validation**

Design validation and product testing shall be performed in accordance with the in process and final inspection requirements and testing requirements as shown in the Manufacturing Flowchart (Attachment #1) and as called out in the design control plan.

### **5.5 Design changes**

All CAD drawings shall be password protected to prevent unauthorized changes not approved by the designer. Prior to production, one controlled hard copy of drawings shall be in circulation with all approved changes incorporated and initialed by the designer. Supporting data and / or analyses for each change shall be kept on file.

## **6. DOCUMENT CONTROL**

### **6.1 Approvals**

All design control plans, designs, design changes and test plans shall be approved by the designer. All inspection procedures and travelers shall be approved by the Quality Control Manager.

### **6.2 Distribution and control**

Controlled, serialized copies of drawings, specifications and test plans shall be made available at appropriate work stations. Approved changes shall be incorporated on all released documents. A master list of the custodian and location of all controlled serialized documents shall be maintained. All obsolete documents shall be removed from circulation with any retained copies marked obsolete and placed in a restricted file. Obsolete computer based documentation shall be removed from readily accessible files and placed in limited access, password protected special files.

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## **6.3 Changes**

All changes shall be supported by written data and / or analyses which shall be kept on file for the duration of the contract and warranty period. Revised documents shall be generated when the design development phase is complete and additional items are produced.

## **7. PURCHASING**

### **7.1 Evaluation of subcontractors**

All subcontractors shall be evaluated and selected based on their ability to meet our requirements. When more than one supplier can meet our requirements, selection will be based on past performance and cost effectiveness. For major and / or quality critical items, subcontractors shall be subjected to initial on site reviews and annual audits. Files will be maintained for all suppliers containing information relating to quantities ordered and quantities rejected. These files shall be reviewed when selecting a subcontractor for new orders and during the annual quality audit / review.

### **7.2 Purchasing data (criteria)**

All purchase orders shall specify type, class, style, grade and / or other precise identification. Where applicable on major or quality critical items, key characteristics, required tests, certifications, acceptance criteria and applicable specifications will be designated on the purchase order. PCB purchase orders shall specify that the supplier must perform a 100 % inspection for shorts and opens.

## **8. CONTROL OF PURCHASED PRODUCT**

All purchased products shall be subjected to incoming material review where the received material is matched up to the purchase order and packing slip for compliance, consistency and completeness. Printed circuit boards (PCB's) shall be subjected to aided visual examination (10X) for plated through holes and dimensional fit checks. Housings shall be subjected to visual examination for plating uniformity and dimensional fit checks. Small PCB and housing lots (10 or less) shall be 100 % inspected while larger lots may be 10 % sample inspected (with 100 % inspection performed if any rejects are found). All material physically received but not yet processed shall be kept in a segregated area separate from the in stock material. Rejected received material shall be reported on a nonconforming material form and placed in a secured limited access area until dispositioned. A copy of the dispositioned nonconforming material form shall be placed in the supplier's file. All accepted received material shall be either individually marked (by an initialed sticker or stamp) or placed in a marked plastic bag (if the size makes it impractical for individual marking).

## **9. PRODUCT IDENTIFICATION AND TRACEABILITY**

When applicable as called out in the design control plan, product identification and / or traceability requirements will be specified on the traveler.

## **10. PROCESS CONTROL**

### **10.1 Traveler package**

A durable card containing a sequenced listing of all task operations, as shown in Attachment 2, shall be used to control processing. The tasks shall begin with withdrawal from stock and end with package for shipping. Included will be references to applicable procedures, documentation enclosure requirements and special labeling instructions. Adjacent to each listing shall be areas for operators to initial and date completed tasks. Required inspection and test data shall be recorded directly on the traveler form or attached as a separate data sheet, whichever is most practical. The completed traveler package will serve as a permanent record for the delivered product and shall be retained for the duration of the contract plus the warranty period unless otherwise specified by the customer. The traveler package shall be left intact with copies made of originals for any items required to be delivered with the product.

### **10.2 Special processes**

Applicable special processes as identified in the design plan and specifications for the product shall require detailed process control procedures to assure that no adverse processing conditions occurred. These extra precautions are required for these processes since evidence of adverse conditions is not readily detectable in the product and the occurrence of these conditions could result in product failure during service.

