

## Part Submission Warrant

Part Name SHEILD HOUSING HAND MATE, 26 POSITION GEN Y Cust. Part Number 1924141-1  
Shown on Drawing No. TE Customer Print -1924141 Org. Part Number 1924141-1  
Engineering Change Level A3 Dated 03.18.2013  
Additional Engineering Changes N/A Dated N/A  
Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. N/A Weight (kg) 0.002275  
Checking Aid Number N/A Checking Aid Engineering Change Level N/A Dated N/A

## ORGANIZATION MANUFACTURING INFORMATION

## TE CONNECTIVITY

Supplier Name &amp; Supplier/Vendor Code

719 Pegg Road Plant

Street Address

Greensboro N.C 27409  
City Region Postal Code Country

## CUSTOMER SUBMITTAL INFORMATION

Nursan Kablo Donanimlari

Customer Name/Division

n/a

Buyer/Buyer Code

Various

Application

## MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☐ Yes ☒ No ☐ N/A

Submitted by IMDS or other customer format:

Are polymeric parts identified with appropriate ISO marking codes?

☒ Yes ☐ No ☐ N/A

## REASON FOR SUBMISSION

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Initial submission                                | <input type="checkbox"/> Change to Optional Construction or Material |
| <input type="checkbox"/> Engineering Change(s)  | <input type="checkbox"/> Sub-Supplier or Material Source Change      |
| <input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional | <input type="checkbox"/> Change in Part Processing                   |
| <input type="checkbox"/> Correction of Discrepancy                                    | <input type="checkbox"/> Parts produced at Additional Location       |
| <input type="checkbox"/> Tooling Inactive > than 1 year                               | <input type="checkbox"/> Other - please specify                      |

## REQUESTED SUBMISSION LEVEL (Check one)

- ☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.  
☒ Level 2 - Warrant with product samples and limited supporting data submitted to customer.  
☐ Level 3 - Warrant with product samples and complete supporting data submitted to customer.  
☐ Level 4 - Warrant and other requirements as defined by customer.  
☐ Level 5 - Warrant with product samples and complete supporting data reviewed at supplier's manufacturing location.

## SUBMISSION RESULTS

The results for ☒ dimensional measurements ☒ material and functional tests ☐ appearance criteria ☐ statistical process packageThese results meet all design record requirements: ☒ YES ☐ NO (If "NO" - Explanation Required)Mold / Cavity / Production Process Molding Process

## DECLARATION

I affirm that the samples represented by this warrant are representative of our parts, which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at a production rate of 8,640 /24 hours.  
I also certify that the documented evidence of such compliance is on file and available for review. I have noted any deviation from the declaration below.

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered?

☒ Yes ☐ No

Organization Authorized Signature

David W. Wilson04.18.2017Print Name David W. WilsonPhone No. 336-665-4428Fax No. 336-665-4571Title QualityE-mail dwwilson@te.com

## FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature

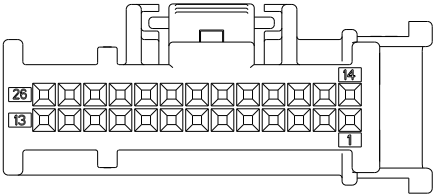
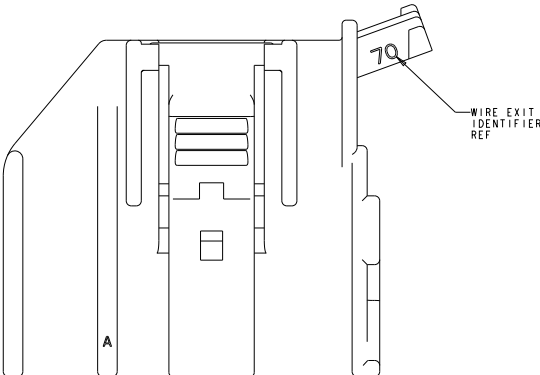
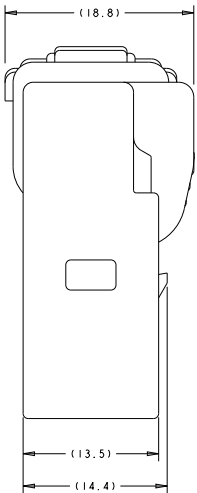
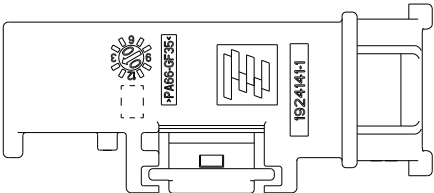
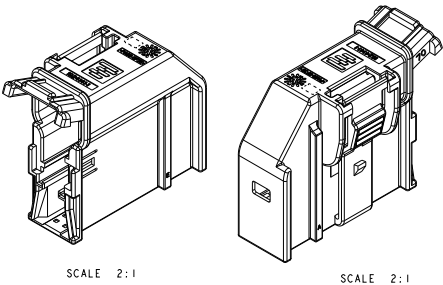
Date

