

Test Report Product Validation

Braganca-Paulista Electrical Components Test Laboratory RUA AMPERE 304 Dist. Indl I BRAGANCA PAULISTA SAO PAULO BRAZIL 12929-570

Report Title: MAXI FUSE BOX ASS'Y

Report Number: RL140600

Revision: 1

Date Issued: 04 mar 2015

Execution: Diogo Rojas Phone: 11 3404-6278

Requestor: Marcos Ogawa
Phone: 11 3404-6153
Address: mrogawa@te.com

Disposition of Samples: Return to Customer

Customer: FORD

List of Part Numbers: 2819045-1

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Scope/Abstract and Conclusions

Purpose

Validation test according to ADVP annex.

Summary

Please see conclusion at each group test.



1. RESULTS

Test Sequence/Environment	Requirements	Results			
Group 1					
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.			
100% Continuity test	Proper continuity through each circuit	Pass.			
Voltage drop	< 4mΩ (initial	Pass.			_
	measurements)			ge drop [n	
			Way 1	Way 2	Way 3
		Minimum	1,463	2,131	1,321
		Average	1,5755	2,219	1,332
		Maximum	1,688	2,307	1,343
Thermal mapping	The temperature of the EDB shall not increase	Informative.			
	above the ambient	82% of	Absolute ΔΤ		ΔT [°C]
	temperature by more than	current	•	ature [°C]	
	50℃ and/or the EDB	Minimum		9,7	72,2
	temperature shall never exceed its material	Average 113,5			86,0
	deflection temperature (in	Maximum	12	28,6	101,1
	this case, 215℃).	75% of	Abo	solute	
	Note:	current		ature [°C]	ΔT [°C]
	Due to the max vehicle	Minimum		8,0	50,0
	steady state load current uncertainty, it was	Average		00,6	74,2
	performed 3 different tests	Maximum		15,3	100,6
	and the results are just for customer information.			,	,
	customer information. Matrix FORD		Absolute temperature [°C]		ΔT [°C]
		Minimum	3	2,6	5,1
		Average	4	4,4	16,9
		Maximum	6	1,9	34,4
Voltage drop	< 8mΩ (final	Pass.			
	measurements)		Voltage drop [m		nV/A]
			Way 1	Way 2	Way 3
		Minimum	1,468	2,086	1,32
		Average	1,533	2,166	1,4135
		Maximum	1,598	2,246	1,507



Test Sequence/Environment	Requirements	Results				
Group 1						
Power dissipation	EDB shall not increase		Informative.			
	above the ambient temperature by more than 50℃ and/or the EDB temperature shall never	82% of current at 125°C		solute rature [°C]	ΔT [°C]	
	exceed its material	Minimum	1	81,8	56,8	
	deflection temperature (in this case, 215℃).	Average	1	96,8	71,8	
	1113 6436, 213 0).	Maximum	2	20,1	95,1	
	Note: Due to the max vehicle steady state load current uncertainty, it was performed 3 different tests	75% of current at 125°C		solute rature [°C]	ΔΤ [°C]	
	and the results are just for customer information.	Minimum	1	65,5	40,5	
	customer information.	Average			61,9	
		Maximum	2	16,1	91,1	
		75% of current at 85°C		solute rature [°C]	ΔT [°C]	
		Minimum	1	24,5	39,5	
		Average	1	46,2	61,2	
		Maximum 173,8 88,		88,8		
Voltage drop	< 8mΩ (final	Pass.				
	measurements)			age drop [m		
			Way 1	Way 2	Way 3	
		Minimum	1,484	2,276	1,647	
		Average	1,634	2,391	1,759	
		Maximum	1,784	2,505	1,87	
Heating test	Informative.	Only informated Please see report.		tem 4.14 of	this test	
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Informative.				



Test Sequence/Environment	Requirements	Results	
Group 2			
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.	
100% Continuity test	Proper continuity through each circuit	Pass.	
Dielectric test	Leakage current < 1mA	Pass.	
			Leakage current [mA]
		Minimum	0,005
		Average	0,008
		Maximum	0,010
Insulation resistance	>10ΜΩ	Pass. All samples	>50GΩ.
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.	

Test Sequence/Environment	Requirements	Results			
Group 3					
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.			
Voltage drop	< 4mΩ (initial measurements)	Pass.			
			Volta	ge drop [m	nV/A]
			Way 1	Way 2	Way 3
		Minimum	1,22	1,66	1,38
		Average	1,70	2,07	1,74
		Maximum	2,80	2,40	2,47
Remove and reinstall all components	There shall be no degradation in the design intended performance.	Pass.			
Thermal shock	Samples must pass in items below.	Pass.			
Flex flexible members 20 times	There shall be no degradation in the design intended performance.	Pass.			



Test Sequence/Environment	Requirements	Results			
Group 3					
Voltage drop	< 8mΩ (final measurements)	Pass.			
			Volta	ge drop [n	nV/A]
			Way 1	Way 2	Way 3
		Minimum	1,16	2,35	1,54
		Average	1,52	2,67	1,94
		Maximum	2,35	3,03	2,32
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.			

Test Sequence/Environment	Requirements	Results
Group 4		
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.
Soak samples at -40℃ for 72 hours	Samples must pass in items below.	Pass.
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.
Remove and reinstall all components	There shall be no degradation in the design intended performance.	Pass.
Flex flexible members 20 times	There shall be no degradation in the design intended performance.	Pass.
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.

Test Sequence/Environment	Requirements	Results
Group 5		
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.
Soak samples at 125℃ for 72 hours	Samples must pass in items below.	Pass.



Test Sequence/Environment	Requirements	Results
Group 5		
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.
Remove and reinstall top cover 20 times after removing from hot chamber	There shall be no degradation in the design intended performance.	Pass.
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.

Test Sequence/Environment	Requirements	Results	
Group 6			
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.	
Component insertion/removal test	J-case Insertion force < 60N J-case extraction force > 6,8N	Pass.	
		Samples	J-case insertion force [N]
		Mínimum	34,50
		Average	41,11
		Maximum	49,00
		Samples	J-case extraction force [N]
		Mínimum	28,00
		Average	34,61
		Maximum	41,00



Test Sequence/Environment	Requirements	Results	
Group 6			
Top cover pull-out test	top cover from EDB shall be less than 90N.	This item was approved by an agreement between FORD and Tengineering because this item is carry over item and it was approven on Ford Program BV 226/BV 256 to specification S96FG-14A073-E and ES-5L1T-14A067-AA item 2.	
			Top cover pull-out test [N]
		Minimum	57,0
		Average	62,5
		Maximum	68,0

Test Sequence/Environment	Requirements	Results
Group 7		
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.
Drop test	There shall be no breakage or degradation in design-intended performance. Shake the EDB vigorously in 3 directions and there shall be no audible rattle, buzzes or squeaks.	Pass.
100% Continuity test	Proper continuity through each circuit	Pass.
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.

Test Sequence/Environment	Requirements	Results
Group 8		
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Informative.
Acid battery spray	Samples must pass in items below.	Informative.



Test Sequence/Environment	Requirements	Results		
Group 8				
Dielectric test	Leakage current < 1mA	Pass.	Leakage current [mA]	
		Minimum	0,004	
		Average	0,007	
		Maximum	0,011	
Flex flexible members 20 times	There shall be no degradation in the design intended performance.	Pass.		
Remove and reinstall all components 20 times	There shall be no degradation in the design intended performance.	Pass.		
Visual inspection	Plastic, labels and graphics must not crack, flake, bubble or deteriorate in any other way.	Informative. Please, see p	photos at item 3.8.	

Test Sequence/Environment	Requirements	Results
Group 9		
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.
Vibration test	There shall be no breakage or degradation in the design-intended performance. Shake the EDB vigorously in 3 directions and there shall be no audible rattle, buzzes or squeaks.	Pass.
100% Continuity test	Proper continuity through each circuit	Pass.
Visual inspection	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part.	Pass.

2. SAMPLE & WIRE DESCRIPTION

The Certification of Conformance (C of C), submitted with the test request, lacked the necessary information to verify the samples tested. Therefore the Test Lab cannot verify that the samples have been produced, inspected, and accepted as conforming to product drawing requirements, and made using the same core manufacturing processes and technologies as production or parts.



2.1. Group / Samples

Group	Part Number	Rev.	Date Code	Sample Description	Quantity Tested
All groups	2819069-1	A1	N/A	Maxi Fuse Box Assy	40

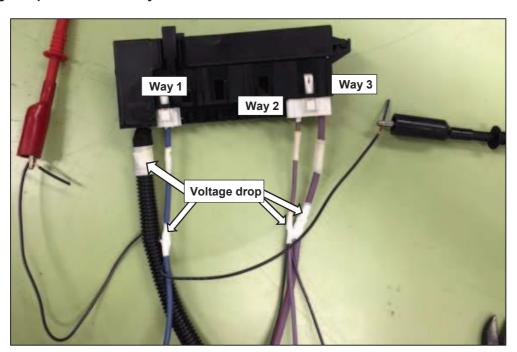
^{*} Information either unavailable or not provided by requestor.

2.2. Wire Information

Group Number	Wire Gage	Overall Diameter	Strand Diameter	Number of Strands	Wire Length
All groups	6mm²	4,15mm	0,29mm	84	40cm
All groups	4mm²	3,49mm	0,31mm	54	40cm
All groups	10mm²	5,74mm	0,40mm	80	70cm
All groups	2,5mm²	2,77mm	0,39mm	19	40cm

