Destructive Physical Analysis Testing Specification for the Space Station Program

Space Station Program Office

SSQ 25000 Revision B
March 26, 1996

National Aeronautics and Space Administration
International Space Station Program
Johnson Space Center
Houston, Texas

REVISIONS

REV LTR		PUB DATE
New	BASELINE ISSUE	8/27/93
A	REASON: Update to ISSA Program requirements and correct minor errors. Include CR 25000-001	1/20/95
B	Official PCB Release Version (include CR 25000-002 and 25000-006)	06/11/96

PREFACE

SSQ 25000, Space Station Program Destructive Physical Analysis testing Specification is a procedure which defines the testing to be performed on electrical, electronic, and electromechanical parts to be utilized on the Space Station program.

____________________________________ _________

Program Manager (or delegated authority) Date
Space Station Program

SPACE STATION PROGRAM OFFICE
DESTRUCTIVE PHYSICAL ANALYSIS TESTING SPECIFICATION
MARCH 26, 1996

CONCURRENCE

PREPARED BY: ______________________ ______________
PRINT NAME ORGN

______________________ ______________
SIGNATURE DATE

CHECKED BY: ______________________ ______________
PRINT NAME ORGN

______________________ ______________
SIGNATURE DATE

SUPERVISED BY: ______________________ ______________
(BOEING) PRINT NAME ORGN

______________________ ______________
SIGNATURE DATE

DQA: ______________________ ______________
PRINT NAME ORGN

______________________ ______________
SIGNATURE DATE

SPACE STATION PROGRAM
DESTRUCTIVE PHYSICAL ANALYSIS TESTING SPECIFICATION

LIST OF CHANGES

MARCH 26, 1996

All changes to this document are shown below:

SSCBD	ENTRY DATE	CHANGE	PARAGRAPH
TBD	1/20/95	REVISION A	All

TABLE OF CONTENTS

PARAGRAPH		PAGE
1.0	SCOPE	1-1
2.0	GOVERNMENT DOCUMENTS	2-1
3.0	GENERAL REQUIREMENTS	3-1
3.1	SAMPLE SIZE	3-1
3.2	CONFIGURATION CONTROL	3-1
3.3	UTILIZATION OF ELECTRICAL REJECTS	3-1
3.4	PHOTOGRAPHY	3-1
3.5	LABORATORY SUITABILITY	3-1
3.6	DPA REPORT	3-1
3.7	DPA RESIDUES	3-1
4.0	DPA TESTING REQUIREMENTS	4-1
A-1	CAPACITOR, FIXED CERAMIC AND STACKED MODULES	A-1
A-2	CAPACITOR, CERAMIC CHIP	A-2
A-3	CAPACITOR, MICA	A-3
A-4	CAPACITOR, SOLID TANTALUM	A-4
A-5	CAPACITOR, FIXED TANTALUM FOIL	A-5
A-6	CAPACITOR, PAPER OR PLASTIC FILM	A-6
A-7	CAPACITOR, METTALIZED FILM	A-7
A-8	CAPACITOR, WET TANTALUM	A-8
A-9	CAPACITOR, FIXED GLASS	A-9
A-10	CAPACITOR, VARIABLE PISTON	A-10
B-1	CONNECTORS/CONTACTS	B-1
C-1	QUARTZ CRYSTALS	C-1
D-1	DIODE, GLASS	D-1
E-1	EMI FEED THROUGH FILTERS	E-1
F-1	MAGNETIC DEVICES, INDUCTORS, AND TRANSFORMERS	F-1
F-2	MAGNETIC DEVICES, RF COILS	F-2
G-1	MICROCIRCUIT	G-1
G-2	HYBRID MICROCIRCUIT	G-2
G-3	PASSIVE ELEMENT SHEAR TESTING	G-3
H-1	RELAYS	H-1
I-1	RESISTOR METALLIZED FIXED FILM	I-1
I-2	RESISTOR, METAL FOIL	I-2
I-3	RESISTOR NETWORK	I-3
I-4	RESISTOR, WIREWOUND ACCURATE	I-4
I-5	RESISTOR, FIXED WIREWOUND	I-5
I-6	RESISTOR, FIXED CHIP	I-6
J-1	SWITCH, SNAP ACTION	J-1
J-2	THERMAL SWITCH	J-2
K-1	THERMISTOR, GLASS BODIED, HERMETIC	K-1
K-2	THERMISTOR, DISC AND BEAD, ENCAPSULATED	K-2
L-1	TRANSISTORS & METAL CAN DIODES	L-1
M-1	THICK FILM FUSES	M-1
M-2	THICK FILM FUSE DPA TESTING REQUIREMENTS	M-2