### **10.3 RoHS products**

RoHS (European Directive for Restriction of Hazardous Substances) compliant parts. RoHS compliance requires restriction of the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium (Cr-VI), Polybrominated Biphenyls (PBB) and Polybrominated Diphenylethers (PBDE). (Per 2002/95/EC). All products specified as RoHS will be produced by following the RoHS Manufacturing Flow Chart (Attachment 1A) and the quality system outlined in this manual.

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## **11. INSPECTION AND TESTING**

### **11.1 Receiving inspection**

Receiving inspection as described in Section 8: CONTROL OF PURCHASED PRODUCT shall be conducted. In cases where incoming product is released for urgent production purposes prior to its prescribed incoming inspection processing, it shall be positively identified with a prerelease serialized tag to permit immediate recall in the event of nonconformity to specified requirements.

### **11.2 In process inspection and testing**

Inspection tasks and product testing shall be performed in accordance with the requirements and sequences called out on the traveler. All nonconformances shall be recorded on a serialized nonconformance tag and dispositioned as soon as possible. In cases where it is likely that the product can be repaired and / or subsequently used, it may be further processed after being specifically identified and tracked. In cases where it is likely the product will be scrapped or salvaged, it shall be identified as nonconforming and placed in a secured limited access area until final dispositioning.

### **11.3 Final inspection**

Prior to product case closure, an inspection for debris and a 10X examination of the reworked solder joints shall be conducted. Additionally, the traveler shall be reviewed for completeness. Certificates of compliance signed by the Quality Coordinator shall then be issued. Prior to closing the packaging container, an inspection for packaging adequacy and for the required enclosures shall be performed.

### **11.4 Inspection test records**

The completed traveler package shall contain evidence of all inspections, tests and test data. The completed traveler package shall be marked on the face with the final retention date which shall be in accordance with instructions on the traveler based on the duration of the contract plus the warranty period or as specifically agreed upon with the customer. The completed, retention date marked traveler package shall be stored in a dry safe location in such a manner that it can be readily retrievable by part and contract number.

### **11.5 Inspection and test status**

The status for any article shall be determined by referral to the applicable traveler.

## **12. CONTROL OF NONCONFORMING PRODUCT**

### **12.1 Nonconformance tag**

A serialized nonconformance tag as shown in Attachment 3 shall be used to control all nonconformant purchased products or processes. Customer Returns will be documented with Attachment 4, Failure Analysis and Corrective Action Report. The tag shall be affixed to the applicable product until final dispositioning.

### **12.2 Nonconformance review and dispositioning**

The initial review shall be performed by the Quality Coordinator who has the authority to initiate rework that can restore the product to original design requirements. All such rework shall be reinspected and / or retested as applicable. The nature of the rework and reinspection and / or retest results shall be recorded or affixed to the tag and become a part of the record for that product. All other dispositions can only be done by the designer. Supporting data and / or analyses for the dispositions by the designer shall be attached to the tag. When required by the customer, additional approvals of the disposition by the customer may be required. Copies of disposition tags shall be kept in a Nonconformance File for future corrective action and preventive action reviews.

## **13. CORRECTIVE AND PREVENTIVE ACTION**

### **13.1 Corrective action**

For each new nonconformity, the Nonconformance file shall be reviewed for similarities where by the existence of three previous similarities will warrant a corrective action investigation to be initiated.

### **13.2 Preventive action**

The Nonconformance file shall be analyzed during the annual quality audit / review to identify potential areas for improvement. Improvement projects and / or other actions shall be initiated accordingly.

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## **14. INSPECTION, MEASURING AND TEST EQUIPMENT**

### **14.1 Calibration Plan**

All tools will be calibrated on a periodic basis. A record of all results will be kept by quality assurance. Frequency of calibration will be as indicated on calibration record card.

### **14.2 Calibration Operations**

All items to be calibrated shall be identified with a serial number and shall be scheduled based on frequency, lead time and out of service time. The schedule shall be incorporated into the corporate year calendar to assure awareness and schedule compliance.

## **15. HANDLING, STORAGE, PACKAGING AND DELIVERY**

### **15.1 Electro-static discharge (ESD) vulnerable components**

All personnel shall be indoctrinated on proper ESD handling practices and be provided with adequate ESD grounding devices and work stations. A warning will be noted on the traveler when ESD vulnerable components are involved.

### **15.2 All products and components**

All personnel shall be indoctrinated on proper handling and storage practices and personnel responsible for packaging and shipping shall be trained on packaging practices that provide adequate protection against rattling and other shipping damage.

