QUALIFICATIONS VALIDATED
ANNUALLY

QML-31032-7
25 January 2000
SUPERSEDING
QML-31032-6
9 November 1999

QUALIFIED MANUFACTURERS LIST

OF

PERFORMANCE SPECIFICATION

MIL-PRF-31032

PRINTED CIRCUIT BOARDS / PRINTED WIRING BOARDS

GENERAL SPECIFICATION FOR

This list has been prepared for use by or for the Government in the acquisition of printed circuit boards / printed wiring boards (hereafter referred to as printed boards) covered by Department of Defense Performance Specification MIL-PRF-31032. Listing of a manufacturer is not intended to and does not connote endorsement of the manufacturer by the Department of Defense. All listings herein have been qualified under the requirements as specified in the latest effective issue of MIL-PRF-31032. This list is subject to change without notice; revision or amendment of this list will be issued as necessary. The listing of a manufacturer does not in any way release the manufacturer from compliance with the individual item specification requirements.

THE ACTIVITY RESPONSIBLE FOR THIS QML IS THE DEFENSE SUPPLY CENTER COLUMBUS (DSCC-VQ), COLUMBUS, OH 43216-5000.

If a manufacturer desires to have test data considered for qualification, it must be certified and meet all qualification test requirements of MIL-PRF-31032 and the applicable associated specification.

The listing of printed board manufacturing lines in the QML applies only to printed boards produced in the plant(s) specified herein. Therefore, only those printed boards that have been manufactured and tested within the United States and its territories and as provided by international agreement(s) establishing reciprocal and equivalent quality systems and procedures, can be supplied as QML printed boards.

QML-31032 is available from the DSCC-VQ World Wide Web pages at the following addresses:

Web pages: http://www.dscccols.com/offices/sourcing_and_qualification/

QML: http://www.dscccols.com/programs/qmlqpl/QPLdetail.asp?QPL=31032

QML is a definition of a manufacturer's verified capabilities. Manufacturers may use the add-on qualification process to qualify capabilities that are not currently listed on the QML. The user is encouraged to contact the manufacturer or DSCC to make arrangements for QML availability.

SECTION I

LIST OF MANUFACTURERS BY ASSOCIATED SPECIFICATION

MIL-PRF-31032/1 - Printed Wiring Board, Rigid, Multilayered, Woven E-Glass Reinforced Thermosetting Resin Base Material, With Plated Through Holes, For Soldered Part Mounting.

Accudyne, Inc.
5800 McHines Place
Raleigh, NC 27616-1839

Dynamic & Proto Circuits, Inc.
869 Barton Street
Stoney Creek, Ontario L8E 566
Canada

Lockheed Martin Corp.
Missiles and Fire Control Orlando
5600 West Sandlake Road
Orlando, FL 32819-8907

Lockheed Martin Federal Systems, Inc.
1801 State Route 17C
Owego, NY 13827

Philway Products, inc.
701 Virginia Avenue
Ashland, OH 44806

Proto Circuit, Inc.
7 Ascot Parkway
Cuyahoga Falls, OH 44223

Raytheon Systems Company
P.O. Box 201155, MS 2110
Austin, TX 78720-1155

Teradyne Circuits Operation
4 Pittsburgh Avenue
Nashua, New Hampshire 03060

MIL-PRF-31032/2 - Printed Wiring Board, Rigid, Single and Double Layer, Woven E-Glass Reinforced Thermosetting Resin Base Material, With or Without Plated Through Holes, For Soldered Part Mounting.

Accudyne, Inc.
5800 McHines Place
Raleigh, NC 27616-1839

Dynamic & Proto Circuits, Inc.
869 Barton Street
Stoney Creek, Ontario L8E 566
Canada

Lockheed Martin Corp.
Missiles and Fire Control Orlando
5600 West Sandlake Road
Orlando, FL 32819-8907

Lockheed Martin Federal Systems, Inc.
1801 State Route 17C
Owego, NY 13827

Raytheon Systems Company
P.O. Box 201155, MS 2110
Austin, TX 78720-1155

Teradyne Circuits Operation
4 Pittsburgh Avenue
Nashua, New Hampshire 03060

SECTION I

LIST OF MANUFACTURERS BY ASSOCIATED SPECIFICATION

MIL-PRF-31032/3 - Printed Wiring Board, Flexible, Single and Double Layer, With or Without Plated Through Holes, With or Without Stiffeners, For Soldered Part Mounting.

Raytheon Systems Company
P.O. Box 201155, MS 2110
Austin, TX 78720-1155

Rigid / Flex Custom Qualification.

