

## DITTO™ INTERCONNECTS

### 1.0 SCOPE

This Test Summary covers the 2.5 mm (.098 inch) centerline (pitch) connector series terminated with 20 to 26 AWG wire using Crimp technology with Tin over Nickel plating.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

DITTO GENDERLESS CRP TER HSM Cu 20-22AWG	36876
DITTO GENDERLESS CRP TER HSM Cu 24-26AWG	
DITTO GENDERLESS WTW HSG FRIC LOCK 1X2	36877
DITTO GENDERLESS WTW HSG FRIC LOCK 1X3	
DITTO GENDERLESS WTW HSG FRIC LOCK 1X4	
DITTO GENDERLESS WTW HSG FRIC LOCK 1X5	
DITTO GENDERLESS WTW HSG FRIC LOCK 1X6	
DITTO GENDERLESS WTW HSG FRIC LOCK 1X7	
DITTO GENDERLESS WTW HSG FRIC LOCK 1X8	150171*
DITTO GENDERLESS HOUSING 1X2 TOOL REMOVAL VERSION	
DITTO GENDERLESS HOUSING 1X3 TOOL REMOVAL VERSION	
DITTO GENDERLESS HOUSING 1X4 TOOL REMOVAL VERSION	
DITTO GENDERLESS HOUSING 1X5 TOOL REMOVAL VERSION	
DITTO GENDERLESS HOUSING 1X6 TOOL REMOVAL VERSION	
DITTO GENDERLESS HOUSING 1X7 TOOL REMOVAL VERSION	150171*
DITTO GENDERLESS HOUSING 1X8 TOOL REMOVAL VERSION	

\*Under development

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

REFER SD-36877-001, SD-36876-001, SD-150171-0001  
REFER *SD-150171-0001 (TBE)*

#### 2.3 PRODUCT SPECIFICATION TITLE AND DOCUMENT NUMBER

*Title:* PRODUCT SPECIFICATION FOR DITTO™ INTERCONNECTS  
*Document Number:* PS-36876-001

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

#### 3.1 TESTING PROCEDURES AND SEQUENCES

Refer Test Reports (TR) for applicable Test Procedures  
Refer Section 6.0 for Test Sequences

### 4.0 QUALIFICATION

Laboratory conditions and sample selection are in accordance with **EIA-364**.

REVISION: <b>A</b>	ECR/ECN INFORMATION: EC No: <b>I2015-0055</b> DATE: <b>2014 / 11 / 27</b>	TITLE: <b>TEST SUMMARY FOR DITTO™ INTERCONNECTS</b>	SHEET No. <b>1 of 6</b>
DOCUMENT NUMBER: <b>TS-36876-001</b>	CREATED / REVISED BY: <b>NCSR</b>	CHECKED BY: <b>NCSR</b>	APPROVED BY: <b>KPRASAD</b>

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL PERFORMANCE RESULTS

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
5.1.1	Contact Resistance (Low Level)	Apply a maximum voltage of <b>20</b> mV and a current of <b>100</b> mA.	<b>3.5</b> milliohms MAXIMUM [initial]	<b>1.53</b> mΩ	<b>0.97</b> mΩ	<b>2.06</b> mΩ
5.1.2	Insulation Resistance TR12243	Apply a voltage of <b>500</b> VDC between adjacent terminals and between terminals to ground.	<b>1000</b> Megohms MINIMUM	<b>&gt;1x10<sup>10</sup> Ω</b>		
5.1.3	Dielectric Withstanding Voltage TR12244	1700 VAC for 1 minute between adjacent terminals & terminal to ground	No Breakdown	Meets Requirement		
			Current Leakage: 5 milliamps MAXIMUM	Meets Requirement		
5.1.4	Temperature Rise [+30°C] TR12255	2 Circuit	0.52 mm <sup>2</sup> (20 AWG)	+30 °C MAXIMUM RISE	<b>29.9 °C @ 8.0 A</b>	
			0.32 mm <sup>2</sup> (22 AWG)	+30 °C MAXIMUM RISE	<b>27.4 °C @ 6.2 A</b> # 30 °C @ 6.4 A	
			0.20 mm <sup>2</sup> (24 AWG)	+30 °C MAXIMUM RISE	<b>29.3 °C @ 5.3 A</b>	
			0.13 mm <sup>2</sup> (26 AWG)	+30 °C MAXIMUM RISE	<b>29.3 °C @ 4.4 A</b>	
		3 Circuit	0.52 mm <sup>2</sup> (20 AWG)	+30 °C MAXIMUM RISE	<b>30.0 °C @ 8.0 A</b>	
			0.13 mm <sup>2</sup> (26 AWG)	+30 °C MAXIMUM RISE	<b>21.9 °C @ 3.6 A</b> # 30 °C @ 4.1 A	
		4 Circuit	0.52 mm <sup>2</sup> (20 AWG)	+30 °C MAXIMUM RISE	<b>28.4 °C @ 6.2 A</b> # 30 °C @ 6.3 A	
			0.13 mm <sup>2</sup> (26 AWG)	+30 °C MAXIMUM RISE	<b>21.0 °C @ 3.6 A</b> # 30 °C @ 4.1 A	
		6 Circuit	0.52 mm <sup>2</sup> (20 AWG)	+30 °C MAXIMUM RISE	<b>23.3 °C @ 5.3 A</b> # 30 °C @ 6.1 A	
			0.13 mm <sup>2</sup> (26 AWG)	+30 °C MAXIMUM RISE	<b>16.0 °C @ 2.7 A</b> # 30 °C @ 3.6 A	
		8 Circuit	0.52 mm <sup>2</sup> (20 AWG)	+30 °C MAXIMUM RISE	<b>26.3 °C @ 5.3 A</b> # 30 °C @ 5.6 A	
			0.13 mm <sup>2</sup> (26 AWG)	+30 °C MAXIMUM RISE	<b>20.5 °C @ 2.7 A</b> # 30 °C @ 3.2 A	