### **15.3 Delivery**

Delivery shall be made by professional sources selected based on schedule reliability and customer satisfaction. All customer complaints or dissatisfaction with the delivered product shall be recorded on nonconformance tags, disposition, reviewed for corrective action and placed in the Nonconformance file.

## **16. SERVICE**

Customer satisfaction after the product is in service shall be monitored through telephone interfaces initiated by the customer and through on customer site and / or phone surveys conducted as part of the annual quality audit / review. Customer complaints or dissatisfaction with the product in service shall be recorded on nonconformance tags, disposition, reviewed for corrective action and placed in the Nonconformance file.

## **17. CONTROL OF QUALITY RECORDS**

All quality records shall be stored in a safe dry area and shall be readily retrievable. Travelers and other product specific records shall be retained for a period consisting of the contract duration plus the warranty period or a time agreed upon with the customer. Other quality records, such as reports on subcontractor surveys, audits, annual quality audit / reviews and nonconformance tags shall be kept on file permanently. Travelers and nonconformance tags shall be filed by part number and contract. All other records shall be filed by subject and date.

## **18. ANNUAL QUALITY AUDIT / REVIEW**

The Quality Control Manager shall conduct an annual audit that shall be submitted to the President of the Corporation for independent review. The audit shall consist of a step by step review of compliance with this document followed by a review of all supplier files, all nonconformances for the prior year and surveys of all customers over the past year. The president shall review the report for consistency and areas for improvement.

## **19. TRAINING**

Formal courses shall include: indoctrination on the use of this document (for all personnel); indoctrination on ESD handling (all personnel); indoctrination on proper handling and storage practices (all personnel) and training to applicable personnel on specific procedures involving areas such as special processes, key characteristics and packaging.

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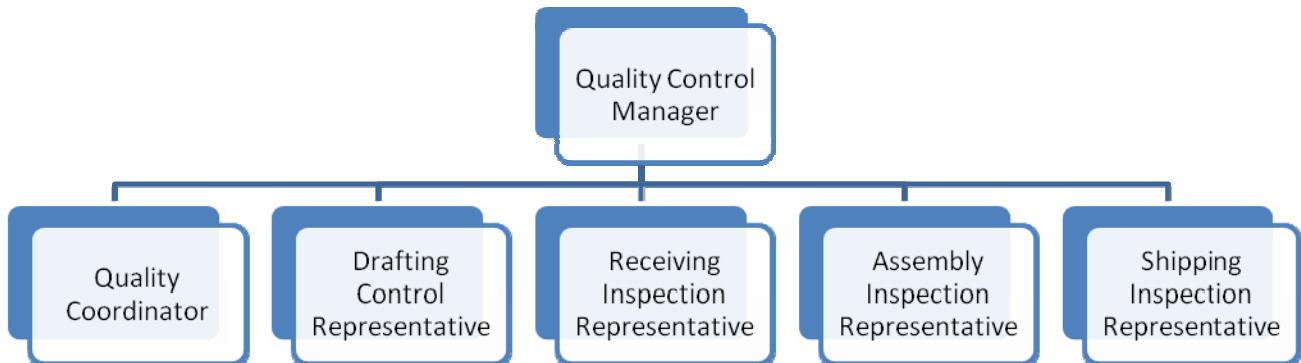
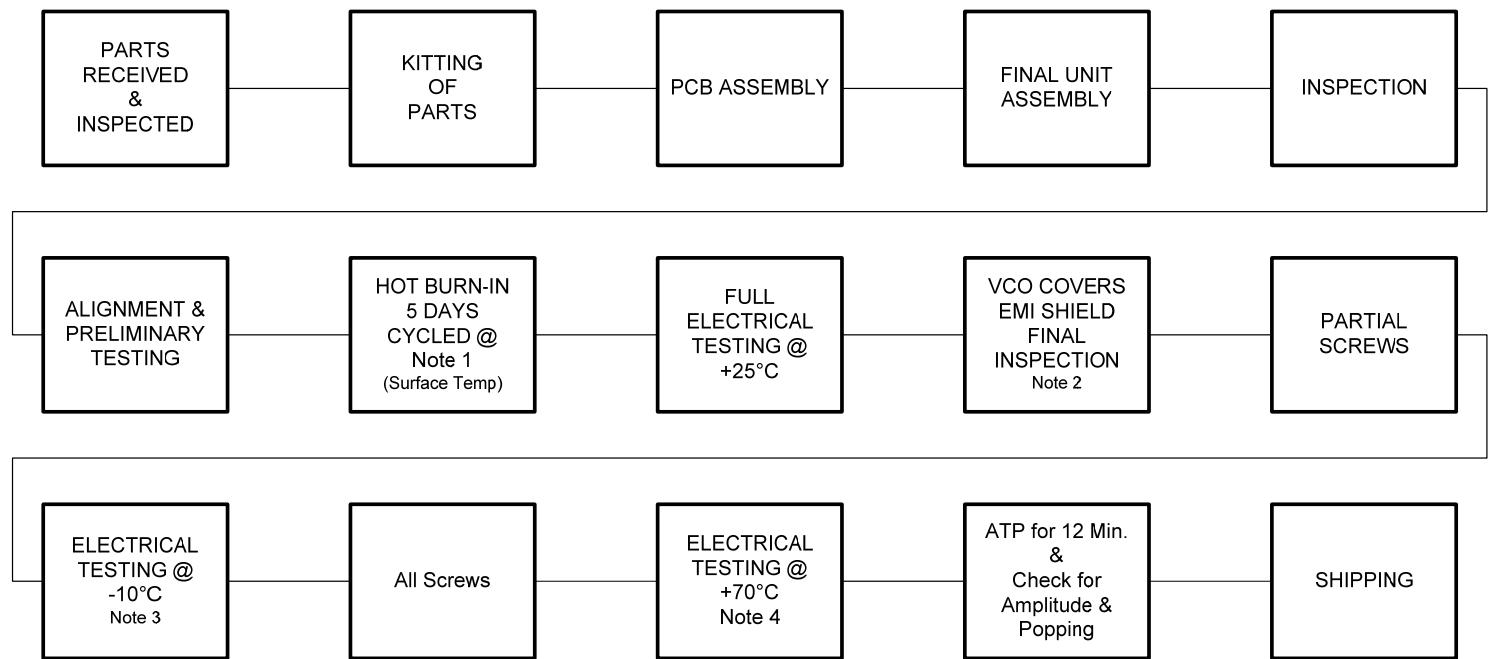