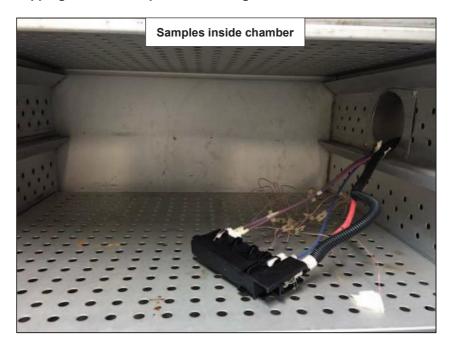
3. SAMPLE PREPARATION

3.1. Voltage drop / 100% continuity test

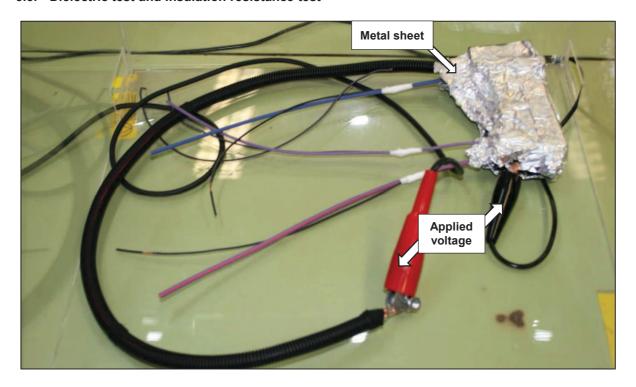




3.2. Thermal mapping / Power dissipation / Heating test

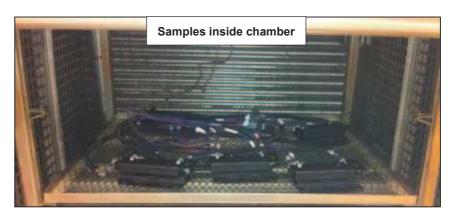


3.3. Dielectric test and Insulation resistance test

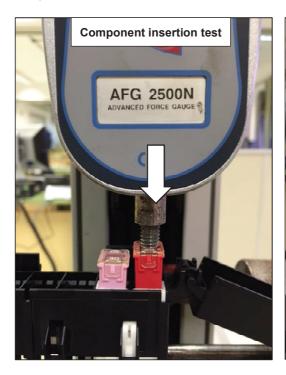


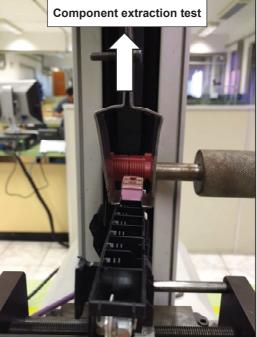


3.4. Thermal shock / Low and High temperature exposure test



3.5. Component insertion/removal test







3.6. Top cover pull-off test



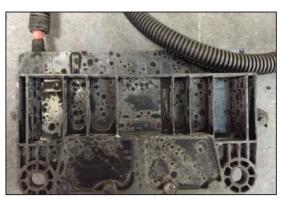
3.7. Drop test





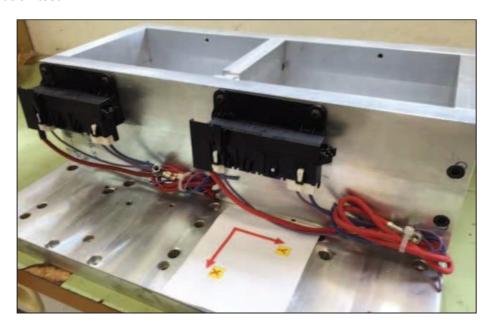
3.8. Acid Battery spray







3.9. Vibration test





4. TEST PROCEDURE

4.1. Voltage drop

Measure the voltage drop between points described at item 3.1 by applying 1ADC to the circuit.

4.2. Thermal mapping

Due to the max vehicle steady state load current uncertainty, it was performed 3 different tests and the results are just for customer information.

Test 1 (82% of specified J-case current):

Apply 82% of the max nominal J-case current to each input/output circuit simultaneously until stabilizes. Measure and record the temperature increase above ambient.

Applied current:

Way 1 = 24,5Adc; Way 7 = 24,5Adc and Way 8 = 40,3Adc.

Test 2 (75% of specified J-case current):

Apply 75% of the max nominal J-case current to each input/output circuit simultaneously until stabilizes. Measure and record the temperature increase above ambient.

Applied current:

Way 1 = 22,5Adc; Way 7 = 22,5Adc and Way 8 = 37,5Adc.

Test 3 (Ford matrix specified current):

Apply the currents specified at Ford matrix to each input/output circuit simultaneously until stabilizes. Measure and record the temperature increase above ambient.

Applied current:

Way 1 = 22,5Adc; Way 7 = 3,9Adc (1,2A nominal steady state op. current + 2,7A max. steady state op. current) and Way 8 = 6Adc (2A nominal steady state op. current + 4A max. steady state op. current).

4.3. Power dissipation

Due to the max vehicle steady state load current uncertainty, it was performed 3 different tests and the results are just for customer information.

Remove and reinstall all components before tests.

Test 1:

Soak the samples at a temperature of 125°C, then after the stabilization apply 82% of the max nominal J-case current to each input/output circuit simultaneously until stabilizes.

Measure and record the temperature increase above ambient.

Applied current:

Way 1 = 24,5Adc; Way 7 = 24,5Adc and Way 8 = 40,3Adc.

<u>Test 2:</u>

Soak the samples at a temperature of 125°C, then after the stabilization apply 75% of the max nominal J-case current to each input/output circuit simultaneously until stabilizes.

Measure and record the temperature increase above ambient.

Applied current:

Way 1 = 22,5Adc; Way 7 = 22,5Adc and Way 8 = 37,5Adc.



Test 3:

Soak the samples at a temperature of 85°C, then aft er the stabilization apply 75% of the max nominal J-case current to each input/output circuit simultaneously until stabilizes.

Measure and record the temperature increase above ambient.

Applied current:

Way 1 = 22,5Adc; Way 7 = 22,5Adc and Way 8 = 37,5Adc

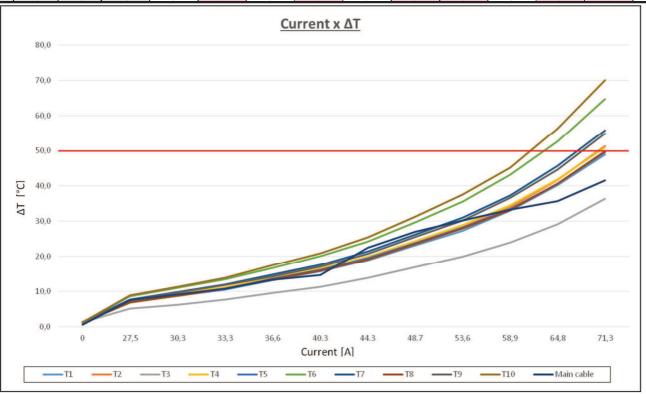
4.4. Heating test

Test performed only for customer information.

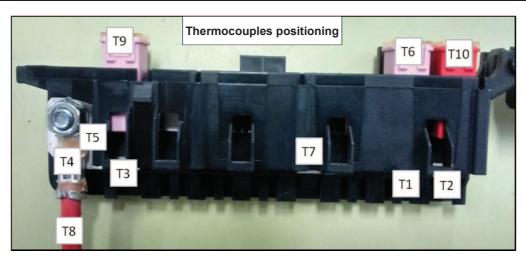
At the beginning of test, It was applied a current of 25% of J-case capacity, then the current was increased by steps of 10% until the delta T reach 50°C.

Please see below a table with the applied current and the reached delta T.

	J-case [A]		Total						Delta T [°C]					
30	30	50	current [A]	T1	T2	Т3	T4	T5	Т6	Т7	Т8	Т9	T10	Main cable
Individual	applied curr circuit [A]	ent in each	0	1,38	1,23	1,21	1,14	1,22	1,19	1,22	1,13	1,03	1,18	0,58
7,5	7,5	12,5	27,5	7,01	7,38	5,06	7,13	6,87	8,51	7,61	6,83	7,36	8,85	7,51
8,3	8,3	13,8	30,3	8,64	8,71	6,15	9,25	8,82	10,99	9,79	8,72	9,57	11,24	9,13
9,1	9,1	15,1	33,3	10,48	10,73	7,61	11,10	10,61	13,40	11,88	10,65	11,70	13,74	10,74
10,0	10,0	16,6	36,6	13,12	13,41	9,50	13,77	13,51	16,54	14,73	13,32	14,21	17,42	13,26
11,0	11,0	18,3	40,3	15,62	15,90	11,16	16,40	16,00	19,97	17,54	15,76	16,90	20,86	14,57
12,1	12,1	20,1	44,3	18,81	19,24	13,83	19,89	19,46	24,14	21,36	19,09	20,70	25,32	22,39
13,3	13,3	22,1	48,7	23,15	23,72	16,88	24,33	23,81	29,67	26,18	23,53	25,46	31,23	26,96
14,6	14,6	24,4	53,6	27,24	28,24	19,86	28,82	28,11	35,49	31,00	27,85	30,21	37,50	30,21
16,1	16,1	26,8	58,9	32,91	33,85	23,87	34,38	33,33	43,04	37,24	33,11	36,54	45,15	33,24
17,7	17,7	29,5	64,8	40,09	41,62	29,14	41,76	40,59	52,60	45,59	40,54	44,62	56,26	35,64
19,5	19,5	32,4	71,3	48,78	51,16	36,25	50,84	49,81	64,66	55,72	49,47	54,82	70,00	41,55







4.5. 100% Continuity test

Measure the continuity between each EDB circuit.

4.6. Dielectric test

Apply 400VAC for 2 minutes between the conductive parts to the outside surfaces of the housing (Al metal sheet).

4.7. Insulation resistance test

Apply 500VDC for 1 minute between the conductive parts to the outside surfaces of the housing (Al metal sheet).

4.8. Thermal shock

Test performed at FACTI-CTI Renato Archer Technology and Information center. Please see details of test FACTI test report nr. DAPE 2k14/179 annex.

125 thermal shock, according to cycle described below:

30 minutes at 125℃

30 minutes at -40℃

Transfer time: < 5 minutes.

4.9. Low temperature exposure test

Soak samples at -40℃ for 72 hours.

4.10. High temperature exposure test

Soak samples at 125℃ for 72 hours.

4.11. Top cover pull-off test

Apply a force to the top cover centered above each of the release latches one at a time (do not apply the force directly to the latch but as close as possible) at rate of 5cm/min.



4.12. Drop test

Drop the EDB a distance of 20cm onto a concrete surface. Repeat once for each opposite direction in all three perpendicular axis for a total of 6 drops.

4.13. Battery acid resistance test

- -Spray the EDB's with battery acid (sulfuric acid with a density of 1,28g/cm³);
- -Allow the EDB's to air dry at 25℃ for 24 hours;
- -Soak the EDB's at 125℃ for 96 hours.

4.14. Vibration test

Test performed at LIT-INPE laboratory. Please see details of test at item 36 of FORD spec. ES-5L1T-14A067-AA and INPE test report nr. TYCO52-R01 annex.

5. TEST EQUIPMENT

All equipment containing a calibration number is calibrated and traceable through TE to the National Institute of Standards and Technology (NIST).

Instrument Description	Manufacturer	Model Number	Calibration Number	Purpose
Climatic Chamber	Weiss	WK1 340	92-339032-004	Low temperature exposure test
Data Acquisition	Agilent	34970A	93-339048-846	Thermal mapping / power dissipation and heating test
Dielectric Analyzer	Associated research, Inc.	HypotUltra III	93-339033-001	Insulation resistance and Dielectric test
Oven	Fanem	320	92-339032-010	High temperature exposure
Digital Multimeter	Agilent	34401A	93-339033-029	Voltage drop / Thermal mapping / power dissipation and heating test
DC Power Supply	Agilent	E3649A	03267	Voltage drop
Digital Dynamometer	Mecmesin	AFG-2500	92-339017-090	Top cover pull-off test / component insertion and removal

6. APPROVALS

Approvals are secured electronically through the corporate document repository routing and approval system.