1.0 SCOPE

This drawing describes the specific minimum requirements for Destructive Physical Analysis Testing to be performed on electrical, electronic, and electromechanical parts to be utilized on the International Space Station Alpha (ISSA) program. This drawing draws on technical criteria set forth in Mil-Std-1580 Rev. A. Minor enhancements and deletions have been made to tailor this document to program requirements. This document has been created to provide a means by which ISSA DPA Testing can be standardized across the program. The specific requirements listed are considered minimum and may be augmented as deemed necessary.

2.0 GOVERNMENT DOCUMENTS

Reference documents shall be those noted within MIL-STD-1580 Rev. A in addition to the following:

SSP 30312
MIL-STD-45662

3.0 GENERAL REQUIREMENTS

3.1 SAMPLE SIZE

When a DPA is conducted to verify lot conformance of a particular production lot of EEE parts, the minimum sample size shall be 3 samples or 1% of the lot size, whichever is larger to a maximum of 5 parts. For devices which cost in excess of $1,500 a sample size of 2 may be used. One Correlation sample will be maintained for each DPA test lot. The Correlation sample will not be drawn from the DPA sample quantity defined above, but rather, will be provided in addition to the DPA sample size stated. Samples to be subjected to Residual Gas Analysis (RGA) testing shall also be provided in addition to the DPA Sample lot, and may be used for other DPA tests if in suitable condition. The Tier 1 contractor may consider on a case by case basis reducing the sample size where surveillance, vendor history, and good engineering judgment is appropriate, provided they meet the intent of DPA planning sheets inspection quantities herein.

3.2 CONFIGURATION CONTROL

Maintenance of baseline configuration control of devices utilized on this program will be performed at the Contractor.

3.3 UTILIZATION OF ELECTRICAL REJECTS

Electrical reject devices from a production lot may be used as DPA samples provided that the devices were only rejected due to out of tolerance parameters. These devices may consist of parts rejected during previous screening inspections. These devices should only be utilized when part availability is low or cost is high, as applicable.

3.4 PHOTOGRAPHY

The photographic requirements of MIL-STD-1580 will be sufficient. At external visual inspection, care should be taken to ensure that all part markings are recorded prior to disassembly. All serious anomalous conditions will be documented in enough detail to allow proper identification of the condition(s). Color film with a minimum size of 2 and 3/4 by 3 and 3/4 inches will be required for photo documentation. An 8 by 10 inch color photograph of the die or the hybrid substrate will be required for microcircuits and hybrids as specified within.

3.5 LABORATORY SUITABILITY

DPA Testing Laboratories shall be ISSA Parts Control Board (PCB) Analysis & Integration Team (AIT) approved prior to performance of testing.

3.6 DPA REPORT

At the completion of the DPA analysis, a complete report detailing the findings shall be generated. The report will meet, as a minimum, the requirements of MIL-STD-1580 REV. A paragraph 4.2.2 except for X-rays and N-rays.

3.7 DPA RESIDUES

All residues (plus the control sample) shall be packaged, marked, and accompany the original report to the contractor for final approval and retention.

4.0 DPA TESTING REQUIREMENTS

The specific DPA Testing criteria and process flows are stated in the following attached appendices:

APPENDIX	PART TYPE(S)
A-1	CAPACITOR, FIXED CERAMIC AND STACKED MODULES
A-2	CAPACITOR, CERAMIC CHIP
A-3	CAPACITOR, MICA
A-4	CAPACITOR, SOLID TANTALUM
A-5	CAPACITOR, FIXED TANTALUM FOIL
A-6	CAPACITOR, PAPER OR PLASTIC FILM
A-7	CAPACITOR METALLIZED FILM
A-8	CAPACITOR, WET TANTALUM
A-9	CAPACITOR, FIXED GLASS
A-10	CAPACITOR, VARIABLE PISTON
B-1	CONNECTORS/CONTACTS
C-1	QUARTZ CRYSTALS
D-1	DIODE, GLASS
E-1	EMI FEED-THROUGH FILTERS
F-1	MAGNETIC DEVICES, INDUCTORS, AND TRANSFORMERS
F-2	MAGNETIC DEVICES, RF COILS
G-1	MICROCIRCUITS
G-2	HYBRID MICROCIRCUITS
H-1	RELAYS
I-1	RESISTOR, METALIZED FIXED FILM
I-2	RESISTOR, METAL FOIL
I-3	RESISTOR NETWORK
I-4	RESISTOR, WIREWOUND ACCURATE
1-5	RESISTOR, FIXED WIREWOUND
I-6	RESISTOR, FIXED CHIP
J-1	SWITCH, SNAP ACTION
J-2	THERMAL SWITCH
K-1	THERMISTOR, GLASS BODIED, HERMETIC
K-2	THERMISTOR, DISC AND BEAD, ENCAPSULATED
L-1	TRANSISTORS AND METAL CAN DIODES
M-1	FUSE, THICK FILM