Figure 1: Quality Control Organizational Chart

## ATTACHMENT 1.: MANUFACTURING FLOW CHART



Notes:

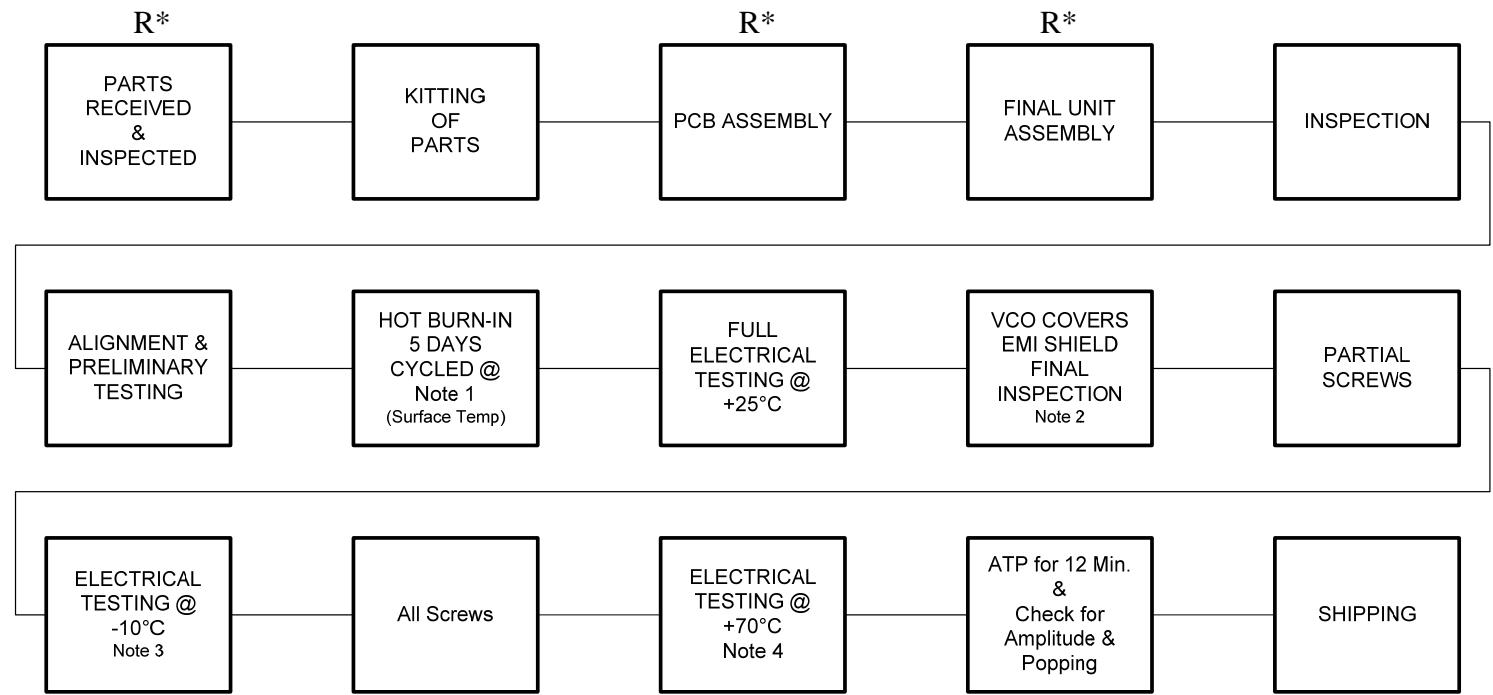
1.
 