Testing & Report By: Diogo Rojas, Laboratory Engineer

Reviewed & Approved By: Paulo Almeida, Laboratory Coordinator



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Technical Service Report

DAPE 2k14 / 179

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MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO Centro de Tecnologia da Informação Renato Archer

Divisão de Qualificação e Análise de Produtos Eletrônicos

Rodovia Dom Pedro I, Km 143,6, Campinas, SP CEP 13069-901, Tel: 19-3746-6059, Fax 19-3746-6051 CNPJ: 04.822.500/0001-60 I.E.: Isento

Analyst (s):	Report Date:	Reviser:	Revision Date:		
R. Medeiros	December 9, 2014	Sebastião Eleutério Filho	December 9, 2014		
Customer: Tyco Electronics	do Brasil LTDA.	Requester: Mr. Diogo Biasetto Rojas			
Address / Phone	Number:	ça Paulista – SP. Phone Numbe	r: (55 11) 3404-6278		
Product (s):	Model (s):	Quantity:	Date received:		
Connectors	N.A.	6	November 27, 2014		

1.Objective

Submit connectors to thermal cycling test.

2.Identification Of Product (See Attached Photographs)

Customer identification: 1 to 6.

3.Equipment (s)

Thermal Cycling Chamber Thermotron ATSS-130, temperature range -70°C to 200°C, uncertainty ± 2.0°C.

4. Methodology

Thermal cycling according to description below, see Table 1. Perform visual inspection before and

Reference Method	IEC 60068-2-14		
Temperature cycling test conditions	(125 ± 2)°C and (-40 ± 3) °C		
Exposure Time at each temperature	30 minutes		
Transfer mode	Test Na: less than 30 seconds		
Total number of cycles	125		

Table 1 - Conditions of thermal cycling test according to IEC 60068-2-14.

5.Test Execution

From: November 27, 2014 to December 3, 2014.

6.Conclusion

The thermal cycling was executed according to specifications of item 4. Visual inspection after test showed no damages.

7. Technical Manager

Rafael Cortès de Medeiros Manager Name and Signature

8.Annex:

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Restrict

Photographs



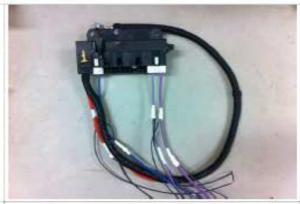


Figure 1. Samples as delivered.



Figure 2. Sample 1 - Connector.



Figure 3. Sample 3 - Identification,



Figure 4. Thermal chamber used to test



Figure 5. Samples arranged into the chamber test.

Figure 6. Sample 1, no damages observed after test. The same was observed for all other samples

9.General Remarks

The results of this report apply only to the above identified samples.

The reproduction of this report only can be total and depends on the CTI authorization.

10. End of Report



RELATÓRIO DE ENSAIOS DE VIBRAÇÃO & CHOQUE

SOLICITANTE: TYCO Electronics Brasil Ltda.

EQUIPAMENTO: MAXI FUSE BOX & BRACKET

MODELO: N/A

N° DO RELATÓRIO: TYCO52 - R01 VERSÃO: 1

INPE/LIT.PM.118/14

RELATÓRIO	DE	ENSAIO N°:					
TYC052-R01							
PÁGINA		VERSÃO					
2		1					

RELATÓRIO DE ENSAIOS DE VIBRAÇÃO- RESUMO

A	Documento No.	TYCO52 - R01
A	Versão / Data de emissão	Versão 1 (Emitida em 27 de Outubro de 2014)
4	No. total de páginas	21 páginas
A	Solicitante	TYCO Electronics Brasil Ltda. At.: Sr. Diogo Biasetto Rojas
A	Endereço	Rua Ampére, 304 - Penha (CEP: 12929-570) Bragança Paulista - SP - Brasil
A	Espécime(s) / Produto(s)	MAXI FUSE BOX & BRACKET P/N: 2819045-1 (Maxi Fuse Box) & 2819068-1 (Bracket)
4	Quantidade	04 (quatro) Amostras identificadas com #01, #02, #03 e #04
A	Especificação de ensaio(s)	Conforme condições de ensaio definidas pela Solicitante (Ref.: Especificação Ford PN: ES-5L1T-14A067-AA): - Ensaio de Vibração / Durabilidade (3 horas/eixo);
>	Resultado(s) do(s) ensaio(s)	Vide páginas seguintes deste documento
>	Data de início do(s) ensaio(s)	15 de Outubro de 2014
>	Data de conclusão do(s) ensaio(s)	16 de Outubro de 2014
>	Área do LIT No. / Laboratório	LIT02 / Laboratório de Ensaios Dinâmicos
>	Processo LIT/PAC No.	ELIT.2183.14.PRO (Serviços #: 335523)
>	Ordens de Serviço Nos.	0153.14.LIT02

CONTROLE DE VERSÕES

Página	Versão	Data	Referência de modificação
1 a 9; A1 a A3; B1 a B4; C1 a C5	1	27/10/2014	- Versão original





RELATÓRIO DE ENSAIO Nº:

TYCO52-R01

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ENSAIOS DE VIBRAÇÃO - MAXI FUSE BOX & BRACKET

1. INTRODUÇÃO

Atendendo à solicitação da empresa Tyco Electronics Brasil Ltda., o Laboratório de Integração e Testes - LIT, do INPE, realizou em suas instalações uma série de ensaios de vibração em quatro (4) amostras da Caixa de Fusiveis & Bracket, fornecidos pela Solicitante. Os ensaios não tiveram acompanhamento de representantes da Solicitante e as condições de realização e os resultados obtidos são apresentados a seguir.

A série prevista de ensaios foi realizada e completada, com sucesso, sem quaisquer ocorrências impactivas ao andamento dos ensaios ou à integridade física das amostras.

2. OBJETIVO DOS ENSAIOS

Os ensaios tiveram por objetivo avaliar a resistência mecânica dos espécimes quando submetidos a ensaios de vibração nos três eixos principais de excitação, conforme condições definidas pela Solicitante e apresentadas no item 7.1 deste documento.

3. PERÍODO DE REALIZAÇÃO DOS ENSAIOS

Quantidade...... 04 (quatro).

Os ensaios foram realizados na área de Qualificação de Sistemas - Laboratório de Ensaios Dinâmicos, do LIT, no período de 15 a 16 de Outubro de 2014.

4. IDENTIFICAÇÃO DOS ESPÉCIMES

•	Denominação	: MAXI FUSE BOX & BRACKET;
•	P/N	2819045-1 (Maxi Fuse Box) & 2819068-1 (Bracket);
•	Dimensões externas [mm]	não especificado;
•	Peso unitário	não especificado:



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6		1	

5. DOCUMENTOS APLICÁVEIS E DE REFERÊNCIA

5.1 DOCUMENTOS APLICÁVEIS

- DA1: E-mail Tyco de 03/07/2014 (Solicitação de ensaios);
- DA2: Documento de especificação Ford PN: ES-5L1T-14A067-AA.

5.2 DOCUMENTOS DE REFERÊNCIA

- DR1: Manuais dos sistemas de vibração LDS V964LS;
- DR2: Manuais do Controlador/Analisador Spectral Dynamics SD2560.

6. REQUISITOS TÉCNICOS

6.1 ÁREA DE ENSAIOS

Os ensaios foram realizados na área de Qualificação de Sistemas do LIT ("Hall" de Testes), na área de Ensaios Dinâmicos, que apresenta as seguintes condições ambientais controladas (somente pessoal autorizado tem acesso a esta área):

• Classe de limpeza....: 100.000 (ISO 8);

• Temperatura..... 23°C +/- 2°C;

• Umidade relativa do ar: 50% +/- 10%.

6.2 EQUIPE TÉCNICA ENVOLVIDA

Os ensaios foram realizados pela equipe do LIT com acompanhamento por um representante da Solicitante, conforme segue:

Pelo LIT.....: Eng. Homero A. F. de Souza;

Eng. André B. Aguiar; Téc. Flavio Alexandre.

Téc. Carlos Eduardo Correa

Téc. Gabriel Faria Silva

Todas as atividades relativas à instrumentação, montagem do adaptador de vibração sobre o meio de ensaio e realização dos ensaios foram de responsabilidade da equipe do INPE/LIT.

6.3 MEIOS DE ENSAIOS

Para realização dos ensaios foram utilizados os meios de ensaio e/ou facilidades listados na Tabela 6.3.1.



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Tabela 6.3.1 - Lista de Equipamentos/Meios de Ensaios

Equipamento	Fabricante	Modelo	No. de Série	Data Calibração	Fornecedor
Vibrador eletrodinâmico	LDS	V964LS		(*)	LIT
Controlador de Vibração	Spectral Dynamics	SD2560 (#1)	***	03/04/2014	IIT
Acelerômetro	Endevco	2221D	10015	22/04/2014	LIT
Amplificador de Carga	Endevco	2721B	DK35	12/03/2014	I IT
Adaptador de Vibração	Тусо				Tyco
Interface LIT (disco)	Kimball				LIT

^(*) Meio de ensaio verificado com utilização de instrumentação calibrada.

7. CONDIÇÕES DE ENSAIO

7.1 ESPECIFICAÇÃO DE ENSAIO

Uma cópia da solicitação de ensaio (e-mail de 03/07/2014) está apresentada no Apêndice A deste Relatório. Um resumo da especificação de ensaios é apresentado a seguir.

7.1.1. ENSAIOS DE VIBRAÇÃO

•	Norma de Referência	Especificação FORD nº ES-5L1T-14A067-AA, item
•	Método de ensaio	36 Figura A e Tabela 1; Condicionamento de vida por vibração senoidal
•	Faixa de freqüência	superposta com vibração aleatória ("sine-on-random"); 10 – 1000 Hz;
•	Nivel de vibração senoidal:	50 – 200 Hz// 8,5 g;
•	Velocidade de Varredura senoidal: Nível de vibração aleatória:	10 Hz $//$ 9,6 (m/s ²) ² /Hz;
		300 Hz // 0,327 (m/s ²) ² /Hz; 1000 Hz // 0,0296 (m/s ²) ² /Hz;
•	Duração do ensaio:	3 horas/eixo:
•	Eixos de ensaio	03 (X. Y & Z)
•	Condição das amostras	Desligadas:
•	Outras informações	Ensaios realizados à temperatura ambiente (23°C±2°C).

7.2 EIXOS DE REFERÊNCIA

Os eixos principais dos espécimes foram definidos conforme especificado pelo Cliente (vide Figura 7.2.1):

- X: eixo transversal;
- Y: eixo longitudinal;
- Z: eixo vertical.



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8		1				

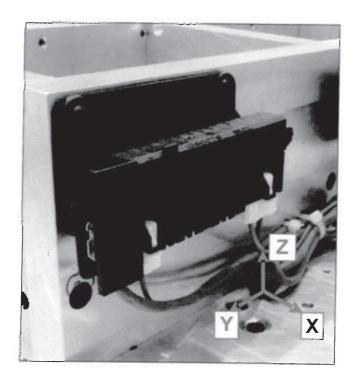


Figura 7.2.1: MAXI FUSE BOX & BRACKET- Eixos de referência (X,Y,Z)

7.3 INSTRUMENTAÇÃO DE CONTROLE

O controle da vibração foi feito através do monitoramento do sinal proveniente de um acelerômetro (ACE01) instalado no dispositivo.

