



# Product Change Notification

Current Date: 22-Jun-2021

## TE Connectivity

Product Change Notification: P-21-021095

PCN Date: 21-JUN-21

Customer: TTI, Inc. ( 1305175 )

Location: Maisach-gernlinden

Agreement: TTI001

TE would like to inform you of the following change(s) to the listed TE Connectivity Product. In case of any further questions about this change(s), please contact your TE Connectivity Sales Engineer. Affected part, drawing and/or specification numbers are listed on the attached sheet(s).

### General Product Description:

Multi-Beam XL/XLE product.

### Description of Changes

We have received force majeure notices from service providers and raw material suppliers across the U.S due to the extreme weather conditions. To ensure the products supplement during the stage of force majeure resin shortage globally. TE introduces alternative materials but identical product performance.

#### Other attachments:

[Test report](#)

### Reason for Changes:

Product improvement. Material shortage due to unstable supplement of raw material from resin vendors.

### Estimated Dates:

Last Order Date (Obsolete Parts Only):

First Date To Ship (Changed Parts Only):

21-JUL-2021

Last Ship Date (Obsolete Parts Only):

Last Date for Mixed Shipments: (Changed Parts Only):

No Mixed Shipments

### Part Number(s) being Modified:

Part Number	Part Discontinued per PCN	Customer Drawing	Customer Part Number	Alias Part Number(s)	Substitute Part Number	Substitute Alias Part Number(s)	Description Of Difference
<a href="#">1-6450520-8</a>	NO		TYC1-6450520-8				
<a href="#">1-6450570-9</a>	NO		TYC1-6450570-9				
<a href="#">3-2204910-4</a>	NO						
<a href="#">6-6450870-4</a>	NO		TYC6-6450870-4				
<a href="#">6450123-3</a>	NO		TYC6450123-3				
<a href="#">6450150-5</a>	NO		TYC6450150-5				
<a href="#">6450160-3</a>	NO		TYC6450160-3				
<a href="#">6450849-7</a>	NO		TYC6450849-7				
<a href="#">6450851-1</a>	NO		TYC6450851-1				
<a href="#">6450874-2</a>	NO		TYC6450874-2				



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Current Date: 22-Jun-2021

## TE Connectivity

Product Change Notification: P-21-021095

PCN Date: 21-JUN-21

Customer: TTI, Inc. ( 3057778 )

Location: Maisach-gernlinden

Agreement: Agreement Unknown

TE would like to inform you of the following change(s) to the listed TE Connectivity Product. In case of any further questions about this change(s), please contact your TE Connectivity Sales Engineer. Affected part, drawing and/or specification numbers are listed on the attached sheet(s).

**General Product Description:**

Multi-Beam XL/XLE product.

**Description of Changes**

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**Other attachments:**
[Test report](#)
**Reason for Changes:**

Product improvement. Material shortage due to unstable supplement of raw material from resin vendors.

**Estimated Dates:**

<b>Last Order Date</b> (Obsolete Parts Only):	<b>First Date To Ship</b> (Changed Parts Only):
	21-JUL-2021
<b>Last Ship Date</b> (Obsolete Parts Only):	<b>Last Date for Mixed Shipments:</b> (Changed Parts Only):
	No Mixed Shipments

**Part Number(s) being Modified:**

Part Number	Part Discontinued per PCN	Customer Drawing	Customer Part Number	Alias Part Number(s)	Substitute Part Number	Substitute Alias Part Number(s)	Description Of Difference
<a href="#">1-6450520-8</a>	NO		TYC1-6450520-8				
<a href="#">1-6450570-9</a>	NO		TYC1-6450570-9				
<a href="#">3-2204910-4</a>	NO						
<a href="#">6-6450870-4</a>	NO		TYC6-6450870-4				
<a href="#">6450160-3</a>	NO		TYC6450160-3				
<a href="#">6450851-1</a>	NO		TYC6450851-1				
<a href="#">6450874-2</a>	NO		TYC6450874-2				

## MULTI-BEAM Verification test

### 1. INTRODUCTION

#### 1.1 Purpose

Testing was performed on Multi-beam Distribution Connector System to determine its conformance to requirements of product Specification 108-1973 and 108-2292; And determine misalignment test conformance to requirements of application specification 114-13251.

#### 1.2 Scope

This specification covers the electrical, mechanical, and environmental performance for MULTI-BEAM material Verification test. Testing was performed at TE Connectivity Shanghai Electrical Test Laboratory between 2021-03-24 and 2021-05-28.

The associated test number is TP-21-00735, TP-21-01219 and TP-21-01268.

#### 1.3 Conclusion

Based on the test results, all specimens meet the requirement according to 108-1973 and 108-2292  
The results in this report only effect on the sampling specimens.