CYCLING PROFILE

The graph illustrates a temperature cycling profile. It starts at +25°C, drops to -30°C over 8 hours, stays at -30°C for 8 hours, rises to +80°C over 8 hours, stays at +80°C for 8 hours, and then drops back to +25°C over 8 hours, repeating the cycle.
2. Re-check Tuning Voltages & Power Output
3. Random Test for 10 min. Monitoring amplitude and check for any popping.
4. Check VCO ON/OFF at beginning of each band. Check for microphonics and popping at middle of each band. Check the output power sweeping on all bands.

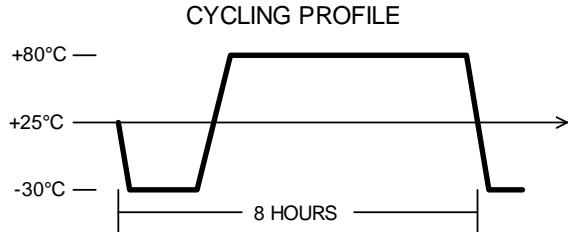
<b>LUFF RESEARCH</b> <b>MANUFACTURING FLOWCHART</b> <b>FREQUENCY SYNTHESIZER</b>		
DWG: 854950	Rev. D	11/07/02

ATTACHMENT 1A: MANUFACTURING FLOW CHART-RoHS



Notes:

1.



R\* =RoHS Process Controls

2. Re-check Tuning Voltages & Power Output
3. Random Test for 10 min. Monitoring amplitude and check for any popping.
4. Check VCO ON/OFF at beginning of each band. Check for microphonics and popping at middle of each band. Check the output power sweeping on all bands.

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Attachment # 2

## JOB ROUTING SHEET

Job # \_\_\_\_\_ Customer \_\_\_\_\_ PO # \_\_\_\_\_

Model # \_\_\_\_\_

	Initial	Comment
(a) Enter order on job sheet with job #	<input type="text"/>	Dave
(b) Order acknowledgement	<input type="text"/>	Dave
(c) Folder & Job Box • Product data sheet/ Copy of PO	<input type="text"/>	Dave
(d) Review Drawings	<input type="text"/>	Arshed/Rich
(e) Kit only from signed off Job Routing Sheet • Order long lead items	<input type="text"/>	James
• Order missing parts	<input type="text"/>	James
• Kit all parts	<input type="text"/>	James
(f) Assembly	<input type="text"/>	Maria/Dave
(g) Inspection	<input type="text"/>	Maria/Dave
(h) Burn-In	<input type="text"/>	Arshed/Dave
(i) Test	<input type="text"/>	Arshed/Rich
(j) Final Test	<input type="text"/>	Arshed

# **LUFF RESEARCH QUALITY MANUAL**

Attachment # 2

## **Job Completion & Package**

**JOB #** \_\_\_\_\_

**Customer:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**P.O.:** \_\_\_\_\_

**RMA #:** \_\_\_\_\_

**Cust. P/N:** \_\_\_\_\_

**Qty:** \_\_\_\_\_

**Model #:** \_\_\_\_\_

**S/N:** \_\_\_\_\_

### **Packaging Documentation:**

Certificate of Compliance

Packing Slip

Shipping Label

Export Documentation

Customer's Account #

Unit Labels

### **Unit Assembly Documentation:**

Drawings (New or Updated)