Apresenta-se no Apêndice B a ficha de instrumentação com a identificação do acelerômetro utilizado nos ensaios e suas respectivas características relevantes e, no Apêndice C, fotos ilustrativas da posição de montagem deste sensor.

7.4 MONTAGEM DOS ESPÉCIMES PARA ENSAIOS

As amostra foram ensaiadas simultaneamente, fixadas às faces de um dispositivo em alumínio, fornecido pela Solicitante.

As amostras foram encaminhadas para o laboratório previamente fixadas através dos respectivos suportes (Brackets) às faces do dispositivo de vibração e, portanto, o conjunto foi manipulado como um bloco monolítico.

Para os ensaios no eixo vertical Z, o conjunto foi montado sobre a armadura do vibrador. Para os ensaios nos eixos lateral (X) e longitudinal (Y), o conjunto dispositivo mais amostras foi montado sobre a mesa transversal do sistema de vibração.

As fotos apresentads no Apêndice C deste Relatorio mostram o esquema de montagem utilizado na realização dos ensaios.

do



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8. DESENVOLVIMENTO DOS ENSAIOS

Os ensaios de vibração foram realizados em três etapas, numeradas e identificadas cada uma como um ensaio particular, conforme está apresentado no Apêndice B deste documento. Os ensaios foram realizados na seguinte sequência de eixos: X, Y e Z. Todos os ensaios foram completados com sucesso sem quaisquer ocorrências impactivas ao andamento dos mesmos ou à integridade física das amostras.

As amostras foram inspecionadas visualmente antes, durante o transcorrer e ao final dos ensaios em cada eixo, constatando-se que não apresentavam sinais de danos mecânicos externos e/ou indícios de desprendimento das peças.

9. RESULTADOS/COMENTÁRIOS

Os ensaios foram realizados e completados com sucesso como descrito no item 8 deste relatório e foram aplicados em conformidade com as especificações apresentadas no item 7.

Os registros obtidos nos ensaios de vibração são apresentados no Apêndice B deste relatório e representam a Densidade Espectral de Aceleração [g²/Hz] do sinal de controle em função da freqüência [Hz].

Através de inspeção visual externa realizada durante e após os ensaios, constatou-se que não haviam indícios de ocorrências de danos mecânicos externos e/ou partes soltas nas amostras ensaiadas.

Cabe observar que durante os ensaios foi observado ruído de choques entre partes devido à folga existente na fixação das amostras aos respectivos brackets. Tal ocorrência foi mais significativa no ensaio no eixo X (eixo transversal das amostras).

Os resultados apresentados neste documento são restritos às amostras relacionadas no item 4 e para as condições gerais de ensaios explicitadas no item 7.

Fotografias ilustrativas da instrumentação de controle, da montagem dos espécimes sobre os meios de ensaio estão apresentadas no Apêndice C deste Relatório.

Eng. responsável:

-27/10/2014

Homero A. Furquim de Souza



RELATÓRIO DE ENSAIO №: TYCO52-R01 PÁGINA VERSÃO A1 1

APÊNDICE A CÓPIA DA SOLICITAÇÃO DE ENSAIOS





RELATÓRIO DE ENSAIO Nº: TYCO52-R01 PÁGINA VERSÃO A2 1

Assunto: Vibração Maxi fuse box (Bracket)

De: "Biasetto Rojas, Diogo" <diogo.rojas@te.com>

Data: 03/07/2014 17:03

Para: Homero <homero@lit.inpe.br>
CC: "pac@lit.inpe.br" <pac@lit.inpe.br>

Boa tarde Homero,

Conforme conversamos ontem, segue o perfil do teste que eu preciso fazer (será testado com sinal senoidal sobreposto, pois é no compartimento do motor).

O dispositivo tem mais ou menos 15kg (4 peças) e deve-se usar o slip table.

Segue anexo o desenho do produto e o perfil.

Qualquer dúvida eu estou à disposição.

Obrigado.

Att.

Diogo Biasetto Rojas

Laboratory Engineer Automotive Division Brazil

+55 11 3404 6278 tel +55 11 3404 6045 fax

diogo.rojas@te.com



www.te.com

-Vibração.jpg-



RELATÓRIO DE ENSAIO Nº: TYCO52-R01 PÁGINA VERSÃO A3 1

Surd

Engineering Specification

FRAME 27 OF 39 REV. A PART NO. ES-SL1T-14A067-AA

/ TEST PROCEDURES AND REQUIREMENTS (continued)

D. Testing Procedures and Description (continued)

36. Vibraton Test

Scope: This test evaluates the EDB's ability to endure vibration.

a. Procedure

- Secure the EDS in vehicle position via production level bracket and hardware as defined by the responsible Design Engineer.
 Ensure that each engine in the EDS is filled with the
- Ensure that each space in the EDB is filled with the appropriate components (fuse, relay, GEM, connector, ...etc).
- The test shall be performed 3 hours in 3 perpendicular planes (vertical, horizontal and transverse) in sequence for a total of 9 hours.
- For passenger and trunk compartment EDB's use the wide-band noise tibration profile shown in Appendix A. Figure 3 unless the actual vehicle vibration profile is available for the EDB's mounting location.
- For engine comperment EDB's, superimpose a sine wave shown in Table 1, onto the widebend noise vibration profile shown in figure A unless the actual vehicle sibration profile is available for the EDB's mounting location.

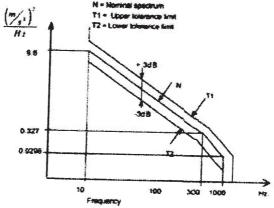
Table 1 f₁ (Hz) a(g) 50-200 8.5 200-650 5 650-200 5 200-50 8.5

Sweep Rate= 0.75 hz/s Effective of Acceleration= 20 m/s²

b. Requirement

- There shall be no breakage or degradation in the design-intended performance.
- Shake the EDB vigorously in 3 directions and there shall be no audible rattle, buzzes, or squeaks
- Test proper continuity through each circuit per: III, D. 1, 100% Continuity Test.

Power Spectral Density Vibration Profile



Reference:

Figure A. In particular with regard to the test specimen (natural frequency) and the selection of measuring and control points reference is made to DIN 40046, section 23.

May 1988

PD 3947-a2

FAP03-150

Vibração.jpg 96,8KB mfbox-Instalacao duvidas.pdf 208KB



RELATÓRIO DE ENSAIO Nº:
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PÁGINA VERSÃO
B1 1

APÊNDICE B REGISTROS OBTIDOS

RELATÓRIO I	DE ENSAIO N°:
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B2	1

B1 - INTRODUÇÃO

Apresentam-se nas Tabelas B1.1 e B1.2, a sequência de execução de ensaios e a Ficha de Controle de acelerômetros, respectivamente e, em seguida, a lista dos registros gráficos obtidos nos ensaios aplicados nos espécimes em questão.

TABELA B1.1 - QUADRO-RESUMO DA SEQUÊNCIA DE ENSAIOS

Ensaio #	Test ID	Eixo	Ensaio / Tipo	Observações
01	MFXR01	1	Durabilidade / Sine-on-Random	Ok (Completado!)
02	MFYR02	2		Ok (Completado!)
03	MFZR03	3	The state of the s	Ok (Completado!)

TABELA B1.2 - FICHA DE CONTROLE DE INSTRUMENTAÇÃO

N°	Modelo	N/S	Sensib. [pC/g]	Função	Certificado de Calibr. #	Data Calibr. [d/m/a]	Data Instal. [d/m/a]	Medida Isolação [GΩ]	Observ. (cabo #)
ACE01	2221D	10015	18,812	Ctrl	CC-1982	22/04/14	15/10/14	N.A.	Z 577

NOTA: N.A. = Não Aplicável.

B2 - LISTA DE FIGURAS

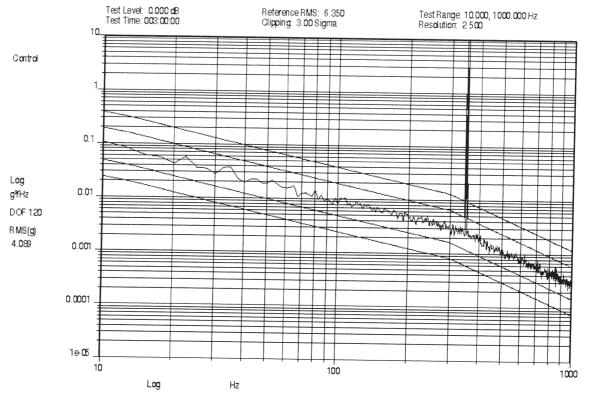
Figura Nº	Ensaio Ref.#	Eixo	Test ID	Gráfico do Sinal de Controle
B2.1	01	X	MFXR01	Ok // 3h (Durabilidade)
B2.2	02	Υ	MFYR02	Ok // 3h (Durabilidade)
B2.3	03	Z	MFZR03	Ok // 3h (Durabilidade)

Nota 1: Ensaio realizado em duas etapas (Run1 e Run 2).





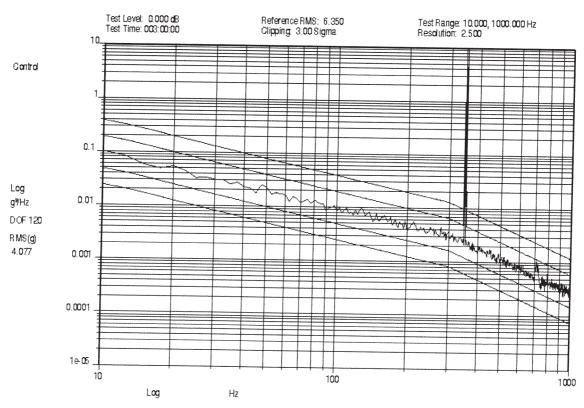
RELATÓRIO DE ENSAIO Nº:
TYCO52-R01
PÁGINA VERSÃO
B3 1



 15:38:27
 ENS AIO 01-Eixo X/Sine-On-R andom/Durabilidade/3 Horas

 15-Oct-2014
 15-Oct-14-MFXR01-TYGO: Maxi Fuse Box & Bracket (Amostras: 1/2/3/4)

Fig. B2.1



 19:06:56
 ENS AIO 02-Eixo Y/Sine-On-R andom/Durabilidade/3 Horas

 15-Oct-2014
 15-OCT14-MFYR02-TYCO: Maxi Fuse Box & Bracket (Amostras:1/2/3/4)

Fig. B2.2



RELATÓRIO DE ENSAIO Nº:
TYCO52-R01
PÁGINA VERSÃO
B4 1

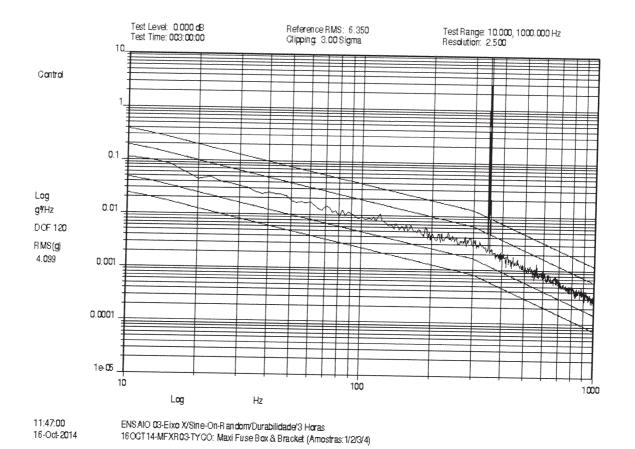


Fig. B2.3





RELATÓRIO DE ENSAIO Nº:
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PÁGINA VERSÃO
C1 1

APÊNDICE C

FOTOGRAFIAS DA MONTAGEM DOS ESPÉCIMES SOBRE OS MEIOS DE ENSAIO E DA INSTRUMENTAÇÃO DE CONTROLE

RELATÓRIO	DE ENSAIO Nº:
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C2	1

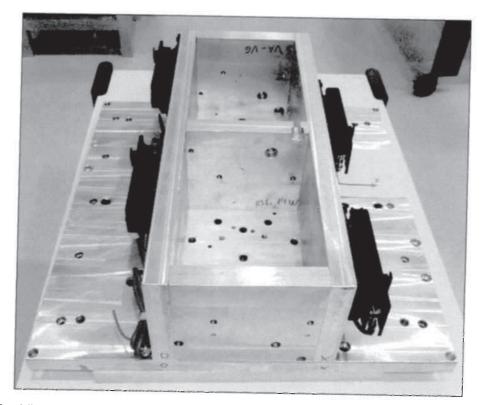


FOTO 01 – Vista geral com Amostras #01, #02, #03 e #04 montadas no adaptador de vibração.