Print Name

Customer Tracking Number (optional)

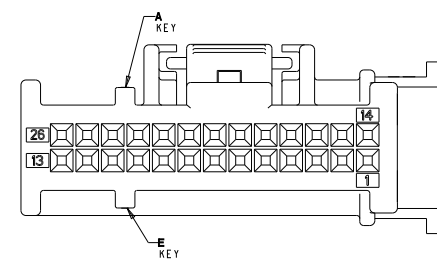
LOC		REV		REVISIONS			
IN	00	LN	DESCRIPTION	DATE	BY	APP	
		A2	REVISED PER ECO-08-022333	04SEP2008	DLD	CJS	
		A3	REVISED PER ECO-13-004668	10MAR2013	DLD	CJS	

△ MATERIAL: SHIELD HOUSING: NYLON 6/6,  
COLOR - SEE TABLE.



PRELIMINARY - NOT RELEASED FOR PRODUCTION	NATURAL	70°0'	PER DETAIL AE	A-E	1-1924141-0
PRELIMINARY - NOT RELEASED FOR PRODUCTION	BLUE	20°0'	PER DETAIL BF	B-F	1924141-9
PRELIMINARY - NOT RELEASED FOR PRODUCTION	GRAY	20°0'	PER DETAIL BE	B-E	1924141-8
RELEASED	BLACK	20°0'	PER DETAIL AE	A-E	1924141-7
PRELIMINARY - NOT RELEASED FOR PRODUCTION	BLUE	45°0'	PER DETAIL BF	B-F	1924141-6
PRELIMINARY - NOT RELEASED FOR PRODUCTION	GRAY	45°0'	PER DETAIL BE	B-E	1924141-5
PRELIMINARY - NOT RELEASED FOR PRODUCTION	BLACK	45°0'	PER DETAIL AE	A-E	1924141-4
RELEASED	BLUE	70°0'	PER DETAIL BF	B-F	1924141-3
RELEASED	GRAY	70°0'	PER DETAIL BE	B-E	1924141-2
RELEASED	BLACK	70°0'	PER DETAIL AE	A-E	1924141-1
STATUS	COLOR REF	WIRE EXIT ANGLE	KEYING	KEYING OPTION	PART NUMBER

THIS DRAWING IS A CONTROLLED DOCUMENT.		OWN	R. BARRER	17MAR2008	NAME	TE Connectivity
DIMENSIONS:		CD	R. HETRICK	17MAR2008	SHIELD HOUSING, 26 POSITION, GENERATION Y, 0.64mm LAC	
mm		APD	R. HETRICK	17MAR2008	SIZE   CASE CODE (DRAWING NO)   RESTRICTED TO	
TO DIMENSIONS UNLESS OTHERWISE SPECIFIED:		PRODUCT SPEC			A   00779   1924141	
APPLICATION SPEC					SCALE 4:1 SHEET 1 OF 2	
MATERIAL		WEIGHT			REV A3	
FINISH		CUSTOMER DRAWING				



DETAIL AE



PRODUCT / TOOLING APPROVAL LAB  
WINSTON-SALEM N.C.

AUTHOR : Reggie McCraw  
REQUEST : 201608.061  
PART DESC. : Shield Housing Hand Mate 26 Position  
PART : 1924141-1  
TOOL : 487169  
CAVITY : A1,A2,A3,A4  
PRINT REV. : A3  
METHOD : Scope # T2993-0005  
VENDOR : N/A / David Wilson  
DATE : 8/06/2016  
FILENAME : 08061P00.xls

\*\* ALL DIMENSIONS IN MILLIMETERS \*\*

LABEL = MEASUREMENT LABEL  
DESC = FEATURE DESCRIPTION  
NOM.VAL = NOMINAL VALUE  
UPPER = UPPER TOLERANCE OR UPPER LIMIT OF A RANGE  
LOWER = LOWER TOLERANCE OR LOWER LIMIT OF A RANGE  
HM = HOW MEASURED DEVICE  
ACT.VAL = ACTUAL MEASURED VALUE  
DEV>TOL = DEVIATION GREATER THAN UPPER OR LOWER TOLERANCE