Supplemental Notes / Data

Scan of Unit

### **Unit Data Package:**

Product Data Sheet

Interface Definition

Additional Notes

Test Data

Customer CD (GUI, PDS, Interface and Additional Notes)

Luff CD (GUI, PDS, Interface and Additional Notes, Bin File, Config File)

GUI \_\_\_\_\_

Bin File \_\_\_\_\_

Config File \_\_\_\_\_

Q.A. Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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Attachment # 3

## NONCONFORMANCE TAG

File # \_\_\_\_\_

Date: \_\_\_\_\_

Customer: \_\_\_\_\_

Part # \_\_\_\_\_ Rev. \_\_\_\_\_

Part Serial # \_\_\_\_\_

Description: \_\_\_\_\_

Traveler # \_\_\_\_\_

Description of Nonconformance: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Disposition:

Rework to Drawing       Repair       Use As Is       Scrap

Rework or Repair Instructions: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Re-inspect and/or Test Instructions: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Attachments Included: \_\_\_\_\_

\_\_\_\_\_  
Quality Coordinator

\_\_\_\_\_  
Designer

\_\_\_\_\_  
Customer

# **LUFF RESEARCH**

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Attachment # 4

## **FAILURE ANALYSIS and CORRECTIVE ACTION REPORT**

DATE: \_\_\_\_\_

MODEL #: \_\_\_\_\_

CUSTOMER: \_\_\_\_\_

CUST PART #: \_\_\_\_\_

RMA #: \_\_\_\_\_

SERIAL #: \_\_\_\_\_

PO #: \_\_\_\_\_

TEST BY: \_\_\_\_\_

CUST REF #: \_\_\_\_\_

QC BY: \_\_\_\_\_

CUSTOMER COMPLAINT:

ANALYSIS:

CONCLUSION:

CORRECTIVE ACTIONS:

## **Counterfeit Parts Risk Mitigation Policy**

### **1.0 Purpose**

**1.1** To define the process and responsibilities for requirements associated with counterfeit product avoidance. Luff Research Inc. maintains a Counterfeit Item risk mitigation process internally and flow such requirements to its suppliers using SAE AS5553 as a guide.

### **2.0 Reference**

**2.1** SAE AS5553: Counterfeit Electronic Parts Avoidance, Detection, Mitigation and Disposition

### **3.0 Definitions**

**3.1 Counterfeit Item**—is defined to include, but is not limited to;

**3.1.1** An item that is an illegal or unauthorized copy or substitute of an Original Equipment Manufacturer (“OEM”) or Original Component Manufacturer (“OCM”) item;

**3.1.2** An item that does not contain the proper external or internal materials or components required by the OEM or OCM or that is not constructed in accordance with OEM or OCM design, but is represented as such;

**3.1.3** An item or component thereof that is used, refurbished or reclaimed but the Seller represents as being a new item;

**3.1.4** An item that has not successfully passed all OEM or OCM required testing, verification, screening and quality control but that Seller represents as having met or passed such requirements; or

**3.1.5** An item with a label or other marking intended, or reasonably likely, to mislead a reasonable person into believing a non-OEM or OCM item is a genuine OEM or OCM item when it is not.

**3.2 Original Component Manufacturer (OCM), Original Equipment Manufacturer (OEM)**—Companies which design parts and products, hold Intellectual Property Rights, manufacture (or consigns manufacturing), and may authorize or license the sale of the product to other companies, typically an Authorized Distributor. For the purposes of this plan, the term Original Equipment Manufacturer (OEM) is used interchangeably for both.

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**3.3 Authorized Distributor**—A distributor with which the OEM has a contractual agreement to stock, repackage, sell and distribute its product lines. Authorized Distributors normally offer the product for sale with full manufacturer flow-through warranty.

**3.4 Broker**—A supplier which is not authorized or under the oversight of the part's OEM. These companies typically do not offer an item with the full manufacturer's warranty. These companies are also referred to as Independent Distributors, Non-Authorized Distributors, Non-Franchised Distributors or Non-Authorized Suppliers, but they will be referred to as Brokers within this plan.

**3.5 GIDEP**—Government-Industry Data Exchange Program (GIDEP) is a cooperative activity between government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information.