Raytheon Systems Company
P.O. Box 201155, MS 2110
Austin, TX 78720-1155

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 1JQF6
Accudyne, Inc. 5800 McHines Place Raleigh, NC 27616-1839	Same	CONTACT: Patrick J. Gardner PHONE #: 919-713-4872 FAX #: 919-876-6385 EMAIL:Accuengr@mindspring.com
CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1 MIL-PRF-31032/2		VQE-99-0871
Panel Size	18" X 24"	
Max. Board Thickness	0.090"	
Max/Min Hole Size	/0.010"	
Aspect Ratio	7:1	
Max. Number of Layers	8	
Min. Conductor Width	0.005"	
Min. Conductor Spacing	0.005"	
Part Mounting	SM, THM, COB	
Base Material	GF (Epoxy resin)	
Finish System	Fused SnPB Hot Air Solder Leveling	
Hole Preparation	Permanganate Desmear	
Copper Plating	Acid Copper	
Solder Resist	Liquid Photo Imagable, Dry Film	
	BGA Platform	
	250 volt testing max.	

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 38898
Dynamic & Proto Circuits, Inc. 869 Barton Street Stoney Creek, Ontario L8E 566 Canada	Same	CONTACT: Mr. Sal Sanchez PHONE #: 905-643-9900 FAX #: 905-643-9911 EMAIL: ssanchez@dapc.com

CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1		VQE-98-1143, VQE-00-0007
MIL-PRF-31032/2		
Panel Size	12"X18"	VQE-00-0007
Max. Board Thickness	0.072"	VQE-98-1143
Max/Min Hole Size	0.039"/0.018"	VQE-98-1143
Aspect Ratio	8:1	VQE-00-0007
Max. Number of Layers	10	VQE-98-1143
Min. Conductor Width	0.005"	VQE-98-1143
Min. Conductor Spacing	0.005"	VQE-98-1143, VQE-00-0007
Part Mounting	SM, THM, MIX	VQE-98-1143, VQE-00-0007
Base Material	GF (Woven E-Glass, Epoxy resin)	VQE-00-0007
	GI (Woven E-Glass, Polyimide resin)	VQE-98-1143
Finish System	Hot Air Solder Leveling	VQE-98-1143, VQE-00-0007
Hole Preparation	Plasma Etch	VQE-98-1143, VQE-00-0007
Copper Plating	Acid Copper	VQE-98-1143, VQE-00-0007
Solder Resist	Liquid Photoimagable	VQE-98-1143
	Dry film solder resist plugs	VQE-00-0007

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 09205
Lockheed Martin Corp. Missiles & Fire Control Orlando 5600 West Sandlake Road Orlando, FL 32819-8907	Same	CONTACT: Vijay Kumar PHONE #: 407-356-0282 FAX #: 407-356-8291 EMAIL: vijay.kumar@lmco.com CONTACT: Paul Rose PHONE #: 407-356-5537 EMAIL: paul.b.rose@lmco.com
CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1 MIL-PRF-31032/2		VQE-00-0193

Panel Size	12" X 18"
Max. Board Thickness	0.076"
Max/Min Hole Size	/0.052"/0.012"
Aspect Ratio	6:1
Max. Nuber of Layers	14
Min. Conductor Width	0.004"
Min. Conductor Spacing	0.005"
Part Mounting	SMT
Base Material	GF (Woven E-glass Epoxy Resin)
Finish System	Hot Air Solder Leveling
Hole Preparation	Plasma Desmear
Copper Plating	Electro-deposited Acid Copper
Solder Resist	Dry Film Photo Imageable, SMOBC

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 03640
Lockheed Martin Federal Systems, Inc. 1801 State Route 17C Owego, NY 13827	Same	CONTACT: Chris Conklin PHONE #: 607-751-4251 FAX #: 607-751-7714 EMAIL: c.j.conklin@lmco.com

CAPABILITIES BY TECHNOLOGY/PRINTEDBOARD TYPE:		QUALIFICATION LETTER:
MIL-PRF-31032/1, /2		VQE-99-0130
Panel Size	18" X 24"	
Max. Board Thickness	0.200"	
Max/Min Hole Size	/0.020"	
Aspect Ratio	8:1	
Max. Number of Layers	16	
Min. Conductor Width	0.004"	
Min. Conductor Spacing	0.004"	
Part Mounting	SMT, THM	
Base Material	GF (Woven E-glass Epoxy Resin) GI (Woven E-glass, Polyimide Resin)	
Finish System	Fused SnPb HASL Nickel Gold	
Hole Preparation	Permanganate Desmear/Plasma Etchback	
Copper Plating	Electro-deposited Copper	
Solder Resist	Liquid Photoimagable	