# Interpolated values

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DOCUMENT NUMBER: <b>TS-36876-001</b>	CREATED / REVISED BY: <b>NCSR</b>	CHECKED BY: <b>NCSR</b>	APPROVED BY: <b>KPRASAD</b>

## 5.2 MECHANICAL PERFORMANCE RESULTS

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
5.2.1 A	Connector Mate and Unmate Forces ( <i>Latch deactivated</i> )  (8 Circuit)  TR12491	Initial Mating	27.0 N (6.06 lbf) MAXIMUM Mate force	10.55 N (2.37 lbf)	9.17 N (2.06 lbf)	12.35 N (2.78 lbf)
		10 <sup>th</sup> Mating		17.10 N (3.84 lbf)	15.58 N (3.50 lbf)	18.89 N (4.25 lbf)
		Final (25 <sup>th</sup> Mating)		18.92 N (4.25 lbf)	15.94 N (3.58 lbf)	21.94 N (4.93 lbf)
		Initial Unmating	7.0 N (1.6 lbf) MINIMUM Unmate force	9.19 N (2.07 lbf)	7.80 N (1.75 lbf)	10.18 N (2.29 lbf)
		10 <sup>th</sup> Mating		12.13 N (2.73 lbf)	10.89 N (2.45 lbf)	13.22 N (2.97 lbf)
		Final (25 <sup>th</sup> Mating)		12.92 N (2.90 lbf)	11.79 N (2.65 lbf)	14.71 N (3.31 lbf)
5.2.1 B	Connector Mate and Unmate Forces ( <i>Latch activated</i> )  (8 Circuit)  TR12492	Initial Mating	27.0 N (6.06 lbf) MAXIMUM Mate force	11.51 N (2.59 lbf)	9.83 N (2.21 lbf)	13.08 N (2.94 lbf)
		10 <sup>th</sup> Mating		16.75 N (3.77 lbf)	14.98 N (3.37 lbf)	19.66 N (4.42 lbf)
		Final (25 <sup>th</sup> Mating)		20.01 N (4.49 lbf)	17.61 N (3.96 lbf)	22.69 N (5.10 lbf)
		Initial Unmating	9.9 N (2.2 lbf) MINIMUM withdrawal force	13.49 N (3.03 lbf)	12.38 N (2.78 lbf)	15.13 N (3.40 lbf)
		10 <sup>th</sup> Mating		15.18 N (3.41 lbf)	13.71 N (3.08 lbf)	17.00 N (3.82 lbf)
		Final (25 <sup>th</sup> Mating)		16.56 N (3.72 lbf)	13.87 N (3.12 lbf)	18.63 N (4.19 lbf)
5.2.2	Terminal Retention Force (in Housing)  TR12460	Initial	30 N MINIMUM (6.74 lbf) MINIMUM	44.57 N (10.02 lbf)	40.52 N (9.11 lbf)	50.16 N (11.28 lbf)
5.2.3	Durability	See Section 6.0 for Test Sequence  EIA-364-1000 Test Group 1/2/3/5	10 milliohms MAXIMUM (change from initial)	0.03 mΩ	-0.55 mΩ	0.67 mΩ
5.2.4 A	Vibration (Random 3.1 g)  TR51570	See Section 6.0 for Test Sequence	10 milliohms MAXIMUM (change from initial)	0.75 mΩ	0.20 mΩ	3.69 mΩ
		EIA-364-1000 Table 3 – Test Group 3	Discontinuity < 1 microsecond	Meets Requirement		