DPA PLANNING SHEET APPENDIX A-1

CAPACITOR, FIXED CERAMIC AND STACKED MODULES

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.1

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 5.1.1.3	50% ROUND DOWN
INTERNAL VISUAL INSPECTION 2/	PARA. 5.1.1.4	50% ROUND DOWN
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATE	PARA. 5.1.1.5 (EIA-RS 469)	ALL
CROSS SECTION 1/, 2/	PARA. 5.1.1.6	ALL
INTERNAL VISUAL INSPECTION	PARA. 5.1.1.6 (EIA-RS 469)	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
HIGH TEMPERATURE SOLDER VERIFICATION	PARA. 5.1.1.4	ONE DEVICE
ENGINEERING REVIEW		

NOTES: 1/ CROSS-SECTION THE DECAPSULATED SAMPLES THROUGH THE SIDE OF THE CAPACITOR BODIES TO SHOW PLATE REGISTRY. CROSS-SECTION THE ENCAPSULATED DEVICES IN A PLANE PERPENDICULAR TO THE LEAD AXIS TO SHOW THE QUALITY OF LEAD ATTACHMENT.

2/ FOR STACKED CERAMIC CAPACITOR MODULES VERIFY SUITABILITY OF THE LEAD FRAME SOLDER / BRAZING. CHECK FOR FOREIGN MATERIAL BETWEEN CAPACITOR STACKS.

DPA PLANNING SHEET APPENDIX A-2

CAPACITOR, CERAMIC CHIP

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.2

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.2.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 5.2.1.3	ALL
CROSS SECTION	EIA-RS 469	ALL
INTERNAL VISUAL INSPECTION	EIA-RS 469 PARA, 4.2 THRU 5.10	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-3

CAPACITOR, MICA

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.3

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.3.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 5.3.1.3	50% ROUND UP
INTERNAL VISUAL INSPECTION	PARA. 5.3.1.4	50% ROUND UP
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATE	PARA. 5.3.1.5	REMAINING SAMPLES
CROSS SECTION	PARA. 5.3.1.5	REMAINING SAMPLES
INTERNAL VISUAL INSPECTION	PARA. 5.3.3	REMAINING SAMPLES
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-4

CAPACITOR, SOLID TANTALUM

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.4

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.4.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
CROSS SECTION	PARA. 5.4.1.3	50% ROUND UP
INTERNAL VISUAL INSPECTION	PARA. 5.4.1.3 AND 5.4.3	50% ROUND UP
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DISASSEMBLY	PARA. 5.4.1.4	REMAINING DEVICES
INTERNAL VISUAL INSPECTION	PARA. 5.4.3	REMAINING DEVICES
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-5

CAPACITOR, FIXED TANTALUM FOIL

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.5

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 5.4.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DISASSEMBLY	PARA. 5.5.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 5.5.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-6

CAPACITOR, PAPER OR PLASTIC FILM

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.6

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 5.6.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DISASSEMBLY	PARA. 5.6.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 5.6.1.4 AND 5.6.3 1/	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
ENGINEERING REVIEW		

NOTES: 1/ PULL TEST OPTIONAL, USED ONLY TO ENSURE THERE ISN'T A COLD SOLDER JOINT.