\*\*NOTES\*\*

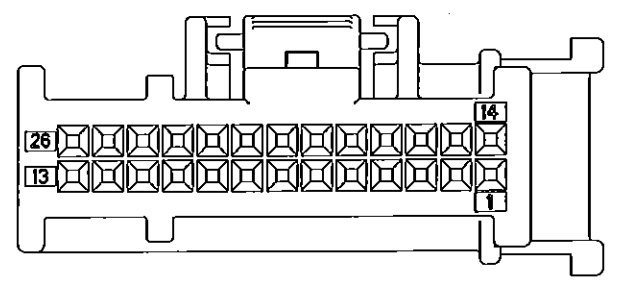
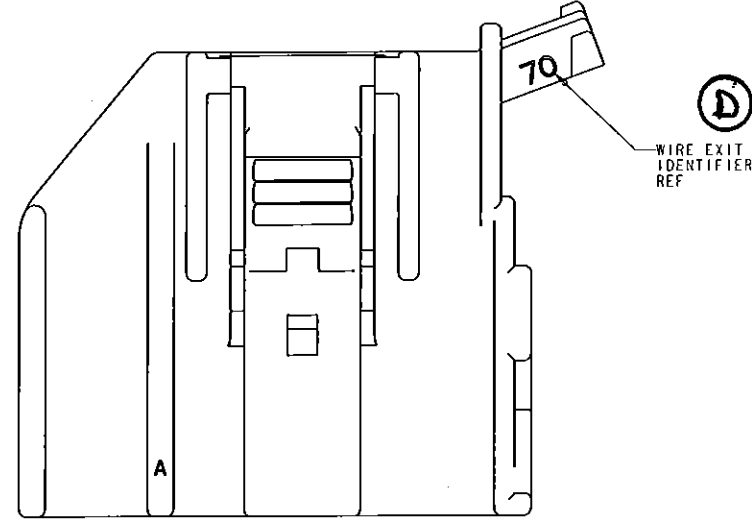
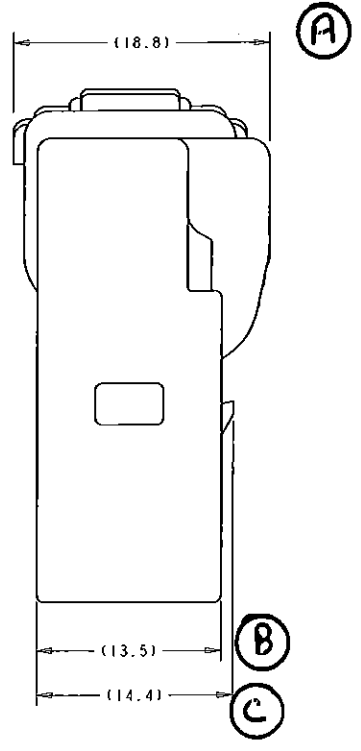
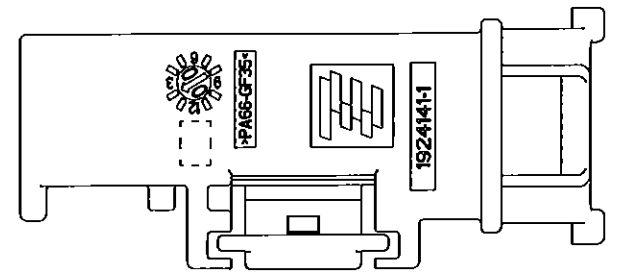
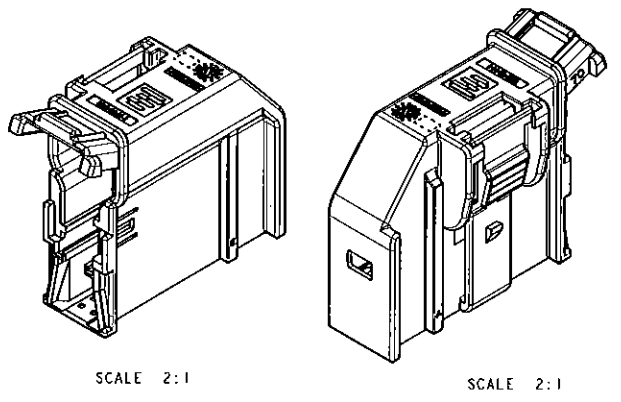
Indi Id # 757098-9z

## PTA LAB

LABEL	DESC	NOMINAL	UPPER	LOWER	FN	HM	ACTUAL	DEV>TOL
			<b>Cavity</b>	<b>A1</b>				
<b>A</b>		18.800	Ref.		LXX	SCOP	18.689	
<b>B</b>		13.500	Ref.		LX0	SCOP	13.509	
<b>C</b>		14.400	Ref.		LX0	SCOP	14.077	
<b>D</b>	Wire	Exit	Identifier	MAE	Visu	Present		
			<b>Cavity</b>	<b>A2</b>				
<b>A</b>		18.800	Ref.		LXX	SCOP	18.670	
<b>B</b>		13.500	Ref.		LX0	SCOP	13.485	
<b>C</b>		14.400	Ref.		LX0	SCOP	14.024	
<b>D</b>		33.500	Ref.		DZI	INDI	33.724	
<b>E</b>	Wire	Exit	Identifier	MAE	Visu	Present		
			<b>Cavity</b>	<b>A3</b>				
<b>A</b>		18.800	Ref.		LXX	SCOP	18.680	
<b>B</b>		13.500	Ref.		LX0	SCOP	13.484	
<b>C</b>		14.400	Ref.		LX0	SCOP	14.041	
<b>D</b>		33.500	Ref.		DZI	INDI	33.695	
<b>E</b>	Wire	Exit	Identifier	MAE	Visu	Present		
			<b>Cavity</b>	<b>A4</b>				
<b>A</b>		18.800	Ref.		LXX	SCOP	18.697	
<b>B</b>		13.500	Ref.		LX0	SCOP	13.481	
<b>C</b>		14.400	Ref.		LX0	SCOP	14.048	
<b>D</b>		33.500	Ref.		DZI	INDI	33.669	
<b>E</b>	Wire	Exit	Identifier	MAE	Visu	Present		