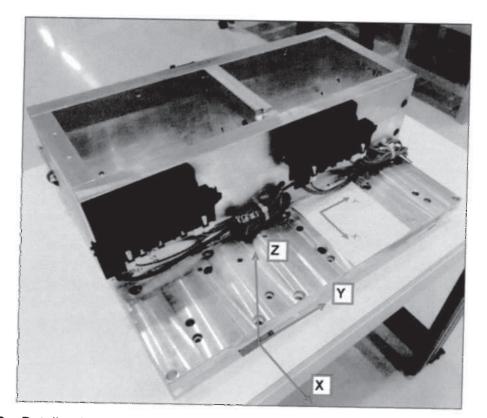


FOTO 02 – Detalhe do triedro de referência (X,Y,Z) utilizado na realização dos ensaios.

4

RELATÓRIO I	DE ENSAIO Nº:
TYCO	52-R01
PÁGINA	VERSÃO
C3 -	1

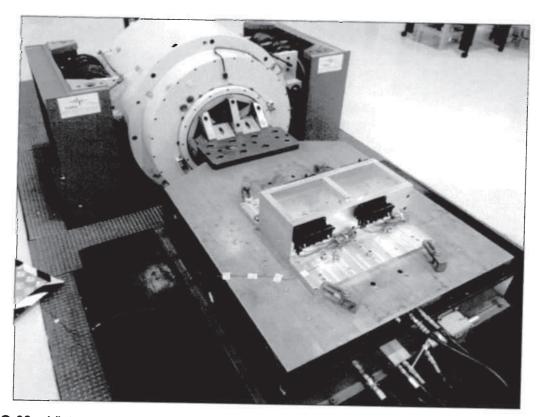


FOTO 03 – Vista geral do ensaio de vibração/durabilidade aplicado no eixo X.

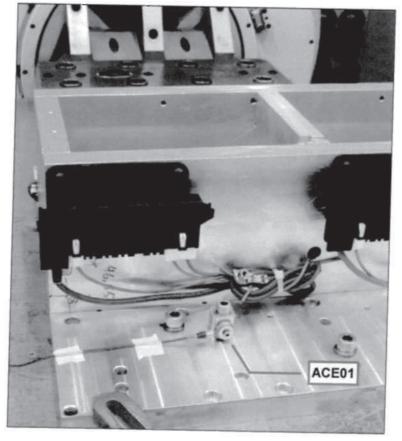


FOTO 04 – Detalhe da localização do acelerômetro de controle ACE01 para o ensaio no eixo X.

4

RELATÓRIO I	DE ENSAIO Nº:
TYCO	52-R01
PÁGINA	VERSÃO
C4	1

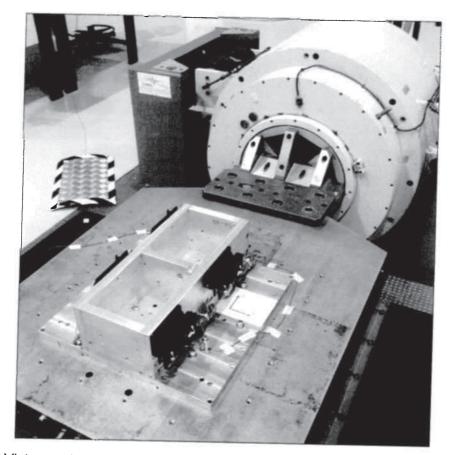


FOTO 05 – Vista geral do ensaio de vibração/durabilidade aplicado no eixo Y.

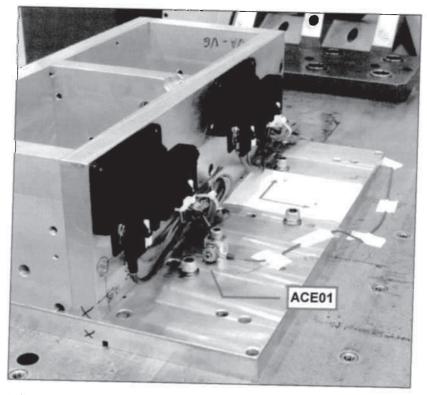


FOTO 06 – Detalhe da localização do acelerômetro de controle ACE01 para o ensaio no eixo Y.



RELATÓRIO D	DE ENSAIO Nº:
TYCO	52-R01
PÁGINA	VERSÃO
C5	1

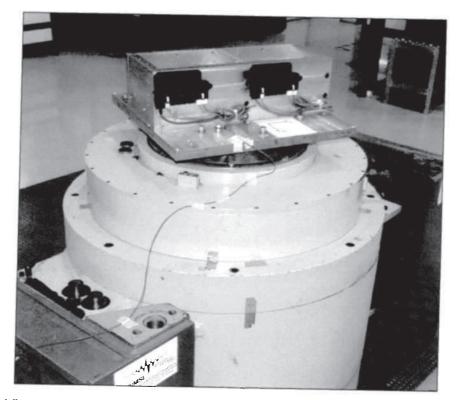


FOTO 07 – Vista geral das amostras montadas, estando em configuração para o ensaio de vibração/durabilidade aplicado no eixo Z.

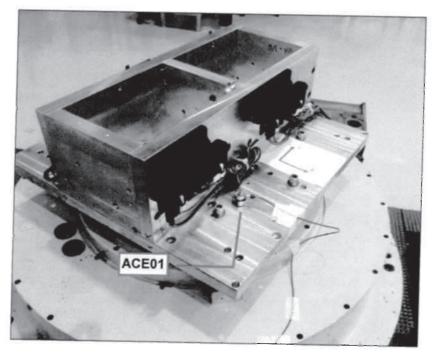


FOTO 08 – Detalhe da localização do acelerômetro de controle ACE01 para o ensaio no eixo Z.



System (CPSC)	18.00.00		PA	PMT / PAT	Electrical	zal		Champion	Rauf Suzuki		ateO	1,100/00/00	1	Cond Comm AMT France Day						THE
Sub-System (CPSC)	18 01 07							Average and a second se			Date	25005034	Total Control	rota catgo Avri ruse Box	×	^ 22 /			HGMT's to DVP	65
TEST DESCRIPITION CETF			DESIGN	de constraint (CECC)	# B		BENCH	11	uo	Vüsers\lb015218\bocumer	DATES	99214 MFB F4		TEST	RISK	< LB >			Pending RQMT'S	65
MVd /	Acceptance Criteria	PART NUMBER L	LEVEL	REQUIREMENTS	SYSTEM	LEADER	BUCK	VEHICLE É	Outail PP	REDICTED	STAI	ACTUAL RT END	PHASE FAIL PASS	FAIL Test Results PASS	YES DONE	Route Cause	Road Map to Pass	DATE TO CLOSE	General Comments	From (if Cascade or Tranfer)
In This test it to check each circuit from input to output individually in the EBB. This also verifies the presence of functioning components.	is Proper continuity through each Tyco PN: 2013- circuit		CP ES	B-SLIT-14A067-AA (Ted 1)_1909/€ CONTRUITY TEST_0	Maxi Fuse Box	<u>Радисов</u>	BUCK	KA A 2007	See Rqmt detail 3 Montus				Ĉ							
Thermal Mapping - Test 2: This test provides information as to where the most critical thermal areas of the EDB may be. It also gives the necessary information where to place thermo-couples for the tests that require thermal data.	or the temperature of the EDB shall not increase above the ham 50° C max, and/or the EDB temperature by more than 50° C max, and/or the EDB temperature shall never exceed its material deflection temperature at 460 kPa (66 psi)	Tyeo PN: 2013- LEIO-0479-01	CP ES	ESSLIT-14ANG-AA/TG6	Maxi Fuse Box	Marcos. Odawa	BUCK K	KA 2007	2 Schonins				ð							
Power Dissipation Test : Test 3: This test provides information about the EDB s ability to dissipate and manage heat.	1. The voltage drop before the test shall be less than or equal to: (mumber of crimps x 0.5 mV/mm). (mumber of crimps x 0.5 mV/mm). 10 mV/mm): 2. The voltage drop after test completion shall be less than or equal to: (mumber of terminal interfaces x D mV/mm); 2. The voltage of terminal interfaces x D mV/mm) + (number of terminal minerfaces x D mV/mm) + (number of terminal minerfaces to D mV/mm) + (number of terminal minerfaces to D mV/mm) + (number of terminal minerfaces to a my vernimal mineriar temperature by more than a mineriar temperature of the EDB shall now terced its material deflection temperature of the EDB shall not increase at any terminal minerface to a temperature of the EDB shall not increase at any terminal minerface to a temperature of the EDB shall not increase at any terminal minerface to a temperature of the EDB shall not increase at any terminal minerface to a temperature of the EDB shall not increase at any terminal minerface of any terminal is temperature of the EDB shall not necessate by a temperature of the EDB shall not necessate at any terminal minerface to a temperature of the EDB speciated by that relay. 5. There shall be no visible dissiontion of PCB traces, arminals, or components that are a evall of overheating.	Tyco PN: 2013. LEII-0-0-79-0.1	CD ES.	BS-SLIT-14A/67-AA (Tost 3), POWER DISSIPATION TEST_0	Maxi Fuse Box	Dozama	BUCK AN BR	Ford Gargo Box	sdinoM &				Ŝ							
135° Short Circuit Test - Test 4: This test ensure that every etreuit in the EDB is protected in the event of a short or system multimection.	There shall be no plastic flow or terminal fusing.	Two PN: 2013.	CP ES	ES-SLIT-14A/67-AA (Test 4), 135% SHORT CIRCUT TEST	Maxi Firse Box	Warcos	Ford Carg	Ford Cargo	2 меекз	V/N	N/A	✓ ✓ ✓ ✓		NOT APPLICABLE					The components used in our proposal, is the same used for Amazon project where this characteristic ans approved.	
		- The state of the			-			-				-	-		-					Villagilapara da managing papaganan