DPA PLANNING SHEET APPENDIX A-7

CAPACITOR, METALLIZED FILM

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.7

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.7.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DISASSEMBLY	PARA. 5.7.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 5.7.1.4 AND 5.7.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATE	PARA. 5.7.1.3	ALL HEADERS
CROSS SECTION	PARA. 5.7.1.3	ALL HEADERS
INTERNAL VISUAL INSPECTION	PARA. 5.7.1.3	ALL HEADERS
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-8

CAPACITOR, WET TANTALUM

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.8

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.8.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
HERMETICITY TESTING	PARA. 5.8.1.2	ALL
DISASSEMBLY	PARA. 5.8.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 5.8.3 AND 5.8.3.1	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-9

CAPACITOR, FIXED GLASS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.9

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 5.9.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATION	PARA. 5.9.1.3	ALL
CROSS SECTION	PARA. 5.9.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 5.9.2 AND 5.9.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX A-10

CAPACITOR, VARIABLE PISTON

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 5.10

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 5.10.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
PISTON ROTATION TEST	PARA. 5.10.1.1	ALL
DISASSEMBLY	PARA. 5.10.1.3 AND 5.10.1.4 A, B, OR C	ALL BUT ONE
INTERNAL VISUAL INSPECTION	PARA. 5.10.3 AND 5.10.3.1	ALL BUT ONE
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATE	PARA. 5.10.1.5	ONE
CROSS SECTION	PARA. 5.10.1.5	ONE
INTERNAL VISUAL INSPECTION	PARA. 5.10.3 AND 5.10.3.1	ONE
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX B-1

CONNECTORS/CONTACTS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 6.1

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 6.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
PLATING ADHESION	PARA. 6.1.1.4 d	ONE PIN ON ALL SAMPLES
ENCAPSULATE 1/	PARA. 6.2.1.2.1	ALL
CROSS SECTION 1/	PARA. 6.2.1.2.1	ALL
PLATING THICKNESS VERIFICATION 1/	PARA. 6.2.1.2.1	ALL
INTERNAL VISUAL	PARA. 6.2.1.2.1 AND 6.3.1.2	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5 & ONE 1000X PHOTO OF EACH PLATING MEASURED	ALL
ENGINEERING REVIEW		

NOTES: 1/ DETERMINE THE PLATING THICKNESS ON CASE AND CONTACTS AS APPLICABLE, AND VERIFY THEM IN ACCORDANCE WITH THE APPROPRIATE PROCUREMENT SPECIFICATION.

DPA PLANNING SHEET APPENDIX C-1

QUARTZ CRYSTALS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 7

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 7.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DELID	PARA. 7.1.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 7.1.1.4 AND 7.1.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX D-1

DIODE, GLASS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 8.1

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 8.1.1.2	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
PAINT REMOVAL	STANDARD LAB PROCEDURE	ALL
INTERNAL VISUAL INSPECTION	PARA. 8.1.1.6	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
HERMETICITY (ONLY IF LOW GLASS SEAL NOTED AT INTERNAL VISUAL)	MIL-STD-750 METHOD 1071 COND E (DYE PENETRANT)	AS NECESSARY
ENCAPSULATE	PARA. 8.1.1.5 (EIA-RS 469)	TWO MINIMUM
Scribe and Brake per MIL-STD-750, method 2101, paragraph 5.2. 1/	PARA. 8.1.1.5 SEE 1/ THREE SECTION PLANES	TWO MINIMUM
INTERNAL VISUAL 1/ INSPECTION	PARA. 8.1.1.6 SEE NOTE 1/ CRITERIA	TWO MINIMUM
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	TWO MINIMUM
ENGINEERING REVIEW		

NOTES: 1/ THREE PLANES OF CROSS-SECTION WILL BE PERFORMED ON EACH DEVICE PARALLEL TO THE LEAD AXIS. THESE PLANES WILL BE AT 25%, 50%, AND 75% OF THE WAY THROUGH THE DIE. AT EACH PLANE, THE DIE ATTACHMENT WILL BE EVALUATED FOR VOIDING IN THE WIDTH. THE PERCENTAGE VOIDING AT EACH LEVEL WILL BE NOTED AND AN AVERAGE TAKEN AT THE COMPLETION OF THE THIRD PLANE. AN AVERAGE WIDTH OF LESS THAN 50% DIE ATTACHMENT WILL BE CAUSE FOR REJECTION. OVERALL DIE PHOTOS WILL BE TAKEN AT EACH LEVEL OF SECTIONING ON ALL DEVICES SECTIONED. IN ADDITION ONE TYPICAL OVERALL VIEW OF A SECTIONED DEVICE WILL BE PROVIDED.