#### 1.4 Test Specimens

Specimens with the following part numbers were used for test:

Test project No.	Test Group	Part No.	Description	Qty. (pcs)	Comments
TP-21-00735	1	6450840-3	MBXLE R/A HEADER 12P+48S+8LP	5	PA9T
		6450860-3	MBXLE VERT RCPT 12P+48S+8LP	5	PA9T
		6450840-3	MBXLE R/A HEADER 12P+48S+8LP	5	PA10T
		6450860-3	MBXLE VERT RCPT 12P+48S+8LP	5	PA10T
TP-21-01219	2	7-6450831-3	MBXLE R/A HDR12S+2P+12LP	5	PA9T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	5	PA10T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	5	PA9T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	5	PA10T
TP-21-01268	3	7-6450831-3	MBXLE R/A HDR12S+2P+12LP	6	PA6T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	6	PA9T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	6	PA10T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	6	PA6T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	6	PA9T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	6	PA10T
	4	2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	9	PA10T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	3	PA6T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	3	PA9T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	3	PA10T
	5	7-6450831-3	MBXLE R/A HDR12S+2P+12LP	2	PA6T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	2	PA6T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	2	PA9T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	2	PA9T
		7-6450831-3	MBXLE R/A HDR12S+2P+12LP	2	PA10T
		2-6450861-6	MBXLE VERT REC. 12S+2P+12LP	2	PA10T

## 1.5 Test Sequence

Test Item	Test Group <sup>a</sup>				
	1	2	3	4	5
	Test Sequence <sup>b</sup>				
Examination of Product	1		1,7		
Dielectric Withstanding Voltage	3,7				
Humidity and Temperature Cycling	5				
Insulation Resistance	2,6				
Thermal Shock (Rapid Change in Temperature)	4				
Resistance to Soldering Heat		1			
Low Level Contact Resistance			3,5		
Mating Force			2		
Durability			4		
Un-mating Force			6		
Misalign Verification				1	
Retention Force					1

Note: a). Test group defined per customer requirement.  
b). Numbers indicate sequence in which tests are performed.

## 1.6 Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15°C to 35°C  
Relative Humidity: 25% to 75%

## 2. TEST PROCEDUES

### 2.1 Examination of Product

Before test, a certificate of conformance was issued stating that all specimens in this test package were produced, inspected, and accepted as conforming to product drawing requirements, and were manufactured using the same core manufacturing processes and technologies as production parts.

After test, there shall be no corrosive influence on the performance and no physical damage that would impair product performance. In accordance with EIA-364-18B.

Criteria: No physical damage.

### 2.2 Dielectric Withstanding Voltage

A test voltage was put onto adjacent contact of specimen for period of 60 seconds, leakage current shall be limited to a maximum of 5 mA. Test voltage shall be 2500V DC for Power Contact, 1000 V DC for Low Power Contact and Signal contact. In accordance with EIA-364-20F.

Criteria: No breakdown.

### 2.3 Humidity and Temperature Cycling

Subject mated specimen to 10 cycles between 25°C and 65°C at 80-100% RH. Measurements to be recorded after specimens are held for 3 hours at ambient temperature and humidity. 1 cycle is 24 hours. In accordance with EIA-364-31F.

Criteria: No physical damage that would impair product performance.

### 2.4 Insulation Resistance

The insulation resistance shall be measured with a test voltage of 500 V dc for 2 minutes between adjacent contact. In accordance with EIA-364-21 E.

Criteria: For power contact & low power contact: 1000MΩ

For signal contact: 500MΩ.

### 2.5 Thermal Shock

Subject mated specimens to 36 cycles between -55°C and 125°C with 60 minutes dwell time. In accordance with EIA-364-32 G.

Criteria: No evidence of physical damage was visible

## 2.6 Resistance to Soldering Heat

- Initial: Execute visual examination before test and take picture
  - Edit test procedure according to test method and run test equipment.
- Test Condition:
1. Immerse terminal leads into flux for 5 seconds.
  2. For excess flux, specimen shall be eliminated drain for 10 seconds.
  3. Immerse the terminal leads into solder bath until the terminal leads immersed completely and at temperature of  $(265 \pm 5)^\circ\text{C}$  last for 10 seconds manually.
- Final: Execute visual examination after test and take pictures  
Take pictures at 30X magnification after test, in accordance with 109-202 Condition B.
- Criteria: No physical damage.

## 2.7 Low Level Contact Resistance

Subject contacts assembled in a housing to 20mV (max.) open circuit at 100 Ma (max.). In accordance with EIA-364-23C.

Criteria: Power contact: 10 mΩ max. initial, 20 mΩ max. final.  
Low power contact: 15 mΩ max. initial, 20 mΩ max. final.  
Signal contacts: 15 mΩ max. initial, 20 mΩ max. final.

## 2.8 Mating Force

Measure force necessary to mate specimens at a maximum rate of 12.7 mm/min. In accordance with EIA 364-13 E.

Criteria: All mating force measurements for power contacts were less than 5 N per contact. All mating force measurements for signal contact were less than 1 N per contact and 1.7 N per low power contact.

