

MIL-E-11991E(MI)  
AMENDMENT 1  
19 May 1987

MILITARY SPECIFICATION

ELECTRONIC, ELECTRICAL, AND ELECTRO-MECHANICAL  
EQUIPMENT, GUIDED MISSILE AND ASSOCIATED WEAPON  
SYSTEMS, GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-E-11991E, dated 26 July 1983, and is approved for use within the U.S. Army Missile Command, Department of the Army and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 1

1.1 Line 1, following "--requirements for--" add "design of".

Beneficial comments block, line 3, delete "DRSMI-RSDS" and substitute "AMSMI-RD-SE-TD-ST".

PAGE 2

QQ-B-613, in document title, delete "(Plat,---)" and substitute "(Plate---)".

QQ-C-450, in document title, delete "610" and substitute "612"; delete "630" and substitute "628".

QQ-C-465, in document title, delete "632M".

PAGE 3

QQ-N-281, delete title and substitute "Nickel-Copper-Alloy Bar, Rod, Plate, Sheet, Strip, Wire, Forgings, and Structural and Special Shaped Sections".

MIL-I-10, in document title, delete "Materials" and substitute "Compound".

AMSC N/A

FSC 1430

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## PAGE 4

MIL-T-713, in document title, delete "Fiborus" and substitute "Fibrous"  
MIL-R-3065, in document title, delete "Parts" and substitute "Products".  
MIL-C-3133, in document title, delete "Elastromeric" and substitute "Elastomeric".  
MIL-L-3890, in document title, following "(---Air Dielectric" add "General Specification For)".

## PAGE 5

Delete "MIL-S-6872 Soldering Process, General Specification For".  
Delete "MIL-S-7021" and substitute "MIL-A-7021".  
Delete "MIL-M-10578" and substitute "MIL-C-10578", and in document title, delete "compound" and substitute "Compound".  
MIL-T-12664, in document title, delete, "Paranitrophenol" and substitute "Parantirophenol".  
Add: MIL-B-16540, Bronze, Phosphor, Castings.

## PAGE 6

MIL-L-25142, in document title delete "Fluroescent" and substitute "Fluorescent".  
MIL-P-25732, in document title delete "257 Deg.F" and substitute "275 Deg F".  
Delete "MIL-C-56224" and substitute "MIL-C-45224".  
Delete "MIL-S-45743 Soldering, Manual Type, High Reliability, Electrical and Electronic Equipment".  
Delete "MIL-P-46843 Printed Wiring Assemblies".  
Delete "MIL-S-46844 Solder Bath Soldering of Printed Wiring Assemblies".

## PAGE 7

Delete "MIL-S-46860 Soldering of Metallic Ribbon Lead Materials to Solder Coated Terminals, Process For Reflow".  
MIL-P-55110, in document title, following "Printed Wiring Boards" add "General Specification For".

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MIL-C-83446, Delete document title and substitute "Coils, Radio Frequency, Chip, Fixed or Variable, General Specification For".

MIL-STD-186, Delete document title and substitute "Protective Finishing for Army Missile Weapon Systems".

PAGE 8

Delete "MIL-STD-750 Test Methods for Semiconductors" and substitute "MIL-STD-470 Maintainability Program Requirements (for Systems and Equipment)".

MIL-STD-810, in document title, add "and Engineering Guidelines".

MIL-STD-883, in document title, delete "Micro-Electronics" and substitute "Microelectronics".

Add: "MIL-STD-1568 Materials and Processes for Corrosion Prevention and Control in Aerospace Weapons Systems".

Add: "DOD-STD-1866, Soldering Process, General (Non-Electrical)".

Add: "DOD-STD-2000-1 Soldering Technology, High Quality/High Reliability.

DOD-STD-2000-2 Part and Component Mounting for High Quality/High Reliability Soldered Electrical and Electronic Assemblies.

DOD-STD-2000-3 Criteria for High Quality/High Reliability Soldering Technology."

PAGE 9

2.1.2 Delete and substitute:

"2.1.2 Other Government documents. The following other Government documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation."

Under "ARMY MISSILE COMMAND" delete:

"QR-800

Reliability Program For Systems Equipment  
Development (MICOM Product Assurance  
(Directorate Exhibit)"

Following "MSFC-SPEC-592" add:

"Department of the Air Force

AFSC Pamphlet 800-27

Parts Dairating Guide"

(Application for copies should be addressed to: Department of the Air Force, Headquarters AFSC, Andrews AFB, Washington, DC 20334-5000.)

3.1 Delete last sentence of paragraph.

PAGE 10

3.1.1.3 First sentence, delete "manufacturer's" and substitute "manufacturers".

3.1.3 Delete second through fifth sentence of paragraph.

PAGE 11

3.1.6 Beginning with second sentence, delete remainder of paragraph.

PAGE 12

3.1.8, line 3, following "--- of the equipment.", delete remainder of paragraph.

3.1.9 Delete "Dissimilar metals." and substitute "Corrosion prevention and control." Following "MIL-STD-1250" add "and MIL-STD-1568."

3.1.10 Line 1, delete "Protective" and substitute "Protection".

3.1.11 Delete "QR-800" and substitute "AFSC Pamphlet 800-27". Delete remainder of paragraph.

PAGE 14

3.2.1.10.1.2 Delete second sentence and substitute: "A chemical conversion coating in accordance with MIL-C-5541 shall be used."

PAGE 15

3.2.1.12 Line 4, delete "of a type approved" and substitute "as specified".

PAGE 18

3.2.2.1.1 Delete entire paragraph and substitute: "Soldering. Soldering to electrical and electronic connections to terminals, wires, cables, connectors, printed wiring boards and like parts shall conform to DOD-STD-2000-1 and DOD-STD-2000-3."