REV. NO.		REVISIONS			
REV.	DATE	DESCRIPTION	DATE	BY	APPV
A2	11/24/2008	REVISED PER ECO-08-022333	11/24/2008	DLD	CJS
A3	10/02/2011	REVISED PER ECO-13-004666	10/02/2011	DLD	CJS

△ MATERIAL: SHIELD HOUSING: NYLON 6/6,  
COLOR - SEE TABLE.



PRELIMINARY - NOT RELEASED FOR PRODUCTION	NATURAL	70° 0'	PER DETAIL AE	A-E	1-1924141-0
PRELIMINARY - NOT RELEASED FOR PRODUCTION	BLUE	20° 0'	PER DETAIL BF	B-F	1924141-9
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PRELIMINARY - NOT RELEASED FOR PRODUCTION	BLUE	45° 0'	PER DETAIL BF	B-F	1924141-6
PRELIMINARY - NOT RELEASED FOR PRODUCTION	GRAY	45° 0'	PER DETAIL BE	B-E	1924141-5
PRELIMINARY - NOT RELEASED FOR PRODUCTION	BLACK	45° 0'	PER DETAIL AC	A-E	1924141-4
RELEASED	BLUE	70° 0'	PER DETAIL BF	B-F	1924141-3
RELEASED	GRAY	70° 0'	PER DETAIL BE	B-E	1924141-2
RELEASED	BLACK	70° 0'	PER DETAIL AE	A-E	1924141-1
STATUS	COLOR REF	WIRE EXIT ANGLE	KEYING	KEYING OPTION	PART NUMBER

THIS DRAWING IS A CONTROLLED DOCUMENT.

DATE: 11/24/2008  
BY: R. BARBER  
CHK: R. METRICK  
DATE: 11/24/2008  
BY: R. METRICK

PRODUCT SPEC: [ ]  
APPLICATION SPEC: [ ]  
WEIGHT: [ ]  
CUSTOMER DRAWING: [ ]

SCALE: 4:1  
SHEET: 1 OF 2  
REV: A3

TE Connectivity  
SHIELD HOUSING,  
HAND MATE, 26 POSITION,  
GENERATION Y, 0.64mm LAC

SIZE: CASE CODE: DRAWING NO: 100779  
RESTRICTED TO: [ ]

**Certificate of Analysis**

Customer:	Product Number	:	52568990
TE CONNECTIVITY LTD	Product Name	:	ULTRAMID® A3EG7 BLACK 23189
8350 E OLD VAIL RD			POLYAMIDE 726KG IBC OF CARDBOARD
TUCSON AZ 85747-9197	Vehicle	:	
	Batch/Lot	:	0204918475
	Manuf.Date	:	Jun-01-2016
Attention:	Shipped Date	:	Jul-18-2016
FAX:	Shipped Quantity	:	25,608.896 LB
Cust Prod: 702661-9	Delivery Date	:	Jul-18-2016
Cust Prod Name: ULT.A3EG7 BK23189 726KG 11G	Order Number	:	114720251 000010
Cust P.O.: 2550080128R11015			
Cust P.O. Line: 1	Delivery Note	:	126975862 900001

Characteristic	Result	UOM	-----Specification-----		Test Method
			Minimum	Maximum	
Ash / Filler Content	34.334	%	33.000	37.000	ASTM5630/ISO3451
Moisture Content	0.09	%		0.15	ASTM D6869 / ISO 15512B
Viscosity Number for Polyamides	143	ml/g	130	160	ISO 307

**Comments :**

Results shown are the means of individual test values determined on samples taken during production of the lot specified.

This product is approved for the following specifications:

MS-DB41 CPN 2224  
MS-DB41 CPN 3695  
M5600  
M53122



# Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO/TS 16949:2009

This is to certify that:

TE Connectivity  
Global Automotive Division  
Americas North  
719 Pegg Road  
Greensboro  
North Carolina  
27409  
USA

Holds Certificate No:

**TS 514458-001**

and operates a Quality Management System which complies with the requirements of ISO/TS 16949:2009 for the following scope:

Design and manufacture of electrical interconnecting devices.

For and on behalf of BSI:

Reg Blake, VP Regulatory Affairs, BSI Group America Inc.