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From (if Cascade or Tranfer) 120T 92 This test was Approved for the KA project using 4 fuse 60A; I fuse 40A and 1 fuse 20A. For Cargo Project, Ford will use only 1 fuse 90 A and I fuse 50A A MFB tem apenas um polo e não é possive lendir a rigidez dielétrica enere cavidades. Será embrulhado a MFB em papel a munino e medit a rigidez dielétrica entre o condutor e a folha de aluminio. The components used in our proposal, is the same used for Amazon project where this characteristic was approved. ending RQMT'S General ROMT's to DVP DATE TO CLOSE Road Map to Pass Route Cause < EA > ^ OO : RISK % YES DONE NO Ford Cargo AMT Fuse Box Test Results NOT APPLICABLE NOT APPLICABLE TEST PHASE FAIL PASS CP CP 21/01/2014 END N/A Y. Date START N/A Ý. DATES END V/V NA START V/V ¥. Raul Suzuki 7. weeks 2 weeks 2 weeks stinoM & Duration 9 νπρ Champion VEHICLE Ford Cargo AMT Fuse Ford Cargo AMT Fuse Ford Cargo AMT Fuse File Name BENCH VEHICLE BUCK BUCK BUCK BUCK BUCK LEADER Marcos Marcos Marcos Marcos Ferminal Electrical Maxi Fuse Box Maxi Fuse Box SYSTEM Maxi Fuse Box Maxi Fuse Box ES-5LIT-14A067-AA (Test 7)_INSULATION RESISTANCE TEST_0 (CPSC) ES-5LIT-14A067-AA (Test 8)_KEY LIFE TEST_0 REQUIREMENTS ES-5LIT-14A067-AA (Test 5)_135% FUSE CIRCUIT BREAKER LOAD TEST_0 ES-SLIT-14A067-AA (Test 6)_DIELETRIC TEST_0 sub-Sub-system PMT / PAT DESIGN CP CB CP C PART NUMBER Tyco PN: 2013-LE10-0479-01 Tyco PN: 2013-LE10-0479-01 Tyco PN: 2013-LE10-0479-01 yco PN: 2013-E10-0479-01 1. The mwd/Amp before the test shall be less than or equal to: (tunmber of crimps x 0.5 mWd/Amp) + (tunmber of terminal minerface x 1.0 mWd/Amp); 2. The mwd/Amp after test in the more equal to: (tumber of crimps x 1.0 mWd/Amp) + (tumber of terminal minerface x 2.0 mWd/Amp); 3. Temp, is not to exceed 50°C. There shall be no discontinuities greater than 7 ohms for more than T 10 microseconds; 5. There shall be no breakage or degradation in the design intended performance; 6. Shake the EDB vigorously (by hand) and there shall be no rattle; 7. All threaded fasteners shall retrain the minimum specified 18.01.07 18.00.00 The insulation resistance shall not be less than 10 Mohm. The leakage current shall not exceed 1mA. Acceptance Criteria 460 kPa; This test ensures that the material used for the housing is sufficient for insulating the current in the EDB with any Dielectric Test - Test 6: This test ensures that any circuit is sufficiently isolated from adjacent circuits. Key Life Test - Test 8: This accelerated test replicates na 10 year/150K mile life expectancy for the EDB for the worst case 90th Insulation Resistance - Test TEST DESCRIPITION CETP This test ensures that every circuit in the EDB is protected in the event of a short or system malfunction. 135% Fuse Load Test - Test Sub-System (CPSC) / DVM rrounding part. system (CPSC)

Ford Cargo AMT Fuse Box D V P & R - Track System

Ford Cargo AMI Fuse Box	DVP&R - Track System

. Tall	65	From (if Cascade or Tranfer)			
RQMT's to DVP	Pending RQMT'S	11 13			
RO	la _d	DATE TO CLOSE			
		Road Map to Pass			
		Road Ma			
* 00 ×	<lr>></lr>	Route Cause			
		RISK % YES DONE NO			
T Fuse Box					
Ford Cargo AMT Fuse Box		Test Results			
		TEST PHASE FAIL PASS	₽ ₽	8	ê5
21/01/2014	899214 MFB FC	ACTUAL F			
Date	RTS'RTS				
	Osers/15015218/Documents	DATES DICTED END			
Raul Suzuki	7: VOsers/1501	PREDICT START			
	6	VTTQ Duration	dinom f	£ thnom I	E throw 1
Champion	File Name	H VEHICLE	Ford AMT Fine Box	Ford Cargo Box	Ford Cargo AMT Fuse Box
***************************************		BENCH BUCK	BUCK	BUCK	BUCK
Electrical	Terminal	, LEADER	re Marcoga	KATCOS	MALCOS. Doswe
	SUB SYSTEM		Maxi Fuse Box	Maxi Fine Box	Maxi Fuse Box
	Sub-Sub-system (CPSC)	REQUIREMENTS	0.AA (Test HOCK EST_0	67-AA TEA FEATURE ST_0	67.AA (Test PERATURE ST.0
PMT / PAT	Sub-Sub-syst	REQUI	ESSLIT-14000-7AA (Tes P), THERMAL SHOCK RESISTANCE TEST_0	LES-SLIT-14A067-AA (Test 10), LOW TEXPERATURE EXPOSURE TEST_0	ESSUTHANGAATE III. IRGN TEMPRATURE ENYSSURE ITST.0
	<u></u>	R DESIGN		ê	40
		PART NUMBER LEVEL	Tyee PK: 2013- LE10-0479-01	Tyce PN; 2013- LEI0-0479-01	Tyco PN: 2013-
18.00.00	18.01.07	Acceptance Criteria	1. The voltage drop before the test shall be less than or equal to (number of termins v 0.5 mV/Amp). 4. Humber of terminal interfaces x 1.0 mVArap). 1.0 mVArap). 2. The collage drop alter test completion shall be less than of equal to (number of terminal interfaces x 2.0 mVArap). 3. There shall be less than of extendial interfaces x 2.0 mVArap). 3. There shall be no wished terracks of distortion in the assemblies; 4. Remove and reminal the top cover 20 times. There shall be no experienced to the maximum allowable travel. 20 times. There shall be no degradation in the design intended performance: 5. Flex 6 of each type of flexible maximum allowable travel. 20 times. There shall be no degradation in the design intended performance: 5. Remove and entendal till the maximum paltowable travel. 20 times. There shall be no degradation in the design intended performance: 7. The residual torque of all intended bengandation in the design intended performance: 7. The residual torque of all intended bengandation in the design intended performance: 7. The residual torque of all intended bengandation in the design intended performance: 7. The residual torque of all intended performance: 8. The residual torque of all intended performance: 9. The residual torque of all intended performance: 1. The residual torque of all intended performance of all intended performance.	I. There shall be no visible cracks or distortion in the assembles; 2. Remove and reinstall the top cover 30 times. There shall be no degradation in the disey in intended performance. 3. Flex to of each type of flexible to performance. 3. Flex to of each type of flexible transmittening the maximum allowable travel 20 times immediately after removing the EDB from the cold chamber. There shall be no degradation in the design intended performance: 4. Remove and remnall all the immediately after removing the immediately after removing the EDB from the cold chamber. There shall be no degradation in the closely intended performance; 6. EDB from the cold chamber. There shall be no degradation in the design intended performance;	Remove and remain the top over 20 times immediately after moving the EDB from the ban handler. There stail be not the progradition in the design intended reformance in ed-case intended reformance and reinstall all the aning connectors. 20 times mentalized after removals after the Bill from the law channer. There all the not degradation in the resign intended performance:
System (CPSC)	Sub-System (CPSC)	TEST DESCRIPITION CETP / DVM	Thermal Shock Resistance Trest - Trest 9: The set vealurates the EDB s. material resistance to extreme thermal cycling.	Low Temperature Exposure Test - Test	High Temperature Exposure Piets - Test 11:: of This test evaluates the EDB's in material resistance to high de temperature.



Ford Cargo AMI Fuse Box DVP&R - Track System
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fant 65	65	From (if Cascade or Tranfer)					
ROMT's to DVP	Pending ROMT'S	General	Test already done for connectors of Annazon Mari Fuse Box, For new proposal, will not be changed the connectors and terminals	Test already done for connectors of Amazon Maxi Fisse Box, For new proposal, will not be changed the connectors and terminals	Test already done for connectors of Anazon Maxi Fuse Box, For new proposal, will not be changed the connectors and terminals		Test already done for connectors of Anazon Mari Fuse proposal, will not be changed the connectors and terminals
		DATE TO CLOSE					
		Road Map to Pass					
		Road Ma					
< 00 >	< LR >	Route Cause					
	and the second second	RISK % YES DONE	Design control of the				
Ford Cargo AMT Fuse Box		Test Results	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		NOT APPLICABLE
		TEST PHASE FAIL PASS				ŧ	
21/01/2014	399214 MPB FC	Q	Ž.	N/A	N/A		N/A
Date	RTS/RTS 899	ACTUAL START 6	N/A	N/A	N/A		N/A
	218\Documents	DATES CTED END	NA	N/A	N/A		N/A
Raul Suzuki	C:\Users\lb015	PREDICTED START R	NA NA	NA	NA		N/A
		PUTTY	9	9	9	9	9
Champion	File Name	VEHICLE	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMIT Fuse Box
		BENCH VEHICLE BUCK	BUCK	BUCK	BUCK	BUCK	BUCK
Electrical	Terminal	LEADER	Marcos	<u>Narcos</u>	Макков	Останова	Marcos. Oznaz
Elec	Ten	SUB	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fise Box	Maxi Fuse Box
	Sub-Sub-system (CPSC)	REQUIREMENTS	ES-SLIT-14M67-AA (Test 12)-TRMINAL INSERTION TIST_0	ES-SILT-IAM67-AA (Ted 13, TEMINAL RETEVTION TEST_9	ES-SUT-14M67-AA (Tes ia, traminal pusipul. Test. o	BS \$17T-144667 AA (Test (9, COMPONENT TASBETTON / REMOVAL, TIST, ()	ES-SLIT-144667-AA (Ted
PMT / PAT	Sub-Sub-sys	REQU	ES-SLIT-14A 12)_TERMINA TEST_0	_ES-SLIT-14A 13_TERMINA TEST_0	_ES.SLIT-14A 14,_TERMINA TEST_0	LES-SLIT-14A 15). COMPON REMOVAL 'IT	ES-5LIT-14A
		DESIGN	Ĉ	ð	. 8	5	ď
		PART NUMBER	Tyco PN: 2013- LE10-0479-01	Tyco PN: 2013- LE10-0479-01	Tyeo PN: 2013-	3 LEIO-0479-01	Tyeo PN: 2013- LE10-0479-01
18.00.00	18.01.07	Acceptance Criteria	The force required to insert the terminal fight into the cavity must probe by the cavity must probe greater than 14 Newton's or cause the wire to backle during insertion.	Terminals designed to lock into pre molderd cavities shall withstand a pull force of 80 Newton.	Each terminal shall substants a III.N pashall force without to residue or degradation in design intended performance.	I. The maximum insertion force shall be M. 8. of maning terminal blades. The value of nis. 2.8mm => 20x1 => terminal size 2.8mm => 25x1 => terminal size 4.8mm => 15x1 => terminal size 4.8mm => 15x1 => terminal size 6.3mm => 25x1 => terminal size 6.3mm => 15x1 => terminal size 6.	L. Each Bolt in connector a shrondower shall withstand a 670X with no distortion or degradation in the design intended performance. Each plag in connector shrond shall withstand 110X with no distortion or degradation in the distortion degradation in the distortion degradation degradatio
System (CPSC)	Sub-System (CPSC)	TEST DESCRIPITION CETP / DVM	Terminal Insertion Force 1 Test 12: This test evaluates the case of inserting terminals in the EDB. This test is for reference only.	Terminal Retention Test - Test 13. The test evaluates the EDB shifty to retain its terminals.	Terminal Dush/Pull Test - Trest 14: This test evaluates the EDB's ability to endure forces applied to its blade terminals (non wire terminals only)	Component Insertion/Removal Test - Test 15: This test ensures that the force required is to insert or remove any component in the EDB is within Ford Motor Company specifications.	Connector Pull Test - Test 16: This test ensures that there will be proper retention of all connectors attached to the EDB.