3.2.2.1.2 Delete entire paragraph.

3.2.2.1.3 Delete entire paragraph.

3.2.2.1.4 Delete "MIL-S-6872" in first and second sentences, and substitute "DOD-STD-1866".

3.2.2.3.3 In second sentence, delete "through" and substitute "thorough".

PAGE 19

3.2.3 Beginning with second sentence, delete remainder of paragraph.

PAGE 20

3.2.3.3 Delete second sentence.

3.2.3.11 Delete "and cams" in paragraph title and first line of text.

PAGE 21

3.2.3.16.2 Delete "shuts" and substitute "shunts".

3.2.3.16.4 Line 3, delete "thermocopules" and substitute "thermocouples".

PAGE 22

3.2.3.18 Delete "accodance" and substitute "accordance".

3.2.3.19 Delete "Printed circuits." and substitute "Printed wiring assembly."

Delete first sentence of paragraph and substitute: "The attachment of parts or component mounting shall be in accordance with DOD-STD-2000-2."

In second sentence, delete "MIL-P-46843" and substitute "DOD-STD-2000-1, DOD-STD-2000-2, and DOD-STD-2000-3".

3.2.3.20 Delete second sentence and substitute: "Selenium rectifiers shall not be utilized in new design without prior approval of the procuring activity."

PAGE 24

3.2.3.38.1 Delete "Micorcircuits" and substitute "Microcircuits".

In first sentence, following "All microcircuits" insert "---including customs, and hybrids--".

In second sentence, following "--Appendix F." delete "." and add "---and/or Appendix G, as appropriate."

In fifth sentence, following "--Methods 5004--" delete remainder of sentence and substitute: "--, 5005 and 5008 for Class B."

3.2.3.38.1.1 Delete first through seventh sentence of paragraph.

PAGE 25

3.2.3.38.1.1.1.1 Delete second sentence of paragraph.

3.2.3.38.1.1.2 Delete entire paragraph.

3.2.3.38.1.1.7 In first line, delete "requiremets" and substitute "requirements"; delete "micorcircuits" and substitute "microcircuits".

In first sentence of paragraph, delete "utetic" and substitute "eutectic".

In fourth sentence, following "1000 PPM" add "water vapor content".

3.2.3.38.2 Delete entire paragraph and substitute: "Semiconductor devices, including light emitting diodes, shall comply with Requirement 30 of MIL-STD-454. All semiconductor devices shall be JANTX, JANTXV or JANS types. All non-standard (Non-JAN) semiconductors shall comply with MIL-S-19500 for JANTX devices except requirements associated with placement of a part on the qualified part list are deleted. Only hermetically sealed semiconductors shall be used. When a required device is not covered by MIL-S-19500 and a new drawing is prepared (see 3.1.7), the nearest appropriate MIL-S-19500 specification sheet shall be used as a guide."

PAGE 26

3.2.3.38.5 Delete last sentence of paragraph.

3.2.3.38.8 Delete paragraph in its entirety.

PAGE 27

3.3 Delete paragraph in its entirety.

3.3.1 Delete paragraph in its entirety.

## PAGE 28

3.3.2.2.1 Delete paragraph number and substitute "a."

3.3.2.2.2 Delete paragraph number and substitute "b."

3.3.4 Delete paragraph in its entirety.

3.3.5 Delete and substitute: "Reliability and Maintainability. Reliability and maintainability shall include, as a minimum, the development program requirements of MIL-STD-785 (tasks 101, 102, 103, 201, 202, 203, 207, and 208) and MIL-STD-470 (tasks 101, 201, 202 and 205). Quantitative reliability and maintainability requirements shall be specified in the contract and the end ite system requirement specification."

3.3.6.1 Delete paragraph in its entirety.

## PAGE 29

3.3.6.3 in third sentence, between "consistent" and "required" add "with".

Delete second, seventh and eighth sentence.

## PAGE 30

3.3.8 Delete paragraph in its entirety.

3.3.9.1 In fourth line of text, between "failure" and "ventilation", delete "to" and substitute "of".

## PAGE 32

3.3.16.1 Delete last sentence of paragraph.

3.3.16.3 Line 5, delete "Marginal" and capitalize "Checking"; delete "providing" and substitute "which provide".

## PAGE 33

3.3.23.1 Delete last sentence of paragraph.

## PAGE 35

3.5.4 Delete and substitute: "Reference designations shall be in accordance with Requirement 67 of MIL-STD-454."

## INDEX

Page 39 through 45: Delete the following paragraph references:

Custom LSI microcircuits	3.2.3.38.1.1.2
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Dissimilar metals	3.1.9
Electron tube development	3.2.3.38.8
Objective	3.3.1
Over design	3.3.4
Printed circuits	3.2.3.19
Soldering, manual	3.2.2.1.1
Soldering, machine	3.2.2.1.2
Soldering, reflow	3.2.2.1.3
Terminal board	3.2.3.29

Add the following paragraph references:

Cable, low capacitance	3.2.3.41
Coil chips	3.2.3.38.1.1.6
Color of fastening and assembly screws	3.2.3.40.1
Copper	3.2.1.10.5
Cork	3.2.1.9
Corrosion prevention and control	3.1.9
Cotton and linen	3.2.1.9.7
Counters, electromechanical	3.2.3.17.1
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Design criteria	3.3.2.1
Electrostatic discharge control	3.2.2.5
Printed wiring assembly	3.2.3.19
Sealing requirements for custom and/or Hybrid microcircuits	3.2.3.38.1.1.7
Tuning dial mechanisms	3.2.3.42
Wet electrolytic capacitors	3.2.3.2.2

Custodian:  
Army - MI

Preparing activity:  
Army - MI

Review activity:  
AV, ES

(Project 1430-A129)