## 2.9 Durability

Manually mate and un-mate specimens for 500 cycles at a maximum rate of 500 cycles per hour. In accordance with EIA 364-09 D.

Criteria: No physical damage that would impair product performance.

## 2.10 Un-mating Force

Measure force necessary to un-mate specimens at a maximum rate of 12.7 mm/min. In accordance with EIA 364-13 E.

Criteria: All Un-mating force measurements for power contacts were greater than 2.2 N per contact; all Un-mating force measurements for signal contacts were greater than 0.2 N per contact and 0.5 N per low power contact.

## 2.11 Misalign Verification

Manually mate and un-mate specimens for 25 cycle per direction with offset of 1.91mm in four perpendicular directions from the normal alignment position. In accordance with 114-13251 (Application Specification)

Criteria: No physical damage that would impair product performance.

## 2.12 Retention Force

Measure the axial force required to remove contact from the housing. Operation Speed: 25.4 mm/min.

Criteria: All retention force measurements for power contacts were greater than 10 N per contact; all retention force measurements for signal contacts were greater than 5 N per contact and 5 N per low power contact.

## 3. SUMMARY OF TEST

Group	SN	Description	Test Item	Qty (pcs)	Test Result				Specification	Conclusion
					Max	Min	Avg	Unit		
1	1	Connector	Examination of Product	10	No physical damage.				No physical damage.	Meet Spec.
	2	power	Insulation Resistance	10	28.7	2.31	9.94	$10^5\text{M}\Omega$	1000 MΩ min.	Meet Spec.
		low power		10	35.2	1.24	9.94	$10^5\text{M}\Omega$	1000 MΩ min.	Meet Spec.
		signal		10	27.7	1.55	8.84	$10^5\text{M}\Omega$	500 MΩ min.	Meet Spec.
	3	Connector	Dielectric Withstanding Voltage	10	No breakdown.				No breakdown.	Meet Spec.

Group	SN	Description	Test Item	Qty (pcs)	Test Result				Specification	Conclusion
					Max	Min	Avg	Unit		
1	4	Connector	Thermal Shock	10	No physical damage.				No physical damage.	Meet Spec.
	5	Connector	Humidity and Temperature Cycling	10	No physical damage.				No physical damage.	Meet Spec.
	6	power	Insulation Resistance	10	16.67	2.55	5.45	10 <sup>5</sup> MΩ	1000 MΩ min.	Meet Spec.
		low power		10	25.36	2.42	5.99	10 <sup>5</sup> MΩ	1000 MΩ min.	Meet Spec.
		signal		10	22.30	2.51	5.36	10 <sup>5</sup> MΩ	500 MΩ min.	Meet Spec.
	7	Connector	Dielectric Withstanding Voltage	10	No breakdown.				No breakdown.	Meet Spec.
2	1	Connector	Resistance to Soldering Heat	10	No physical damage such as no melting, no blister, no discoloration, and no deformation				No physical damage.	Meet Spec.
3	1	Connector	Examination of Product	18	No physical damage.				No physical damage.	Meet Spec.
	2	Connector	Mating Force	18	21.7	18.1	19.7	N	37.4 N max.	Meet Spec.
	3	power	Low Level Contact Resistance	18	0.64	0.34	0.45	mΩ	10 mΩ max.	Meet Spec.
		low power		18	0.98	0.46	0.70	mΩ	15 mΩ max.	Meet Spec.
		signal		18	8.95	4.05	5.82	mΩ	15 mΩ max.	Meet Spec.
	4	Connector	Durability	18	No physical damage.				No physical damage.	Meet Spec.
	5	power	Low Level Contact Resistance	18	0.85	0.38	0.51	mΩ	20 mΩ max.	Meet Spec.
		low power		18	1.75	0.52	0.81	mΩ	20 mΩ max.	Meet Spec.
		signal		18	6.72	3.95	5.41	mΩ	20 mΩ max.	Meet Spec.
	6	Connector	Un-mating Force	18	17.6	12.7	14.2	N	10.6 N min.	Meet Spec.
	7	Connector	Examination of Product	18	No physical damage.				No physical damage.	Meet Spec.
4	1	Connector	Misalign Verification	9	No physical damage.				No physical damage.	Meet Spec.
5	1	power	Retention Force	6	118.9	89.4	98.9	N	10 N	Meet Spec.
		low power			34.1	25.2	28.4	N	5 N	Meet Spec.
		signal			21.1	16.6	18.3	N	5 N	Meet Spec.

#### 4. VALIDATION

Requested by:

Zhou, Cecily

2021-03-22

TE Connectivity Product Engineering

Prepared by:

*Ian Zheng*

2021-05-28

TE Connectivity Shanghai Electrical Components Test Lab.

Approved by:

*Harlan Wu*

2021-05-28

Test Manager

TE Connectivity Shanghai Electrical Components Test Lab.

----- END OF REPORT -----