Issue Date: 01/06/2016

Latest Issue: 01/06/2016

Expiry Date: 09/14/2018

IATF Number: 0228236

Page: 1 of 3



...making excellence a habit.™



Certificate No: **TS 514458-001**

Location	Registered Activities
TE Connectivity Global Automotive Division Americas North 719 Pegg Road Greensboro North Carolina 27409 USA	Plating, molding and mechatronics.  Including the following remote support functions:  TE Connectivity Global Automotive Division Americas North 900 Wilshire Boulevard Suite 150 Troy, MI 48084 Design and Development.  TE Connectivity Global Automotive Division Americas North 1901 Fulling Mill Road Middletown, PA 17057 Design and Development, Product Testing and Customer Service.  TE Connectivity Global Automotive Division Americas North 3800 Reidsville Road Winston-Salem, NC 27102 Design and Development, Product Testing and Calibration, Business Office (Quote Process) and Purchasing.  TE Connectivity Global Automotive Division Americas North 20 Esna Park Drive Markham, Ontario L3R 1E1 Canada Design and Development and product testing (optics lab).  TE Connectivity Global Automotive Division Americas North 2100 Paxton Street Harrisburg, PA 17111 Provision of Product Testing to TE Connectivity Manufacturing Sites.

Issue Date: 01/06/2016

Latest Issue: 01/06/2016

Expiry Date: 09/14/2018

IATF Number: 0228236

Page: 2 of 3

This certificate remains the property of BSI and shall be returned immediately upon request.

An electronic certificate can be authenticated [online](http://www.bsigroup.com/ClientDirectory). Printed copies can be validated at [www.bsigroup.com/ClientDirectory](http://www.bsigroup.com/ClientDirectory)

To be read in conjunction with the scope above or the attached appendix.

Further clarifications regarding the scope of this certificate and the applicability of ISO/TS16949 requirements may be obtained by consulting the organization.

IATF Contracted Office: BSI Group Americas Inc., 12950 Worldgate Drive, Suite 800, Herndon, VA 20170-6007 USA.

A Member of the BSI Group of Companies.

# TYCO ELECTRONICS GAD-AN

## NORTH CAROLINA LABORATORIES SCOPE OVERVIEW

SERVICE	EQUIPMENT	TYPICAL PROCEDURES	
Product/Tooling Approval Laboratory 3800 Reidsville Road, Winston-Salem, NC 27101			
Layout Inspection	Leitz Toolmakers Microscopes Starrett Coordinate Meas. Machine Mycrona Vision/Contact CMM Mitutoyo Hand Measuring Devices Micro-Vu Vertex Vision/Contact Measuring Center	AAP129, AAP165, AWP127-LB	
Cross-Sectioning	Low speed saws Polishing/grinding equipment	ASTM E3	
SERVICE	EQUIPMENT	TYPICAL PROCEDURES	
Product Reliability Center 3800 Reidsville Road, Winston-Salem, NC 27101			
Electrical, High Current			
Current Cycling	Hewlett-Packard 6032A	System Power Supply	TIN 109-51, SAE/USCAR-2
Current Surge	Wavetek 395, Kepco ATE 15-50M	Current Pulsing Station	Customer/Product Specific
Maximum Current Rating	T System	Portable Data Acquisition System	SAE/USCAR-2
Millivolt Drop	READA System		SAE/USCAR-2, EIA 364-6B, IEC 60512-2-2
T-rise at Rated Current	READA System		SAE/USCAR-2, EIA 364-70A Method 1
T-rise vs. Current Curve	T System		SAE/USCAR-2, EIA 364-70A Method 2
Resistive Load Verification	Agilent 60502B and 6681A	Programmable loads & power supplies	Customer/Product Specific
Electrical, Low Current			
Termination Resistance, Dry Circuit	READA System, Buttons System, H-P Micro-Voltmeter	Portable Data Acquisition System Hand Probe	SAE/USCAR-2, -17 & 20, EIA 364-23A, IEC 60512-2-1
Electrical, Voltage			
Breakdown Voltage	Associated Research 4271m13, EDNA System, Quadtec	HiPot Dielectric Tester	EIA 364-20B, IEC 60512-4-1
Dielectric Withstanding Voltage			SAE/USCAR-2, -17 & -20, EIA 364-20B, IEC 60512-4-1
Insulation Resistance	GenRad 1644-A, Quadtech	Megohm Bridge, Dielectric Analyzer	SAE/USCAR-2, -17 & -20, EIA 364-21C, IEC 60512-3-1
Electrical, RF			
Insertion Loss	Agilent 8753ES	Network Analyzer	SAE/USCAR-17
VSWR	Agilent 8753ES	Network Analyzer	SAE/USCAR-17