DPA PLANNING SHEET APPENDIX E-1

EMI FEED THROUGH FILTERS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 9

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 9.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATION (PLANE 1) LONGITUDINAL	PARA. 9.1.1.3	50% ROUND UP
ENCAPSULATION (PLANE 2) TRANSVERSE	PARA. 9.1.1.3	REMAINING DEVICES
CROSS SECTION	PARA. 9.1.1.3	ALL
INTERNAL VISUAL INSPECTION	PARA. 9.1.1.4 AND 9.1.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX F-1

MAGNETIC DEVICES, INDUCTORS, AND TRANSFORMERS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 10.1

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 10.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
RADIOGRAPHY	PARA. 10.1.1.3 (3 VIEWS)	ALL
DECAPSULATION STEP 1 STEP 2	PARA. 10.1.1.4	ALL
INTERNAL VISUAL INSPECTION 1/	PARA. 10.1.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
HIGH TEMPERATURE 2/ SOLDER VERIFICATION	PARA. 5.1.1.4	ONE
ENGINEERING REVIEW		

NOTES: 1/ THE INTERNAL VISUAL INSPECTION CRITERIA OF MIL-STD-1580 WILL BE UTILIZED IN CONJUNCTION WITH AND WILL BE SUPERSEDED BY MIL-T-27 AND MIL-STD-981 WHEN APPLICABLE.

2/ VERIFY THAT HIGH TEMPERATURE SOLDER WAS UTILIZED ON THE LAST SOLDER JOINT TO THE EXTERNAL LEAD. USE TECHNIQUES STATED IN PARA. 5.1.1.4.

DPA PLANNING SHEET APPENDIX F-2

MAGNETIC DEVICES, RF COILS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 10.2

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 10.2.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 10.2.1.3	50% ROUND UP
INTERNAL VISUAL INSPECTION	PARA. 10.2.1.4	50% ROUND UP
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATION	PARA. 10.2.1.5	REMAINING SAMPLES
CROSS SECTION	PARA. 10.2.1.5	REMAINING SAMPLES
INTERNAL VISUAL INSPECTION	PARA. 10.2.3 AND 10.2.3.1	REMAINING SAMPLES
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX G-1

MICROCIRCUIT

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 11/MIL-STD-883 METHOD 5009

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-883 METHOD 2009	ALL
EXTERNAL PHOTODOCUMENTATION	MIL-STD-1580 PARA. 4.5	ONE MINIMUM
RGA	MIL-STD-883 METHOD 1018	ONE DEVICE PROVIDED IN ADDITION TO THE DPA SAMPLES
DELID	MIL-STD-883 METHOD 5009 PARA. 3.6	ALL
INTERNAL VISUAL INSPECTION	MIL-STD-883 METHOD 2010 COND. A	ALL
INTERNAL PHOTODOCUMENTATION	1 8X10 INCH COLOR PHOTO OF DIE, 1 OVERALL PHOTO OF DIE CAVITY.	ONE MINIMUM
BOND PULL TESTING	MIL-STD-883 METHOD 2011	ALL
GLASSIVATION REMOVAL	STANDARD LABORATORY PROCEDURE	50% ROUND UP
SEM ANALYSIS 1/	MIL-STD-883 METHOD 2018	50% ROUND UP
DIE SHEAR TESTING	MIL-STD-883 METHOD 2019	ALL
ENGINEERING REVIEW		

NOTES: 1/ PHOTODOCUMENTATION REQUIRED ON ONE DEVICE ONLY. PHOTOGRAPHS WILL BE REPRESENTATIVE OF WORST CASE CONDITIONS NOTED. TWO PHOTOS ARE REQUIRED PER LAYER OF METALLIZATION EXAMINED IN ADDITION TO ONE GENERAL METALLIZATION PHOTO. IF ANOMALOUS CONDITIONS ARE NOTED ADDITIONAL DOCUMENTATION IS REQUIRED.