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 21971
Philway Products, Inc. 701 Virginia Avenue Ashland, OH 44806	Same	CONTACT: Ted Norris PHONE #: 419-281-7777 FAX #: 419-289-3447 EMAIL:chris@philway.com
CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1		VQE-99-1107

Panel Size	18" X 21"
Max. Board Thickness	0.090"
Max. Base Cu Thickness	0.002"
Max/Min Plated Hole Size	0.04410"/0.012
Aspect Ratio	4:1
Max. Number of Layers	12
Min. Conductor Width	0.005"
Min. Conductor Spacing	0.005"
Part Mounting	SM, THM, MIX
Base Material	GF (Woven E-Glass, Epoxy resin) GI (Woven E-Glass, Polyimide resin) GM (Woven E-Glass, Triazine and/or Bismaleimide Modified Epoxy resin)
Finish System	Hot Air Solder Leveling: IR Reflow following SnPb plate
Hole Preparation	Permanganate Desmear/Etchback
Copper Plating	Acid Copper
Solder Resist	Liquid Photoimagable

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 7Z463
Proto Circuit, Inc. 7 Ascot Parkway Cuyahoga Falls, OH 44223	Same	CONTACT: Peter Menuez PHONE #: 330-572-3400 FAX #: 330-572-3434 EMAIL: menuez@protocircuit.com
CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1		VQE-00-0289
Panel Size	18" X 24"	
Max. Board Thickness	0.126"	
Max/Min Hole Size	/0.017"	
Aspect Ratio	5:1	
Max. Number of Layers	16	
Min. Conductor Width	0.004"	
Min. Conductor Spacing	0.004"	
Part Mounting	SM/THM	
Base Material	GF (Woven E-glass Epoxy resin)	
Finish System	HASL	
Hole Preparation	Plasma Etchback	
Copper Plating	Acid Copper	

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 96214
Raytheon Systems Company P.O. Box 201155, MS 2110 Austin, TX 78720-1155	12501 Research Blvd. Austin, TX 78759	CONTACT: Roddy Scherff PHONE #: (512) 250-7538 FAX #: (512) 250-7010 EMAIL: r-scherff@raytheon.com

CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1 MIL-PRF-31032/2		VQE-97-0509 VQE-97-0718
Panel Size	18" X 24"	
Max. Board Thickness	0.150"	
Max/Min Hole Size	/0.010"	
Aspect Ratio	9:1	
Max. Number of Layers	20	
Min. Conductor Width	0.004"	
Min. Conductor Spacing	0.004"	
Part Mounting	THM, SM	
Base Material	BI (Nonwoven aramid reinforced polyimide resin) GF (Epoxy resin) GI (Polyimide resin)	
Finish System	Fused SnPB Hot Air Solder Leveling OSP Nickel Gold	
Hole Preparation	Plasma Desmear/Etchback	
Copper Plating	Acid Copper	
Solder Resist	Liquid Photo Imageable (spray coated and screen printed), Dry Film Photo Imageable, SMOBC	

MIL-PRF-31032/3		VQE-99-0935
Panel Size	18" X 24"	
Max/Min Hole Size	/0.010"	
Aspect Ratio	9:1	
Min. Conductor Width	0.004"	
Min. Conductor Spacing	0.004"	
Part Mounting	THM	
Flex Base Material	IPC-FC-241/1 IPC-FC-241/11	
Finish System	Fused SnPB, HAL, OSP, Nickel, Gold Immersion Silver	
Copper Plating	Electro-deposited Acid Copper	
Usage	Class A	

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 96214
		CONTACT: Roddy Scherff
Raytheon Systems Company P.O. Box 201155, MS 2110 Austin, TX 78720-1155	12501 Research Blvd. Austin, TX 78759	PHONE #: (512) 250-7538 FAX #: (512) 250-7010 EMAIL: r-scherff@ti.com
CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
Multilayer Rigid/Flex Construction (Custom)		VQE-99-0933
Panel Size	18" X 26"	
Max. Board Thickness	0.150"	
Max/Min Hole Size	/0.010"	
Aspect Ratio	9:1	
Max. Number of Layers	20	
Internal Connections	Blind Vias	
Min. Conductor Width	0.004"	
Min. Conductor Spacing	0.004"	
Part Mounting	THM, SM	
Rigid Base Material	GF (Epoxy resin) GI (Polyimide resin)	
Flex Base Material	IPC-FC-241/1 IPC-FC-241/11	
Finish System	Fused SnPb, HAL, OSP, Nickel Gold, Immersion Silver	
Copper Plating	Electro-deposited Acid Copper	
Solder Resist	UV-Cured Wet Screen	
Usage	Class A (Flex during installation)	