<b>Environmental</b>			
Heat Age	Blue M Models Such as OV490A-2, POM966E, POM206EX, HS3802FG, POM336B-1, CW5512F-1, POM336EX, Despatch LEB1-76-4	Oven	SAE/USCAR-2 & -20, EIA 364-17B, IEC 60512-11-9
Humidity / Temp. Cycling	Thermotron F-52-CHMV ESPEC ETH37 4DW CSZ Models CTH-32-15-15-S/WC CTH-16-705-705-S/W ZH-16-2-2-H/AC CVH-16-3-3-H/WC Blue M Electric Models FR-256PB, FR-366PB LRM386E CSZ ZH-8	Temperature / Humidity Chamber	SAE/USCAR-2 & -20, EIA 364-31B, IEC 60512-11-3, IEC 60512-11-12
Immersion	Blue M Electric OV490A-2, GenRad 1644-A	Oven, Megohm Bridge	SAE/USCAR-2
Pressure / Vacuum Leak	Ashcroft 415P-20, Ashcroft 4116P	Precision Gauges	SAE/USCAR-2
Salt Spray	Harshaw 4100-000-003	Salt Fog Chamber	SAE/USCAR-2 (Aug 97) EAI 364-26B, ASTM B117
Submergible Air Leak	Ashcroft 415P-20, Ashcroft 4116P	Precision Gauges	SAE/USCAR-2
Temp. Cycling	Blue M Models VRC30-PS-6WE VRC12-PC-4WE GOP 1004-12-2TPE CSZ Models Z-16-2-2-H/AC Z-8-1-1-H/AC BAV-1.6-033-033-H/A	Temperature Cycling Chamber	Customer/Product Specific
Thermal Shock	-Ransco 7103-1 -ESPEC TSA-70H-W -Thermotron ATS-100-3-3-LN2 ATS-150-H-3-3-LN2 -CSZ VTS-2.6-705-705-S/W VTS-3.3-705-705-S/A -Envirotronics SV2-2-2-3	Thermal Shock Chamber	SAE/USCAR-2 & -20, EIA 364-32C, IEC 60512-11-4
High Pressure Washing (Hot & Ambient)	Landa Pressure Washer, Wika Pressure gage	Pressure washer set-up	Customer Specific
Dust Testing	Triton	Dust Chamber	PF-9688, Customer Specific
Air Leak Detector	Furness – Sovereign	Leak Detector	Customer Specific

<b>Mechanical</b>			
Drop	n/a	n/a	Ford SDS #40
Durability	AMP Inc. 37517	Cycling Machine	SAE/USCAR-2, EIA 364-9C, IEC 60512-9-1
Mechanical Shock	AVCO SM105MP Vibration Machines	Mechanical Shock Tester High Frequency Vibration Machines	SAE/USCAR-2 EIA 364-27B IEC 60512-6-3
Torque	Snap-On TQJE1000	Torque Tester	TIN 109-183, Customer/Product Specific
Vibration – Low	LAB LVH18-100	Low-Frequency	Mil Std 202 Method 201A
Frequency		Vibration Machine	EIA 364-28A Test Cond. I
Vibration – High Frequency	Unholtz-Dickie Models SA30-560/ST MA250D-206 Ti000-14 206 LDS V850	High-Frequency Vibration Machine	SAE/USCAR-2 & -20 EIA 364-28D, IEC 60512-6-4
<b>Miscellaneous</b>			
Audible Feedback	Brueel & Kjaer 1561725	Sound Meter (db)	TIN 109-133, SDS #EL-0017, Customer Specific
Thermal Imaging	Nikon Laird 3AS	Infrared Camera	Application Specific
<b>Tensile / Compression</b>			
Axial Pull Test	Instron 4502	Tensile / Compression Machine	SAE/USCAR-2 & -17
Bend Force			SAE/USCAR-2
Bend, Crimp			SAE/USCAR-2
Connector - Connector Engage / Disengage			SAE/USCAR-2, EIA 364-13B IEC60512-13-1
Connector Lock Strength Integrity			SAE/USCAR-2 & -17
Connector Mechanical Integrity			SAE/USCAR-2
Contact Insertion			SAE/USCAR-2, TIN 109-41
Contact Retention			SAE/USCAR-2, TIN 109-41
Crimp Tensile			SAE/USCAR-2, EIA 364-8B, IEC 60512-16-4 & -20
Engaging Force			SAE/USCAR-2, TIN 109-35
Force vs. Deflection			TIN 109-98
Insulated Crimp			SAE/USCAR-2
Latch Depression			SAE/USCAR-2
Lock Insertion & Removal Forces			SAE/USCAR-2 & -17
Misc. Component Engage / Disengage			SAE/USCAR-2 & -17
Contact Normal Force			TIN 109-98
Panel Retention			TIN 109-41

