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1 Purpose

- 1.1 The purpose of the Stage 3 procedures is to complete a detailed design of a new concept including the verification and validation of the new detailed design.

2 Scope – *applies to where & when the procedure is used*

- 2.1 This process applies to all North American based R&D programs for MTS Test.

3 Definitions and Acronyms

- 3.1 BOM = Bill of Material


4 Graphic (if needed)



Stage 3A Design & Development Rev F.pd

5 Responsibilities

- 5.1 See Graphic

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6 Procedure

6.1 Approved Stage 3 Program Plan

The R&D council approves the development program for Stage 3 and notifies the Product Manager and Program Leader.

Output: Stage 3 Approval Email (Quality Record 7.1)

Template: None

6.2 Update Development Team

The Program Leader updates the Development Team.

Output: Development Team Checklist (Quality Record 7.2)

Template: Development Team Checklist Template

6.3 Begin Product Compliance Process for Stage 3

The Program Leader works with Compliance Engineer to begin Product Compliance Process for Stage 3.

Output: None

Template: None

6.4 Complete EHS Analysis

The development team will complete the Environmental Health and Safety Analysis form.

Output: EHS Form (Quality Record 7.4)

Template: EHS Form Template

6.5 Update Combined Product Requirements & Design Specifications

The Program Leader and Product Manager update the Product Requirements & Design Specifications.

Output: Product Requirements & Design Specifications (Quality Record 7.4)

Template: Product Requirements & Design Specifications Template

6.6 Perform Detailed Design

The Development Team generates detailed designs for the final product.

Output: None

Template: None


6.7 Product Name

The Product Manager generates a Product Name, if required.

Output: None

Template: None

6.8 Create Product Labeling

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The Development Team works with Marketing Communications to create product labeling. Product labeling includes MTS logos and design language considerations.

Output: Product Label Part Number List (Quality Record 7.7)

Template: Product Label Part Number List Template

6.9 Create Functional Labeling

The Development Team works with Compliance Engineering and Marketing Communications to create functional labeling. Functional labels include information that relates to product operation (labeling for knobs or switches).

Output: Functional Label Part Number List (Quality Record 7.8)

Template: Functional Label Part Number List Template

6.10 Create Equipment Rating Label

The Development Team works with Compliance Engineering and Marketing Communications to create functional labeling. Equipment labeling includes certification marks, product rating labels, etc.

Output: Equipment Rating Label Part Number List (Quality Record 7.9)

Template: Equipment Rating Label Part Number List Template

6.11 Update Physical Diagram

The Development Team updates the Physical Diagram showing how the different components of the system and customer's facility interface to one another.

Output: Physical Diagram (Quality Record 7.10)

Template: Physical Diagram Template

6.12 Update Functional Diagram

Update the Functional Diagram that was created in Stage 2.

Output: Functional Diagram (Quality Record 7.11)

Template: Functional Diagram Template

6.13 Update Workflow Diagram

Update the Workflow Diagram that was created in Stage 2.

Output: Workflow Diagram (Quality Record 7.12)

Template: Workflow Diagram Template


6.14 Internal MTS Facility & Safety Review

The Program Leader conducts a Facility & Safety Review with the Safety and Environmental Manager per ISO 14001 and OSHAS 18001. This is specific to internal facility and human safety considerations at MTS Systems.

Output: Facility & Safety Review Notes (Quality Record 7.13)

Template: Facility & Safety Review Notes Template

6.14 Final Design Review Meeting

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The Development Team presents the final design for review and feedback. Possible attendees include: subject matter experts, development managers, application engineers, staff engineers, etc.

Output: Final Design Review Notes (Quality Record 7.14)

Template: Final Design Review Notes Template

6.15 Does Design Meet Product Requirements & Design Specifications?

The Program Leader, Product Manager, Hardware Development Manager and Market or Group Product Manager will sign off on this decision.

If No, return to Perform Detailed Design (6.5).

If Yes, continue to Create Bill of Materials for Prototype(s) (6.16).

Output: Design Signoff (Quality Record 7.15)

Template: Design Signoff Template

6.16 Create Bill of Materials for Prototype(s)

The Development Team generates a Bill of Materials for the prototype(s).

Output: None

Template: None

6.17 Material Fulfillment Plan

The Manufacturing Engineer begins Material Fulfillment Plan.

Output: Material Fulfillment Plan (Quality Record 6.17)

Template: Material Fulfillment Plan Template


6.18 Build Prototype(s)

The Development Team builds the prototype(s).

Output: None

Template: None

7 Associated Quality Records – as stated in the Quality Records List

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	Required Record
7.1	Stage 3 Approval
7.2	Development Team Checklist
7.4	EHS Form
7.5	Product Requirements & Design Specifications Document
7.8	Product Label Part Number List
7.9	Functional Label Part Number List
7.10	Equipment Label Part Number List
7.11	Physical Diagram
7.12	Functional Diagram
7.13	Workflow Diagram
7.14	Facility & Safety Review Notes
7.15	Final Design Review Notes
7.16	Design Signoff
7.18	Material Fulfillment Plan


8 Reference Forms / Templates / Documents

Form / Template / Document Title	Location

9 Current Revision's Training Requirements

Training requirements are determined by the document owner – either awareness or formal.

Select One (mark X)	Training Type	Training Definition
X (general)	Awareness	Awareness training is conducted by communication, which is sent/delivered by the approver/author/owner of the document to the affected employees/groups.

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Hardware Development Team	Formal	Formal training requires the approver/author/owner to collect/store evidence that the affected employees/groups were trained.
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10 Revision History & Approval

REVISION HISTORY			
Rev	Description of Change	Author	Effective Date
A	Initial Release	S. Firman	2/27/2009
B	Release Into New Format	S. Firman	6/7/2011
C	Updated to meet Rev. B of R&D Stage Gate and CE Process	S. Firman	8/27/2012
D	Update procedure owner, training requirements, and records location	S. Firman	5/17/2013
F	Updated process to better fit SPD group objectives.	S. Firman	11-20-2015

APPROVAL OF CURRENT REVISION		
Name / Function	Signature	Date
Scott Firman, Director of Solutions Engineering		