DPA PLANNING SHEET APPENDIX G-2

HYBRID MICROCIRCUIT

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 11/MIL-STD-883 METHOD 5009

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-883 METHOD 2009	ALL
EXTERNAL PHOTODOCUMENTATION	MIL-STD-1580 PARA. 4.5	ONE MINIMUM
RGA	MIL-STD-883 METHOD 1018	ONE DEVICE (DEVICE TO BE USED IN REST OF ANALYSIS)
DELID	MIL-STD-883 METHOD 5009 PARA. 3.6	ALL
INTERNAL VISUAL INSPECTION	MIL-STD-883 METHOD 2017 COND. A	ALL
INTERNAL PHOTODOCUMENTATION	1 8X10 INCH COLOR PHOTO OF ENTIRE CAVITY OF DEVICE	ONE MINIMUM
BOND PULL TESTING	MIL-STD-883 METHOD 2011	ALL (ALL WIRES)
GLASSIVATION REMOVAL	STANDARD LABORATORY PROCEDURE	50% ROUND UP
SEM ANALYSIS 1/	MIL-STD-883 METHOD 2018	50% ROUND UP
DIE SHEAR TESTING	MIL-STD-883 METHOD 2019	ALL
PASSIVE ELEMENT SHEAR TESTING 2/	MIL-STD-883 METHOD 2019 & NOTE 2/	ALL
ENGINEERING REVIEW		

NOTES: 1/ PHOTODOCUMENTATION REQUIRED ON ONE EACH DIFFERENT DIE TYPE/TOPOGRAPHY WITH EXPANDED METALLIZATION WITHIN ONE HYBRID. EVERY DIE WITHIN EACH DEVICE SHALL BE INSPECTED FOR METALLIZATION COVERAGE. PHOTOGRAPHS WILL BE REPRESENTATIVE OF WORST CASE CONDITIONS NOTED. TWO PHOTOS ARE REQUIRED PER LAYER OF METALLIZATION EXAMINED IN ADDITION TO ONE GENERAL METALLIZATION PHOTO. IF ANOMALOUS CONDITIONS ARE NOTED, ADDITIONAL DOCUMENTATION IS REQUIRED.

2/ PASSIVE ELEMENT SHEAR SHALL BE PERFORMED IN ACCORDANCE WITH THE ATTACHED TEST PROCEDURE AND CRITERIA.

APPENDIX G-2

PASSIVE ELEMENT SHEAR TESTING

All passive elements within the hybrid cavity shall be shear tested as feasible in accordance with MIL-STD-883 Method 2019 except as noted below:

1. The acceptance criteria will be the 1.0 X force level of Method 2019 only. This is due to the fact that Method 2019 does not take into account polymeric or glass attachment materials for silicone or non silicon elements within hybrid devices. If the 1.0 X force level criteria are met then the results will be considered acceptable.

2. The shear force will be applied as stated in Method 2019 in a plane perpendicular to the longest axis of the passive element. The attachment area will be defined by measuring the actual possible area of attachment to a device as practical for its design. For example: a ceramic chip capacitor is typically attached at its end metallization areas. The attachment area would be obtained by measuring one of those end metal areas optically from an incident angle. This value would then be multiplied by two to obtain the attachment area prior to testing. Staking material beneath the capacitor body will not be measured as it is commonly used to ensure adequate mechanical support but is not typically required for attachment purposes. If any element has been intentionally attached by its total bottom surface area, the that area will be considered the attachment area for the proposes of this evaluation.

3. The elements will be sheared to separation from the substrate in order to provide more complete quantitative results useful in further evaluations and assessments of the device.

4. Care shall be noted to ensure that all anomalous conditions have been resolved prior to shear testing and destruction of the evidence.

DPA PLANNING SHEET APPENDIX H-1

RELAYS

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 12

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 12.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DELID 1/	PARA. 12.1.1.4	ALL
INTERNAL VISUAL INSPECTION	PARA. 12.1.1.6a, c-g & NOTES 2/, 3/	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
WELD PULL TEST	PARA. 12.1.1.6f	ALL
HIGH TEMPERATURE SOLDER VERIFICATION 4/	PER NOTE 4/	ONE
ENGINEERING REVIEW		

NOTES: 1/ PARAGRAPH 12.1.1.5 OF MIL-STD-1580A (MICROCLEANLINESS INSPECTION) HAS BEEN REMOVED INTENTIONALLY BY THIS DRAWING.

2/ PARAGRAPH 12.1.1.6b OF MIL-STD-1580A HAS BEEN REMOVED INTENTIONALLY BY THIS DRAWING.

3/ VERIFY THAT THE COIL WIRE DIAMETER IS LARGER THAN 44 AWG.