Date Issued: 25/11/2002 Date Revised: 7/28/03

Ford Cargo AMT Fuse Box DVP&R - Track System

65	65	From (if Cascade or Tranfer)					
HQMT's to DVP	Pending ROMT'S	General	Text already done for connectors of Arnazon Mara it has it has it has been been been been been been been connectors and terminals	Maxi Fuse Box is not scaled. There is no problem in fled for current version.			Maxi Fuse Box proposed doesn't have Bottom Cover
		DATE TO CLOSE		,			
		Road Map to Pass					
< 55 >	<lr></lr>	Route Cause					
	***************************************	RISK % YES DONE NO					
Ford Cargo AMT Fuse Box		Test Results	NOT APPLICABLE	NOT APPLICABLE			NOT APPLICABLE
		PHASE FAIL PASS		~	ð	ŧ	
21/01/2014	214 MFB FC	Q.	ΝΆ	N/A			N/A
Date	RTS/RTS 899	ACTUAL START E	N/A	N/A			N/A
	C: Users 15015218/Documents/RTS/RTS 899214 MFB	DATES PREDICTED TT END	NA	N/A			Ϋ́
Raul Suzuki	C: Users 1501	PRED	N/A	N/A			XX
		VTTO ,	 E	ξ) week	9	9
Champion	File Name	VEHICLE	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuxe Box	Ford Curgo AMT Fuse Box
	-	BENCH VEHICLE BUCK	BUCK	BUCK	- BUCK	BUCK	BUCK
Electrical	Terminal	LEADER	Marcos	Магсов	Marcos	Marcos	Marcos
Ele	Ţ.	SYSTEM	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box
PMT / PAT	Sub-Sub-system (CPSC)	REQUIREMENTS	ESSLIT-HAWETAA (Tee	ES SLIT IAM67 AA (Ted (8), DUST TEST_0	BS-SLIT-14M67-AA (Tea (9)_ DROP TEST_0	ES-ELIT-LAMOC-AA/Tes 200_TOP COVER PULL TEST_0	ESSUTTAMEAN (Tee TEST_O
Lá.	_ <u>ਲ</u>	DESIGN	£ 3,1	CP 67	CP 1.9	8 8	do do
		PART NUMBER LEVEL	Tyce PN: 2013- LE10-0479-01	Тусо РN: 2013- LE10-0479-01	Tyo PN: 2013- LE10-0479-01	Tyco PN: 2013. LE10-0479-01	Tyco PN: 2013- LEI0-0479-01
18.00.00	18.01.07	Acceptance Criteria	1. The voltage drop before the test shall be less whall be less than or equal to (tunmer or of trimps x 0,5 mV/kmp) + tunmer of terminal interfaces x 10 mV/kmp; than 10 mV/km	1. The voltage drop before the test shall be less than or equal to: (tuniber of crimps x 0.5 mV/Amp) + froundre of terminal interfaces x 1.0 mVAmp). 2. The voltage drop after test completion shall be less than or equal to: (tumber of crimps x 1.0 mV/Amp) + (tumber of crimps x 1.0 mV/Amp) + (tumber of crimps x 1.0 mV/Amp).	1. The EDB cover(s) shall not fail off. 2. Proper continuity through each curvain per III. D. 100% continuity Test. Continuity Test. 2. There shall be no breakage or degradation in design-intended performance. 4. Lake and graphics must not creek. flake, bubble, or deteriorate in any other when the EDB vigorously in 3 Garke the EDB vigorously in 3 directions and there shall be no audible ruttle, buzzes or squeaks.	I. The top cover must withstand: II. (IN opposinger and trunk compariment mounted; 2. 20N (engine compariment mounted), before separating from the base. 2. There shall be no demage to the base.	1. The bottone cover must withstand -140N before separating from the base; 2. There shall be no damage to the base.
System (CPSC)	Sub-System (CPSC)	TEST DESCRIPTION CETP / DVM	Humidity - Temperature Cycle Test - Test 17: This test the EDB's billity to endure various combinations of temperature and humidity.	∞ ,∞	Perform Drop Test - Test 19: This test evaluates the EDB's ability to endure impact.	Top Cover Pail-Off Test - Test 20: This test evaluates the EDB's ability to retain its top cover.	Bottom Cover Pull-off Test - Trest 21: This test evaluates the EDB's ability to retain its bottom cover.



15df 6.5	65	From (if Cascade or Tranfer)					
ROMT's to DVP	Pending ROMT'S	General	The MFB doesn't have receptacle terminals, only Tabs.	The MFB doesn't have receptude terminals, only Tabs. Test not applicable - MFB will not be exposed to this fluid will not be the mean terminal to the mean terminal		Test not applicable - MFB wit not be exposed to this fluid	
_ <u>u</u>	DATE TO CLOSE			H 0	<u> </u>	£ 8	
		Road Map to Pass					
<00>	<lr></lr>	Route Cause					
		RISK % YES DONE NO					
Ford Cargo AMT Fuse Box		Test Results	NOT APPLICABLE				
		TEST PHASE FAIL PASS					
21/01/2014	214 MPB FC	Q	N/A	NA	NA	V/V	
Date	VRTS KTS 899	ACT START	N/A	NA	ΝΑ	ζ. Ž	
	C: (Users/15015218/Do	DATES PREDICTED T END	N.A	N/A	NA	NA	
Raul Suzuki		PREC	NA NA	N/A	NA	NA NA	
		OTTY Duration	 	 c	 7	7	
Champion	File Name	4 VEHICLE	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuxe Box	Ford Cargo AMT Fuse Box	
-	Terminal	BENCH BUCK	BUCK	BUCK	BUCK	- BUCK	
Electrical		LEADER	Массов.	Мактов	Marcos	Raccos	
Ele		SUB	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	
PMT / PAT	Sub-Sub-system (CPSC)	REQUIREMENTS	ES-SLIT-14AND AA/Ted 22, COMPONENT ROCKING TEST_0	BS-5LT-14M/G-AA (Tes 3), OIL RESISTANCE TEST_0	BS-GIT-14M67-AA-(Tes 341_GAS-RESISTANCE TEST_0	BS-LIT-HAM7-AA-(Ted 25, AWI-PREZE TEST, 0	
ă	ns	DESIGN	CP 22.6	95 81 82 83	9 9 8 18	CP 18	
		PART NUMBER LEVEL	Tyco PN: 2013- LE10-0479-01	Tyo PN: 2013- LEI0.0479.01	Tyo PK: 2013- LEI0-0479-01	Pyo PN: 2013- LEIO 0479-01	
18.00.00	18.01.07	Acceptance Criteria	The removal force using a minimum filterbee spokladed steel gage shall neet the terminal print officience. The removal force shall more needed to percent change from mitial removal force.	If The maximum allowable leak current shall main allowable leak Dielent Test, and per IIID 6. Dielent Test, and any of the shall be in any of the way; if the current allowable maximum and crack, filike, bubble or over and all mainty comectors. 30 ferrow and reinstall the top cover and all mainty comectors. 30 ferrow, and all mainty comectors. 30 ferrow, There shall be no egyndation in the designed immended performance. If the cof each type of flexible members to the maximum allowable travel. 30 times.	1. The maximum allowable leak current shall be 1 no. peletre? 18st. Deferre? 18st. 2. Plants, labele and graphies must not crack. Jake bubble or deteriorate in yo other ways. 3. Remove and entired all the top cover and all mating connectors 20 cover and suffernation in the designed intended performance; 18. Rev of each type of flexible morebees to the maximum allowable travel 20 times.	1 = 6 1	
System (CPSC)	Sub-System (CPSC)	TEST DESCRIPITION CETP / DVM	Component Rocking Test - Test 22: This test evaluates the EDB's ability to allow insertion of components at various majers and maintain adequate nemal force between yhe EDB's terminal and the component.	Oll Resistance Test - Test 23: This test evaluates the EDB's ability to function during exposure to oil.	Gasoline Resistance Test - Test 2: Trest 2: Trest 2: This test evaluates the EDB's ability to function during exposure to gasoline.	Anti-Freeze Resistance Teet The maximum allowable leak Trest 27: This test evaluates the EDB\$ Defenit Test: and per III.D. 6. This test evaluates the EDB\$ Defenit Test: and per III.D. 6. Placed Lebs and graphers may not create, flace from an other way. Remove and reinstall the op- cover and all maning connectors 20, times. Three shall be no degradation in the designed intended performance. 4. Flex of each type of flexible members to the maximum allowable travel. 20 times.	