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DOCUMENT NUMBER:  <b>TS-36876-001</b>	CREATED / REVISED BY:  <b>NCSR</b>	CHECKED BY:  <b>NCSR</b>	APPROVED BY:  <b>KPRASAD</b>

## 5.2 MECHANICAL PERFORMANCE RESULTS (continued)

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
5.2.4 B	Vibration (Sinusoidal 10 g)  TR51750	EIA 364-28, test condition II except where noted by *. Mate connectors and vibrate. Amplitude 1.52 mm Max. (10g peak), Frequency 50*-500 Hz in 6* minute(s) sweep for 20 hour(s) in each of the 3 mutually perpendicular axes.	10 milliohms MAXIMUM (change from initial)	0.08 mΩ	-0.30 mΩ	6.25 mΩ
5.2.5 A	Mechanical shock  TR51570	See Section 6.0 for Test Sequence	10 milliohms MAXIMUM (change from initial)	0.71 mΩ	0.18 mΩ	4.40 mΩ
		EIA-364-1000 Table 3 – Test Group 3	Discontinuity < 1 microsecond	Meets Requirement		
5.2.5 B	Mechanical shock  TR51750	EIA-364-27, Test Condition A except where noted by *. Mate connectors and shock at 44* g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes (18 shocks total).	10 milliohms MAXIMUM (change from initial)	0.47 mΩ	-0.07 mΩ	5.96 mΩ
5.2.6	Wire Pullout Force (Axial)  TR12260	0.52 mm <sup>2</sup> (20 AWG)	36 N MINIMUM (8 lb <sub>f</sub> ) MINIMUM	90.16 N (20.27 lb <sub>f</sub> )	82.80 N (18.61 lb <sub>f</sub> )	105.69 N (23.76 lb <sub>f</sub> )
		0.32 mm <sup>2</sup> (22 AWG)	36 N MINIMUM (8 lb <sub>f</sub> ) MINIMUM	80.29 N (81.05 lb <sub>f</sub> )	71.84 N (16.15 lb <sub>f</sub> )	84.98 N (19.10 lb <sub>f</sub> )
		0.20 mm <sup>2</sup> (24 AWG)	26.7 N MINIMUM (6 lb <sub>f</sub> ) MINIMUM	52.90 N (11.89 lb <sub>f</sub> )	51.13 N (11.49 lb <sub>f</sub> )	54.73 N (12.30 lb <sub>f</sub> )
		0.13 mm <sup>2</sup> (26 AWG)	17.8 N MINIMUM (4 lb <sub>f</sub> ) MINIMUM	33.06 N (7.43 lb <sub>f</sub> )	31.58 N (7.09 lb <sub>f</sub> )	35.21 N (7.92 lb <sub>f</sub> )
5.2.7	Terminal Insertion Force (into Housing)  TR12461	Initial	10 N MAXIMUM (2.3 lb <sub>f</sub> ) MAXIMUM	1.71 N (0.38 lb <sub>f</sub> )	1.22 N (0.27 lb <sub>f</sub> )	2.40 N (0.54 lb <sub>f</sub> )