Secondary Lock Strength			SAE/USCAR-2, TIN 109-35,
Separating Force			USCAR-2, TIN 109-98
Spring Rate			Ford SDS #32
Staging Latch Strength			SAE/USCAR-2, Ford SDS #32
Tensile			SAE/USCAR-2, EIA 364-8B, IEC 60512-16-4 & -20
Terminal Assurance Retention			SAE/USCAR-2, TIN 109-14
Terminal Insertion / No False Lock-up			SAE/USCAR-2, TIN 109-14
Terminal Push Thru			SAE/USCAR-2, TIN 109-14
Unmating Force			SAE/USCAR-2, EIA 364-13B, IEC 60512-13-1
SERVICE	EQUIPMENT		TYPICAL PROCEDURES
Electromechanical Components Laboratory 3920 Reidsville Road, Winston-Salem, NC 27101			
Electrical, APT			
Pull-in/Drop-out Voltage	Markenrich Tester	APT	VTEST-0001
Pull-in/Drop-out Current	Markenrich Tester	APT	VTEST-0001
Operate/Release time	Markenrich Tester	APT	VTEST-0001
Contact Voltage Drop	Markenrich Tester, CVD Tester	APT	VTEST-0001
Contact Resistance	Markenrich Tester, CVD Tester	APT	VTEST-0001
Contact Bounce	Markenrich Tester	APT	VTEST-0001
Coil Resistance	Markenrich Tester	APT	VTEST-0001
Electrical, Durability			
Overload and Endurance	Life Test Monitor	L.T.M.	Customer Specific
Current Cycling	Power Supplies	L.T.M.	Customer Specific
Flasher Testing	Power Supplies, Temp Chambers, Flasher Tester	Flasher Test Set-up	Customer Specific VTEST-0055 & 0056
Continuous Current Overload	Life Test Monitor	L.T.M.	Customer Specific
Millivolt Drop Testing	Power Supplies, Agilent 34970A, Millivolt LTMs	Millivolt Drop Testers	VTEST-0001, Customer Specific
Load Soak	Power Supplies Temp Chambers	Load Soak Set-up	VTEST-0003
Electrical, Coil			
Coil Over/Under Voltage	Power Supplies Multi-meters	Coil Over/Under Voltage Test Set-up	Customer Specific
Coil Temperature Rise	YEW Chart Recorder/ Power Supplies/Temp. Chambers, Agilent 34970A	Coil Temperature Rise Test Set-up	Customer Specific
Coil Input (power)	Power Supply/Multi-meter	Coil Power Test Set-up	Customer Specific

<b>Electrical, Voltage</b>			
Breakdown Voltage	Kikusui Tos 8650, Quadtech Guardian 2530, Quadtech Sentry 30	Hipot Tester	EIA 364-20B, IEC 60512-4-1
Dielectric Testing	Kikusui Tos 8650, Quadtech Guardian 2530, Quadtech Sentry 30	Hipot Tester	VTEST-0001
Insulation Resistance	Quadtech Guardian 2530, Quadtech Sentry 30	IR Tester	EIA 364-21C, IEC 60512-3-1, VTEST-0001
<b>Circuit Breaker</b>			
Short Circuit AC	Short Circuit Tester	Short Circuit Tester	Customer Specific
Calibration- Circuit Breakers	Model F-EDC12159	Circuit Breaker Calibration	Customer Specific
Current Cycling Endurance	Power Supplies/LTM/ pneumatic cyler.	Circuit Breaker Cycler Set-up	Customer Specific
<b>Environmental</b>			
Humidity / Temp. Cycling	Thermotron/Tenney Chambers/LTM	Humidity / Temp. Cycling Set-up	EIA 364-31B, IEC 60512-11-3, IEC 60512-11-12
Thermal Shock	Thermal Shock Chambers @ 3800RR	Thermal Shock Chambers	EIA 364-32C, IEC 60512-11-4
Dust	Dust Chamber	Dust Test Chamber	VTEST-0011
Salt Fog	Harshaw 4100-000-003	Salt Fog Chambers	EIA 364-26B, ASTM B117
Temp. Cycling	LTM/Power supplies/Temp Chamber	Temp. Cycling Set-up	Customer/Product Specific
<b>Mechanical</b>			
Drop	Drop Tester	Drop Test Set-up	VTEST-0008
Mechanical Shock	AVCO SM105MP  Vibration Tables @ 3800RR	Mechanical Shock Tester High-Frequency Vibration Machines	EIA 364-27B IEC 60512-6-3
Vibration – Low Frequency	LAB LVH18-100 @ 3800 RR	Low-Frequency Vibration Machines	EIA 364-27B IEC 60512-6-3
Vibration – High Frequency	Vibration Tables at 3800RR	High-Frequency Vibration Machine	EIA 364-28D, BTEST-0010 IEC 60512-6-4
Mechanical Life Cycling	Power Supplies/ Counter	Mechanical Life Cycling Test Set-up	Customer Specific Technical Data Book
<b>Mechanical, Miscellaneous</b>			
Audible Sound	Sound Meter / Sound Chamber	Audible Sound Test Set- up	VTEST-0017
<b>Tensile/Compression</b>			
Panel Retention	Insertion 4502 @ 3800RR	Tensile / Compression Machine	TIN109-41
Tensile	Instron 4502 @ 3800RR	Tensile / Compression Machine	EIA 364-8B, IEC 60512-16-4 & -20
Cover Retention	Instron 4502 @ 3800RR	Tensile / Compression Machine	VTEST-0005
Thermal retention	Instron 4502 @ 3800RR	Tensile / Compression Machine	VTEST-0004