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12HL	99	From (if Cascade or Tranfer)				
RQMT's to DVP	Pending ROMT'S	General	Test not applicable - MFB will not be exposed to this fluid	Test not applicable - MFB will not be exposed to this fluid		Test not applicable - MFB wit not be exposed to this fluid
		DATE TO CLOSE				
		Road Map to Pass				
< CC >	< LR >	Route Cause				
	manuscriptorius de la constitución de la constituci	RISK YES DONE NO				
Ford Cargo AMT Fuse Box		Test Results				
L		TEST PHASE FAIL PASS			<u> </u>	
21/01/2014	4 MPB Fc	9	*	N/A	<u></u>	<
Date 7	TSVRTS 8992)	ACTUAL START E	Š.	NA		₹ _N
	8\Documents\R	DATES TED END	\$ 7	Y X		N/A
Raul Suzuki	C:\Vsers\lb015218\Documents\RTS\RTS 899214 MFB	PREDICTED START E	//N	V/X		₹ X
		VTTQ Duration	7	7	7	7
Champion	File Name	4 VEHICLE	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fixe Box	Ford Cargo AMT Fluse Box	Ford Cargo AMT Fuse Box
	Terminal	BENCH NEHICLE BUCK	BUCK	BUCK	BUCK	- BUCK
Electrical		LEADER	Максов. Одажа	Stations Octobria	рагсоз	Мат.сов. Оодима
		SUB	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box
PMT / PAT	Sub-Sub-system (CPSC)	REQUIREMENTS	BS SLITTHAWG AA (Ted 20. BRAKE H.UD TEST. 9	ESSUTTAMOGAA (Tea	BS-GITF-HAMOF-AA-(Test 28), BATTERY ACID TEST_, 0	BS-SLIT-HAW67-AA/Gree 29), WIND SHIELD FLUID TEST. ()
4	ns	DESIGN	C.P.	CP 273	GP 288	CP E
		PART NUMBER	Tyee PN: 2013- LEIG-0479-01	Tyse Pk. 2013- EEI 0.6479 0.1	FysePN: 2013. LEI(0.6479.01)	Fyce PN: 2013. LEIO-0479-01
18.00.00	18.01.07	Acceptance Criteria	1. The maximum allowable leak current shall be 1 nA per III.D. 6. Deleared Test. Deleared Test. 2. Plessic labeles and graphics must not crack. flake bubble or desertionae in ay other way; 3. Remove und reinstall the order and all maning connectors, 30 intimes. There shall be no degradation in the designed intended performance; intended performance; 4. Flex of each type of flexible members to the maximum allowable travel 20 times.	1. The maximum allowable leak current shall be 1 mA pet 111D. 6. Dlederic Test. 2. Parsic, labels and graphes must not crist, flake, bubbe way: 3. Remove and reinstall the way: 3. Remove and reinstall the orderiorate in sy other way: 1. Remove and reinstall the orderiorate in sy other way: 1. Remove and estable to degradation in the designed intended performance; intended performance; 4. Flex of each type of flexible members to the maximum allowable travet 20 times.	1. The maximum allowable lock current shall be 1 and per III.D. 6. Dielerier Text. Dielerier Text. 2. Plansic, labels and graphes must not crack, flake, bubble or deteriorate in sy other way; 3. Remove and reinstall the top cover and all mating connectors 20 times. These shall be no degradation in the designed imitted for the cover and all mating connectors 4. Flex of each type of feetible members to the maximum allowable travel 20 times.	1. The maximum allowable leak current shall be 1 mA per 111.D. 6. Deleter't Test. Deleter't Test. Deleter't Test. On the per 111.D. 6. Deleter't Test. On the per 111.D. 6. Deleter's must not crack. Take bubble on crack. Take bubble on crack. Take bubble on crack. Take bubble on cover and all mating connectors 20 inner. These stail De rate of the per 111.D. Test. Deleter's the degradation in the designed immended performance: 14. Flex of each type of flexible members to the maximum allowable travel 20 times.
System (CPSC)	Sub-System (CPSC)	TEST DESCRIPITION CETP / DVM	Brake Fluid Resistance Test 1 Test 26: This test evaluates the EDB's 2 ability to function during a exposure to brake fluid.	Steering Fluid Resistance Trest - Tree (Fee) This test evaluates the EDB's bability to function during background to steering fluid.	Battery Acid Test - Test 28: 1 This test excludes the EDS is obility to function during 2 ability to function during 2 exposure to battery acid.	Wind Shield Fluid Test - 1 Trest 29: This test evaluates the EDB's E ability to function during 2 exposure to windshield 3 washer fluid.



- Parit	99	From (if Cascade or Tranfer)					
RQMT's to DVP	Pending RQMT'S	General Comments	Test not applicable because the MFB proposed is not scaled.	Test not applicable because the MFB proposed is not scaled.	The MFB proposed does't hane any eyelet for service center.	The terminals and connectors used in MPB proposed were approved according LISCAR spec.	There is no threaded insert at the Maxi Fuse Box proposed.
		DATE TO CLOSE					
		Road Map to Pass					/ -
< 90 >	< LR >	Route Cause					
		RISK % YES DONE NO					
Ford Cargo AMT Fuse Box		TEST Test Results PASS	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
0014	9 Fc	PHASE	,				
e 21/01/2014	uments/RTS/RTS 899214 MFB	ACTUAL START END	*	Y Z	NA NA	N/A	× ×
Date	mts/RTS/RT	DATES VD STAI	V _N	N/A	N. N.	N/A	N/A
un ying dialajahangan mandriyayaya saga	C:\Users\lb015218\Documen	9	ž	N/A	N/A	N/A	N.A.
Rauf Suzuki		PREDICT START	Š	NA	Y Z	N/A	N/A
		Duration	9	9		1	9
Champion	File Name	VEHICLE	Fond Cago Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT Fuse Box	Ford Cargo AMT fuse Box
-	mary formation or an arrangement of the control of	BUCK BUCK	BUCK	BUCK	BUCK	BUCK	BUCK
Electrical	Terminal	LEADER	Marcos Oznaka	MATCOS	Матсоя.	Marcos	Максов
Elec		SVSTEM	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box
PMT / PAT	Sub-Sub-system (CPSC)	REQUIREMENTS	BS-81 FCH-MWG-AA (Ted 30, SALT SPRAY HST_0	ESSUT HANGTAN (Tea 31_WATER TEST_0	ES-ELT: HANG? AA (Tes 32), B+ TORQUE,0	ES-SLIT. HAWO"-AA (Tee 33), "TEMINAL PROTECTION (SCOOP) TEST. 0	ES-SLIF I-HAWT-AA (Tes 34), THREADD INSER BETENTON TEST, 9
	18.01.07	DESIGN	8	B	ð	5	<u>A.</u>
		PART NUMBER	Tyoe PN: 2013- LEI0 0479-01	Tyee PN: 2013- LE10-0479-01	Tyco PN: 2013- LE10-0479-01	Tyco PN: 2013- LE10-0479-01	Tyco PN: 2013- LE10-0479-01
18.00.00		Acceptance Criteria	1. The voltage drop before the text shall be less than or equal to: shall be less than or equal to: shall be less than or 10 mV/kmp). 2. The voltage drop after text completion value be less than or shall be less than a cr spain (vinmber of terminal mov/kmp). 3. The maximum allowable less current shall be link per III.D 6. Diederic Text and Inha at vehicle less; current shall be Inh per III.D 6. Diederic Text and 14 hours after text current shall be Inh per III.D 6. Diederic Text at 24 hours after text completion	The maximum allowable leak unership leak better leak and the leak perfectly leak and the leak perfectly leak and the leak perfectly leak and leak leak leak leak leak leak leak leak	At worst case mis-insertion angle, a Loma gan must be maintained between the contextor housing assembly and the mating connection terminals.	At worst case mis-insertion angle, at 10 mm ago must be maintained between the concetor housing assembly and the mating councertor terminals.	1. During procedure #2 and #4, the fluesched treat must withstand a minimum force prior to deformation or degradation in deckentuation or degradation in deckentuation or degradation in threaded insert of the surrounding plastic moding. This minimum force, dependent on holt size, shall be so from bolt: 70,8N => 6mm bolt: 4,5kN
System (CPSC)	Sub-System (CPSC)	TEST DESCRIPITION CETP / DVM	Salt spray Test - Test 30: 11 This test evaluates the EDB's shahility to function during cyposure to salt cyposure to salt in it in it in the EDB's shahility to function during the cyposure to salt cyposure to	Water Test - Test 31: This test evaluates the EDB's capability to function during year exposure to water.	Battery/Alternator Bolt-on Attachment Torque Test - Test 32: This test evaluates the EDB's ability to endure maximum torque to its bolcin attachements.	Terminal Protection (Scoop) Test - Test 33: This test evaluates the EDB's ability to allow insertion of connectors at various angles.	Threaded Insert Retention Test - Test 34: This test entanes the EDB's ability to securely tenin its threaded inserts.

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	659	99	From (if Cascade or Tranfer)			
	ROMT's to DVP	Pending ROMT'S	General	The MFB proposed doesn't have bolt-in connectors.		It is necessary 1 complete vehicle. This test must be done by FORD.
			DATE TO CLOSE			
			Road Map to Pass			
	^ 00 v	< LR >	Route Cause			
			RISK % YES DONE NO			
	Ford Cargo AMT Fuse Box		Test Results	NOT APPLICABLE.		NOT APPLICABLE
			TEST PHASE FAIL PASS			Z
	22/08/2014	MPB Pc	END PHA	NA	đ	N/A
	Date 22/0	RTS 899214	ACTUAL START I	NA NA		N/N
	נ	C:\Users\lb015218\bocuments\RTS\RTS 899214 MPB Fc	DATES	5		N/A
	Raul Suzuki	C:10sers/1b0152	PREDICTED START E	\$		N/A
			VTTQ	9	- t	- t
	Champion	File Name	BENCH VEHICLE BUCK	Ford Cargo AMT Face Box	Ford Cargo AMT Fase Box	Ford Cargo AMT Fuse Box
				BUCK	BUCK	BUCK
	Electrical	Terminal	LEADER	Масска	Матсов	Матсов
			SUB	Maxi Fuse Box	Maxi Fuse Box	Maxi Fuse Box
	PMT / PAT	Sub-Sub-system (CPSC)	REQUIREMENTS	ES-SLIT-140007-AA (Ted ISS, OVER TORQUE CAPABILITY TEST 0	DS-SLIT-14A007-AA (Teat Mo. SHRRATION TEST. 0	ESSLIT-14007-AA (Tee 39, ALT, & BATT, ATTACIBRENT FAIL-SAFE TEST, 9
	Į.	S.	DESIGN	8	ð	3
	18.00.00	18.01.07	PART NUMBER	Tyo PK: 2013- LE10-0479-01	Tyco PN: 2013- LE10-0479-01	Tyco PN: 2013- LE10-0479-01
			Acceptance Criteria	I. Na EDB using a 4mm nut insert mans whistand a longer of 3,0Nm minimum, and na EDB using a form nut use with standard to minimum. And offer offer mass whistand a longer of 7,0 Nm minimum. No visual damage is allowed beyond a 0.35 mm movement of the brass beshing and a slight buckling of the tower (famerer). Le EDB suitage belia wire connector. The threaded meet shall not spin or disloged meet shall not spin or disloged from the EDB when subjected to two times the assembly drive torque.		L. The EDB and surrounding components shall not fame. Mechanical damage shall be confirmed to the EDB only; 2. Battery and Alternator attachments shall fall safe (i.e., Dischagged Battery or open circuit).
	System (CPSC)	Sub-System (CPSC)	TEST DESCRIPTION CETP / DVM	Over Torque Capability Trest "Test "	: 0B's	Alternator and Battery Attachment Fail Safe Test - Test 37: This test evaluates the EDB's ability to endure misophication of the B+ attachment.