## **4.0 Procedure**

**4.1** The Quality Manager is responsible for the implementation of this plan.

### **4.2 Engineering**

**4.2.1** Engineering shall produce designs that do not contain obsolete parts, materials or products.

### **4.3 Supply Chain**

**4.3.1** The purchase of material shall be directly from an OEM or from Authorized Distributors.

**4.3.2** As a general rule, Luff Research will not use brokers for the purchase of materials. In the event the use of a Broker is required, said Broker must be authorized for sale of OEM equipment, and be capable of producing authentication test/analysis requirements (using AS5553 as a guide).

**4.3.2.1** The Supply Chain Agent must first obtain approval from the Supply Chain Manager prior to seeking availability of parts from authorized Brokers.

**4.3.2.2** Authorized Brokers can be a Customer Approved Broker or a CCAP-101 (Counterfeit Components Avoidance Procedures) certified Broker.

**4.3.3** Customer approval request for the use of a Broker shall be documented and include:

## **Quality Manual Appendix A**

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**4.3.3.1** A complete and compelling support for any request to procure from sources other than OEMs or OCMs or their Authorized Distributors

**4.3.3.2** All actions completed to ensure the parts procured are not Counterfeit Items.

**4.3.3.3** Results of authentication test and analysis conducted (using AS5553 as a guide).

**4.3.3.4** Traceability with identification of all supply chain intermediaries wherever such traceability exists.

**4.3.3.5** Identification of and traceability to the source for any remarked or resurfaced material.

**4.3.4** After Customer written approval to use material from a Broker, the material shall be segregated and provide traceability identifiers (i.e. Date Code / Lot Code., Serial number) for all items delivered.

**4.3.5** Supply Chain will flow down requirements (Example-Luff Research Quality Requirements [LRQR], T&C's, etc.) to suppliers and subcontractors which shall include:

**4.3.5.1** The Counterfeit Parts requirement, appears within Luff Research's T&C's.

**4.3.5.2** Certificate of Conformance(C of C) requirement which includes as a minimum, the OEM name and address, part number, traceability identification for item(s) such as date codes, lot codes, or serializations. Said requirement falls under LRQR7.2.1, which is entered for all program material purchases.

**4.3.5.3 Approved Vendor List (AVL)** AVL includes vendors that have been assessed and determined to be a low risk for supplying counterfeit parts. Ref. LRQR7.1.1

## **4.4 Quality and Receiving Inspection**

**4.4.1** Receiving Inspection shall review Certificate of Conformances for each item received to compare purchase order requirements, including that the OEM is the same as identified on the purchase order.

**4.4.2** Receiving Inspection shall review packaging, the physical product (including product markings) and associated documentation for signs of potential counterfeit material including:

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**4.4.2.1** Manufacturer logos or labels containing miss-spelling, smudged or questionable appearance.

**4.4.2.2** Obvious signs of poor, substandard or out of control manufacturing processes such as varying component lead lengths, significant differences in identifying markings, ink smears, etc.

**4.4.2.3** Characteristic measurement results indicating questionable differences from typical product received.

**4.4.2.4** Uneven top and /or bottom coating of the part, or inconsistent texture or color between top and bottom side coating (mold compound).

**4.4.2.5** Bent leads or inconsistent lead plating coverage.

**4.4.2.6** Poor quality part ink or laser marking.

**4.4.2.7** Chip outs on the package corners which may indicate excessive or careless handling.

**4.4.2.8** Rough surface texture.

**4.4.2.9** Other signs of variance from typical product received.

**4.4.3** For material received from a Broker, Receiving Inspection shall perform the following additional requirements;

**4.4.3.1** Contact Quality to verify proper authorization was granted.

**4.4.3.2** Contact Quality to verify required authentication test/analysis requirements were performed and results approved.

**4.4.3.3** The material shall be segregated and provide traceability identifiers (i.e. Date Code / Lot Code., Serial number) for all items delivered.

**4.4.4** When suspect or confirmed Counterfeit part(s) are discovered, Quality shall:

**4.4.4.1** Quarantine suspect or confirmed counterfeit parts and ensure suspect counterfeit parts are not delivered to a Customer.

**4.4.4.2** Document and report all occurrences to Management.

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**4.4.4.3** Issue a GIDEP report.

## **4.5 Human Resources**

**4.5.1** Quality, Engineering and Supply Chain employees shall receive training on Counterfeit Parts Avoidance on an annual basis.