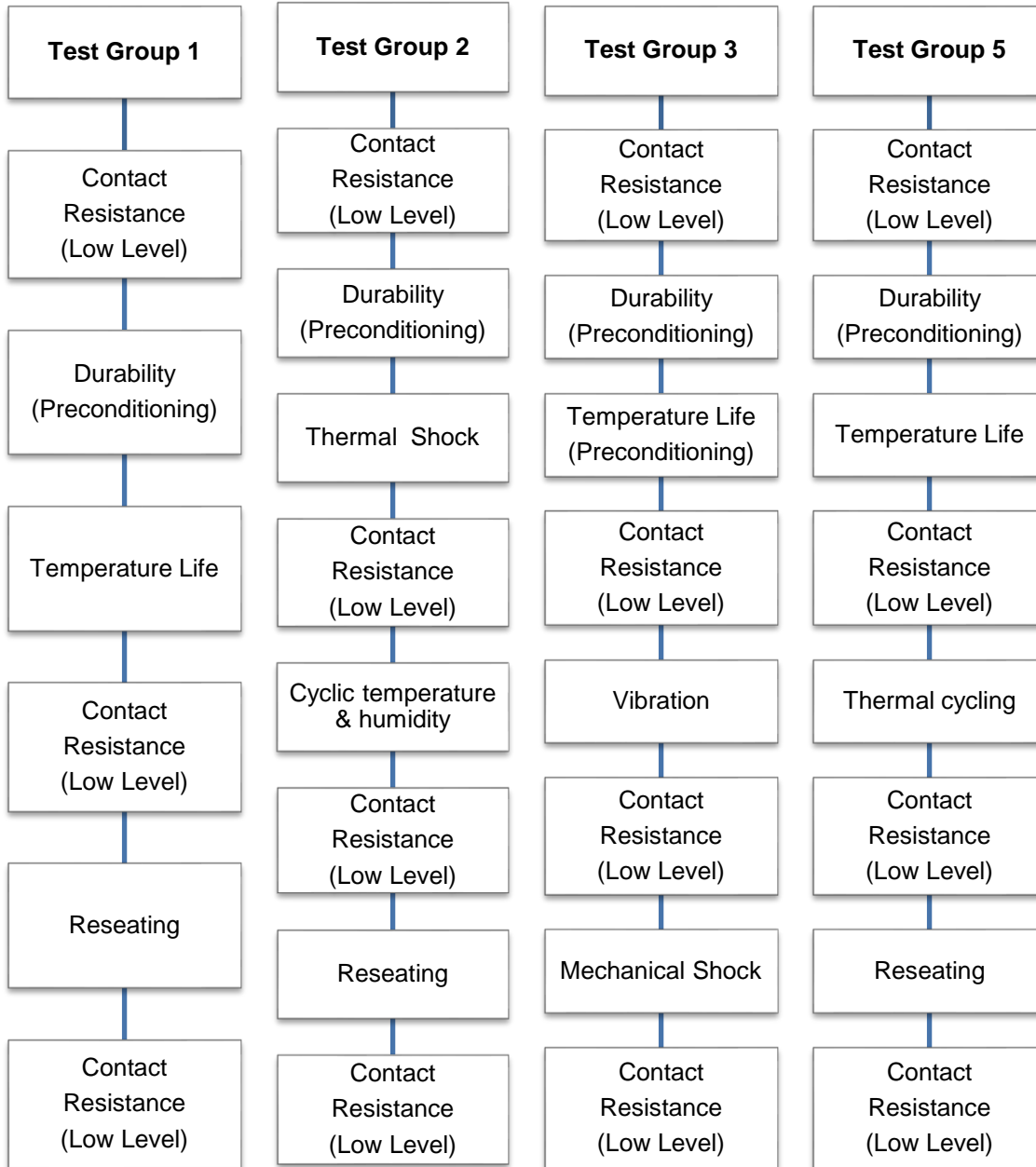
REVISION:  <b>A</b>	ECR/ECN INFORMATION: EC No: I2015-0055 DATE: 2014 / 11 / 27	TITLE:  <b>TEST SUMMARY FOR DITTO™ INTERCONNECTS</b>	SHEET No.  <b>4 of 6</b>
DOCUMENT NUMBER:  <b>TS-36876-001</b>	CREATED / REVISED BY:  <b>NCSR</b>	CHECKED BY:  <b>NCSR</b>	APPROVED BY:  <b>KPRASAD</b>

### 5.3 ENVIRONMENTAL PERFORMANCE RESULTS

ITEM	DESCRIPTION	TREATMENT	REQUIREMENT	MEAN	MINIMUM	MAXIMUM
5.3.1	Thermal shock TR12251	See Section 6.0 for Test Sequence EIA-364-1000 Table 2 – Test Group 2	10 milliohms MAXIMUM (change from initial)	0.17 mΩ	-0.25 mΩ	0.46 mΩ
			Visual: No Damage	Pass		
5.3.2	Temperature & humidity (Cyclic) TR12251	See Section 6.0 for Test Sequence EIA-364-1000 Table 2 – Test Group 2	10 milliohms MAXIMUM (change from initial)	0.54 mΩ	-0.01 mΩ	1.34 mΩ
			Dielectric Withstanding Voltage: No Breakdown at 500 VAC	Meets Requirement		
			Insulation Resistance: 1000 Megohms MINIMUM	>1x10 <sup>10</sup> Ω		
			Visual: No Damage	Pass		
5.3.3	Temperature Life TR12250	See Section 6.0 for Test Sequence EIA-364-1000 Table 1 – Test Group 1	10 milliohms MAXIMUM (change from initial)	0.56 mΩ	-0.11 mΩ	1.44 mΩ
			Visual: No Damage	Pass		
5.3.4	Thermal cycling TR12254	See Section 6.0 for Test Sequence EIA-364-1000 Table 5 – Test Group 5	10 milliohms MAXIMUM (change from initial)	-0.03 mΩ	-0.49 mΩ	0.56 mΩ
			Visual: No Damage	Pass		

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DOCUMENT NUMBER: <b>TS-36876-001</b>	CREATED / REVISED BY: <b>NCSR</b>	CHECKED BY: <b>NCSR</b>	APPROVED BY: <b>KPRASAD</b>

## 6.0 TEST SEQUENCES



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DOCUMENT NUMBER: <b>TS-36876-001</b>	CREATED / REVISED BY: <b>NCSR</b>	CHECKED BY: <b>NCSR</b>	APPROVED BY: <b>KPRASAD</b>