SERVICE	EQUIPMENT	TYPICAL PROCEDURES
<b>Materials and Processes Laboratory</b> <b>3800 Reidsville Road, Winston-Salem, NC 27101</b>		
Metallographic Sample Preparation	Embedding Media, polishing compounds, LECO AP-200 polisher	ASTM E3
Optical Examination of Cross-Sectioned Materials	Nikon Epiphot Metallograph	TIN 109-52, Method 2 ASTM E112
Vickers Hardness	Micromet Microhardness Tester	ASTM E384, ASTM E92
Knoop Hardness	Micromet Microhardness Tester	ASTM B758, ASTM E384
Rockwell Hardness	Wilson Series 500 Hardness Tester	ASTM E18, ASTM 1842
Coercive Force	Forster Coercive Force Tester	ASTM A867, ASTM A848
Tensile Testing – Materials	United TM-10 Tensile Tester	TIN 109-79, ASTM E8
Differential Scanning Calorimetry (DSC)	Mettler DSC 20 Differential Scanning Calorimeter	TIN 109-172, ASTM D3417
Scanning Electron Microscopy (SEM) Surface Characterization	AMRAY 1830i Scanning Electron Microscope	Application Specific
Elemental Analysis – Qualitative and Quantitative Energy Dispersive Spectroscopy	EDAX International EDS Detector PV9700/43 with Phoenix Software	Application Specific, ASTM E1508
Fourier Transform Infrared (FTIR) Material Identification	Nicolet 5PC FTIR with IR-Plan analytical microscope	Application Specific, ASTM E1252, ASTM E334
Melt Viscosity	Kayeness (Dynisco) Capillary Rheometer	ASTM D3835, TIN 109-57, TIN 103-2915
Melt Flow Rate	Dynisco Melt Indexer	ASTM D1238, TIN 118-1952
Melt Volume Rate	Dynisco Melt Indexer	ISO 1133, TIN 118-4440
Moisture Content	Computrac Vapor Pro	TIN 118-1953
Solderability	Multicore Solder Must II	MIL-STD 883C, TIN 109-11

Certificate No: **TS 514458-001**

Location

Registered Activities

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TE Connectivity  
North Carolina Distribution Center  
8000 Piedmont Triad Parkway  
Greensboro, North Carolina 27409  
Shipping, Receiving, Receiving Inspection, Packaging,  
Storage/Inventory.

Issue Date: 01/06/2016

Latest Issue: 01/06/2016

Expiry Date: 09/14/2018

IATF Number: 0228236

Page: 3 of 3

This certificate remains the property of BSI and shall be returned immediately upon request.

An electronic certificate can be authenticated [online](http://www.bsigroup.com/ClientDirectory). Printed copies can be validated at [www.bsigroup.com/ClientDirectory](http://www.bsigroup.com/ClientDirectory)

To be read in conjunction with the scope above or the attached appendix.

Further clarifications regarding the scope of this certificate and the applicability of ISO/TS16949 requirements may be obtained by consulting the organization.

IATF Contracted Office: BSI Group Americas Inc., 12950 Worldgate Drive, Suite 800, Herndon, VA 20170-6007 USA.  
A Member of the BSI Group of Companies.



# MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: CERT-12244-2007-AQ-HOU-IATF

Valid until:  
02 June, 2016 – 14 September, 2018

IATF Certificate No.: 0239981

This is to certify that the management system of

## **BASF Corporation**

1609 Biddle Avenue, Wyandotte, MI 48192 USA  
and, if applicable, the remote support locations as mentioned in the Appendix  
accompanying this Certificate

has been found to conform to quality management system standard:

**ISO/TS 16949:2009**

This certificate is valid for the following Scope:

**DESIGN AND MANUFACTURE OF COMPOUNDED ENGINEERING  
RESINS INCLUDING NYLONS, THERMOPLASTIC POLYESTERS  
AND POLYACETALS**

Place and date:

**Katy, TX. 02 June 2016**



For the issuing office:

**DNV GL - Business Assurance  
Katy, TX, USA**

**Peter Herman**  
Management Representative

Certificate No.: CERT-12244-2007-AQ-HOU-IATF  
 IATF Certificate No.: 0239981  
 Place and date: **Katy, TX.** 02 June 2016

## Appendix to Certificate

### MSSC Canada

Remote Support Locations included in the certification are as follows:

Name	Address	RSL Activities	Certification Body
BASF Corporation	450 Clark Drive, Budd Lake, NJ 07828 USA	Product Design, Testing	DNV GL