SECTION II

LIST OF MANUFACTURERS' QUALIFIED CAPABILITIES FOR EACH TECHNOLOGY

MANUFACTURER NAME & ADDRESS	PLANT LOCATION	CAGE CODE: 3T000
Teradyne, Inc. Connection Systems Division MS-124 4 Pittsburgh Avenue Nashua, New Hampshire 03062	Same	CONTACT: Mark Buechner PHONE #: 603-791-3832 FAX #: 603-791-3080 EMAIL:buechner.mark @tcs.teradyne.com
CAPABILITIES BY TECHNOLOGY / ASSOCIATED SPECIFICATION:		QUALIFICATION LETTER:
MIL-PRF-31032/1 MIL-PRF-31032/2		VQE-97-0649 VQE-97-0721
Panel Size	24" X 36"	
Max. Board Thickness	0.322"	
Max/Min Hole Size	/0.016"	
Aspect Ratio	8:1	
Max. Number of Layers	27	
Min. Conductor Width	0.004"	
Min. Conductor Spacing	0.004"	
Part Mounting	THM, Compliant Pin, SMT	
Base Material		
	GF (Epoxy resin)	
	GI (Polyimide resin)	
Finish System	Fused SnPB	
	Nickel	
	Gold	
Hole Preparation	Permanganate Desmear/Etchback	
Copper Plating	Acid Copper	
Solder Resist	Thermal cured soldermask and SMOBC	

SECTION III

ALPHABETICAL LIST OF QUALIFIED MANUFACTURERS

MANUFACTURER'S NAME & ADDRESS	PLANT LOCATION	OTHER INFORMATION
Accudyne, Inc. 5800 McHines Place Raleigh, NC 27616-1839	Same	CAGE CODE: 1JQF6 CONTACT: Patrick Gardner PHONE #: 919-713-4872 FAX #: 919-876-6385 EMAIL: Accuengr@mindspring.com
Dynamic & Proto Circuits, Inc. 869 Barton Street Stoney Creek, Ontario L8E 566 Canada	Same	CAGE CODE: 38898 CONTACT: Mr. Sal Sanchez PHONE #: 905-643-9900 FAX #: 905-643-9911 EMAIL: ssanchez@dapc.com
Lockheed Martin Corp. Missiles & Fire Control Orlando 5600 Sandlake Road Orlando, FL 32819-8907	Same	CAGE CODE: 09205 CONTACT: Vijay Kumar PHONE #: 407-356-0282 FAX #: 407-356-8291 EMAIL: vijay.kumar@lmco.com CONTACT: Paul Rose PHONE #: 407-356-5537 EMAIL: paul.b.rose@lmco.com CAGE CODE: 03640
Lockheed Martin Federal Systems, Inc. 1801 State Route 17C Owego, NY 13827	Same	CONTACT: Chris Conklin PHONE #: 607-751-4251 FAX #: 607-751-7714 EMAIL: c.j.conklin@lmco.com
Philway Products, Inc. 701 Virginia Avenue Ashland, OH 44806	Same	CAGE CODE: 21971 CONTACT: Ted Norris PHONE #: 419-281-7777 FAX #: 419-289-3447 EMAIL: chris@philway.com
Proto Circuit, Inc. 7 Ascot Parkway Cuyahoga Falls, OH 44223	Same	CAGE CODE: 7Z463 CONTACT: Peter Menuez PHONE #: 330-572-3400 FAX #: 330-572-3434 EMAIL: menuez@protocircuit.com
Raytheon Systems Company P.O. Box 201155, MS 2110 Austin, TX 78720-1155	12501 Research Blvd. 78759 Austin, TX 78759	CAGE CODE: 96214 CONTACT: Roddy Scherff PHONE #: (512) 250-7538 FAX #: (512) 250-7010 EMAIL: r-scherff@raytheon.com
Teradyne, Inc. Connection Systems Division MS-124 4 Pittsburgh Avenue Nashua, New Hampshire 03062	Same	CAGE CODE: 3T000 CONTACT: Mark Buechner PHONE #: 603-791-3832 FAX #: 603-791-3080 EMAIL:buechner.mark @tcs.teradyne.com