4/ VERIFY THAT HIGH TEMPERATURE SOLDER WAS UTILIZED ON THE EXISTING SOLDER JOINT IF APPLICABLE. USE METHODS DEFINED IN MIL-STD-1580A PARA. 5.1.1.4

DPA PLANNING SHEET APPENDIX I-1

RESISTOR METALLIZED FIXED FILM

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 13.3

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 13.3.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 13.3.1.3.1 AND PARA. 13.3.1.3.2 A OR B	ALL
INTERNAL VISUAL INSPECTION	PARA. 13.3.2	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
END CAP REMOVAL	PARA. 13.3.1.4	ALL
SEM EXAMINATION	AS REQUIRED PER PARA. 13.3.1.3.1	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX I-2

RESISTOR, METAL FOIL

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 13.4

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 13.3.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 13.4.1.4 A OR B	ALL
INTERNAL VISUAL INSPECTION	PARA. 13.4.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX I-3

RESISTOR NETWORK

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 13.6

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 13.6.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
PULL TEST (MOLDED PACKAGE STYLES ONLY)	PARA. 13.6.1.3	1/3 OF SAMPLES
DELID/DECAPSULATION	PARA. 13.6.1.4 A THRU D	ALL
INTERNAL VISUAL INSPECTION	PARA. 13.6.1.5 AND 13.6.3 THRU 13.6.3.7	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
BOND PULL TESTING (IF APPLICABLE)	MIL-STD-883 METHOD 2011 COND. D	ALL
PASSIVE ELEMENT SHEAR (IF APPLICABLE)	SSQ 25000 APPENDIX G-2	ALL
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX I-4

RESISTOR, WIREWOUND ACCURATE

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 13.7

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 13.7.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 13.7.1.2.2	2/3 OF SAMPLES
INTERNAL VISUAL INSPECTION	PARA. 13.7.1.3 AND 13.7.3	2/3 OF SAMPLES
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
ENCAPSULATION	PARA. 13.7.1.2.1	1/3 OF SAMPLES
CROSS SECTION	PARA. 13.7.1.2.1	1/3 OF SAMPLES
INTERNAL VISUAL INSPECTION	PARA. 13.7.1.3 AND 13.7.3	1/3 OF SAMPLES
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX I-5

RESISTOR, FIXED WIREWOUND

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 13.8

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 13.8.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION/ DISASSEMBLE	PARA. 13.8.1.2.1 OR 13.8.1.2.2	ALL
INTERNAL VISUAL INSPECTION	PARA. 13.8.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX I-6

RESISTOR, FIXED CHIP

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 13.5

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 13.5.1.1 & 13.5.3	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX J-1

SWITCH, SNAP ACTION

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 14.1

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 14.1.1.2 A, B, C, & D	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DISASSEMBLY	PARA. 14.1.1.4	ALL
INTERNAL VISUAL INSPECTION	PARA. 14.1.1.5 A THRU D	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.6	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX J-2

THERMAL SWITCH

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 14.2

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 14.2.1.2	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DELID 1/	PARA. 14.2.1.4	ALL
INTERNAL VISUAL INSPECTION	PARA. 14.2.1.6	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES: 1/ PARAGRAPH 14.2.1.5 OF MIL-STD-1580A (MICROCLEANLINESS INSPECTION) HAS BEEN INTENTIONALLY REMOVED FROM THIS DRAWING.

DPA PLANNING SHEET APPENDIX K-1

THERMISTOR, GLASS BODIED, HERMETIC

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 15.1

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	MIL-STD-1580 PARA. 15.1.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATION	PARA. 15.1.1.4	ALL
CROSS SECTION	PARA. 15.1.1.4	ALL
INTERNAL VISUAL INSPECTION	PARA. 15.1.1.5 AND 5.1.3	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX K-2

THERMISTOR, DISC AND BEAD, ENCAPSULATED

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 15.2

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PARA. 15.2.1.1	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
DECAPSULATION	PARA. 15.2.1.3	50% ROUND UP
INTERNAL VISUAL INSPECTION	PARA. 15.2.1.4 AND 15.2.3	50% ROUND UP
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENCAPSULATION	PARA. 15.2.1.3 AND 15.2.1.4	REMAINING SAMPLES
CROSS SECTION	PARA. 15.2.1.3 AND 15.2.1.4	REMAINING SAMPLES
INTERNAL VISUAL INSPECTION	PARA. 15.2.1.4 AND 15.2.3	REMAINING SAMPLES
INTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

DPA PLANNING SHEET APPENDIX L-1

TRANSISTORS & METAL CAN DIODES

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

MIL-STD-1580 REV. A SEC 16/MIL-STD-750/MIL-STD-883

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	16.1.1.2	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5	ONE MINIMUM
P.I.N.D. TESTING 1/	MIL-STD-750 METHOD 2052	ALL
RGA	MIL-STD-883 METHOD 1018	ONE DEVICE PROVIDED IN ADDITION TO THE DPA SAMPLES
DELID	PARA. 16.1.1.5	ALL
INTERNAL VISUAL INSPECTION 2/	MIL-STD-750 METHOD 2072.2 OR 2074	ALL
INTERNAL PHOTODOCUMENTATION	ONE OVERALL DIE PHOTO, ONE OVERALL DIE CAVITY PHOTO	ONE MINIMUM
BOND PULL TESTING	MIL-STD-750 METHOD 2037	ALL
GLASSIVATION REMOVAL	STANDARD LABORATORY PROCEDURE	50% ROUND UP
SEM ANALYSIS 3/	MIL-STD-750 METHOD 2077	50% ROUND UP
DIE SHEAR TESTING	MIL-STD-750 METHOD 2017	ALL
ENGINEERING REVIEW		

NOTES: 1/ P.I.N.D TESTING IS REQUIRED ONLY ON POWER DEVICES IN METAL CANS THAT DISSIPATE MORE THAN 5 WATTS OF POWER AND SHALL BE IDENTIFIED AS SUCH BY THE TIER I OR SUBTIER CONTRACTOR.

2/ FOR TRANSISTORS REFER TO MIL-STD-750, METHOD 2072: FOR METAL CAN DIODES REFER TO MIL-STD-750, METHOD 2074.

3/ PHOTODOCUMENTATION REQUIRED ON ONE DEVICE ONLY. PHOTOGRAPHS WILL BE REPRESENTATIVE OF WORST CASE CONDITIONS NOTED. TWO PHOTOS

ARE REQUIRED OF WORST METALLIZATION STEPS ALONG WITH ONE GENERAL METALLIZATION PHOTOGRAPH.

DPA PLANNING SHEET APPENDIX M-1

THICK FILM FUSES

DPA TESTING PERFORMED IN ACCORDANCE WITH THE FOLLOWING DOCUMENT(S):

SSQ 25000

TASK DESCRIPTION AND SEQUENCE	DOCUMENT - METHOD AND CONDITION PERFORMED TO	QUANTITY PERFORMED ON WITHIN DPA SAMPLE
EXTERNAL VISUAL INSPECTION	PER APPLICABLE REQUIREMENTS OF MIL-F-23419	ALL
EXTERNAL PHOTODOCUMENTATION	PARA. 4.5 OF MIL-STD-1580A	ONE MINIMUM
RADIOGRAPHY (REFERENCE ONLY)		
DELID	SSQ 25000 TEST PROCEDURE PARA. 3.0	ALL
INTERNAL VISUAL INSPECTION	SSQ 25000 TEST PROCEDURE PARA. 4.0	ALL
INTERNAL PHOTODOCUMENTATION	PARA. 4.5 OF MIL-STD-1580A	ONE MINIMUM
ENGINEERING REVIEW		

NOTES:

APPENDIX M-2

THICK FILM FUSE DPA TESTING REQUIREMENTS

1. EXTERNAL VISUAL INSPECTION. Examine the fuse for defects in the external construction in accordance with the applicable requirements of MIL-F-23419 as applicable.

2. RADIOGRAPHY. Perform radiography in two perpendicular planes to determine the orientation of the substrate in the case for reference as delidding.

3. DELID. Lap the case material of sample unit to the surface of the substrate opposite the lead attachments and examine them at 10X minimum power magnification as follows:

3.1. Inspect the deposited resistance element for adequacy of adhesion to the substrate.

3.2. Inspect the metallization bonding areas for adequacy of alignment and adhesion to the resistance element.

3.3. Remove remaining case material with a suitable chemical depotting agent and inspect the lead solder connections for smoothness and proper wetting.

4. INSPECTION CRITERIA. There shall be no evidence of:

4.1. Cracks in the resistance element.

4.2. lifting of the resistance element.

4.3. Inadequate alignment of the metallization bonding area.

4.4. Inadequate adhesion of the metallization bonding areas to the resistance element.

4.5. There shall be no evidence of cracks in the solder joints.