

# MHF® I Connector with Lock

Part No. Plug: 20278-112R-32, Lock: 3376-000\*

# Test Report

Product Specification no. PRS-2396

1	T22057	March 11, 2022	S.Taguchi	-	M.Takemoto
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Rev.	ECN	Date	Prepared by	Checked by	Approved by

#### 1. Purpose

To evaluate the performance of MHF I Connector with LockConnector in accordance with PRS-2396.

#### 2. Specimen

- (1) MHF I PLUG ASS'Y (Part No. 20278-112R-32)
- (2) LOCK (Part No. 3376-000\*)
- (3) MHF I/II RECEPTACLE ASS'Y (Part No. 20279-001E-0\*)

#### 3. Test Sequence

All the evaluations were performed in accordance with Table 1. Test Sequence.

#### 4 Docult

See Table 1 to 2, Graph 1 to 10. For the details of the testing conditions and requirements, see PRS-2396.

#### 5. Conclusion

All the specimens met the requirements of PRS-2396.

5-1 Test Sequence and Sample Quantity

**Table.1 Test Sequence and Sample Quantity** 

Test Item	Group														
	Α	В	С	D	Е	F	G	Н	J	K	L	М	N	Р	Q
Contact resistance						1,3	1,3	1,3	1,3	1,4	1,4	1,3	1,3		
Insulation resistance										2,5	2,5				
Dielectric Withstanding Voltage	1														
VSWR		1													
Un-mating force <unlock state=""></unlock>			1												
Un-mating force <lock state=""></lock>				1											
Crimp strength					1										
Durability						2									
Contact resistance with force on the cable							2								
Vibration								2							
Shock									2						
Thermal shock										3					
Humidity(Steady state)											3				
Salt water spray												2			
High temperature life													2		
Solder ability														1	
Soldering heat Resistance															1
Sample Quantity	10	5	10	10	10	10	10	10	10	10	10	10	10	10	10

XNumbers indicate test sequences in which tests are performed.

#### Table.2 Test Result

Group	Test items		Specification	Number of	Unit	AVE.	MAX.	MIN.	S	Judgement			
Oloup	']	Measurements	Ороспісацоп	samples	Offic		IVI/VX.	IVIII N.		Judagement			
Α	Dielectric v	vithstanding voltage											
		Initial	Spec: No creeping discharge	, flashover, no in	sulator br	eakdown	shall occu	r.					
			-	10	-	No abnor	mality			Pass			
В	VSWR												
	Plug												
		0.1∼3.0GHz	1.3 MAX.	5	ı	1.082	1.11	1.06	0.012	Pass			
		3.0 <b>~</b> 6.0GHz	1.5 MAX.	5	•	1.178	1.21	1.15	0.019	Pass			
		6.0∼9.0GHz	1.9 MAX.	5	-	1.294	1.38	1.25	0.038	Pass			
	Recepta	acle	<b>-</b>	,		ļ.	!						
		0.1∼3.0GHz	1.3 MAX.	5	-	1.085	1.09	1.08	0.006	Pass			
		3.0 <b>~</b> 6.0GHz	1.4 MAX.	5	-	1.233	1.27	1.18	0.033	Pass			
		6.0∼9.0GHz	1.8 MAX.	5	-	1.515	1.60	1.41	0.068	Pass			
С	Unmating for	orce											
	T otal fo	rce <unlock state=""></unlock>											
		Initial	5 MIN.	10	N	16.11	17.4	14.8	0.77	Pass			
		30 cycles	3 MIN.	10	N	11.04	11.9	10.2	0.56	Pass			
	Inner contact												
		Initial	0.15 MIN.	10	N	0.369	0.39	0.35	0.014	Pass			
		30 cycles	0.10 MIN.	10	N	0.230	0.25	0.22	0.011	Pass			
-	lu e												
D	Un-mating	force <lock state=""></lock>	20 MIN.	10	N	36.89	38.0	35.9	0.88	Pass			
		IIIIuai	ZO WIIIV.	10	11	30.03	30.0	00.9	0.00	1 033			
Е	Crimp stren	ngth											
		-	10N MIN.	10	N	19.52	20.9	18.3	0.86	Pass			
	l.			<u> </u>		1	I		ı	1			
F	Durability												
	Contact	t resistance of main cor	ntact										
		Initial	20 MAX.	10	m۸	6.77	7.0	6.5	0.22	Pass			
		After testing	25 MAX.		mΩ	7.27	7.8	6.9	0.28	Pass			
	Contact	t resistance of ground c	ontact			•		•	•	•			
		Initial	10 MAX.	10	mΩ	4.96	5.5	4.5	0.26	Pass			
		After testing	15 MAX.	10	11177	6.53	7.6	4.9	0.80	Pass			

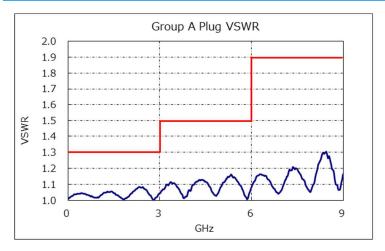
	Test items		0 '6 "	Number of	11.7	A) #=	1441/					
Group	l l	Measurements	Specification	samples	Unit	AVE.	MAX.	MIN.	S	Judgement		
G	Contact resist	tance with force on the ca	ble			.!				ļ		
	Contact re	esistance of main contact										
	Ī	Initial	20 MAX.	40		6.90	7.5	6.1	0.41	Pass		
	[	After testing	25 MAX.	10	mΩ	7.20	8.2	6.6	0.43	Pass		
	Contact re	esistance of ground conta	ct			1				1		
	l [	Initial	10 MAX.	40	0	4.85	6.0	3.4	0.92	Pass		
		After testing	15 MAX.	10	mΩ	5.51	6.3	4.9	0.49	Pass		
	Electrical	discontinuity										
	[	Spec: No creeping discha	c: No creeping discharge, flashover, no insulator breakdown shall occur.									
		After testing	<u>-</u>	10	-	No abnoi	mality			Pass		
	Appearan	ce		ļ		<u>.</u> i	•			ļ		
	l	Initial	No abnormality adversely affecting	40		No abnor	mality			Pass		
		After testing	the performance shall occur.	10	-	No abnor	mality			Pass		
		Ţ.				1	-					
Н	Vibration											
	Contact re	esistance of main contact										
	l [	Initial	20 MAX.	40	_	6.67	7.2	6.1	0.37	Pass		
		After testing	25 MAX.	10	mΩ	6.67	7.1	6.1	0.37	Pass		
	l L	esistance of ground conta	ct			1			ļ			
	_	Initial	10 MAX.			5.03	5.7	4.6	0.38	Pass		
		After testing	15 MAX.	10	mΩ	5.17	6.5	4.5	0.62	Pass		
	∟	discontinuity				1						
	l	<b>·</b>	arge, flashover, no insulator brea	kdown shall o	ccur.							
	I	After testing	-	10	-	No abnoi	mality			Pass		
	Appearan											
	l '''	Initial	No abnormality adversely affecting	40		No abnoi	mality			Pass		
		After testing	the performance shall occur.	10	-	No abnor	mality			Pass		
	<u> </u>					<u> </u>						
J	Shock											
	Contact re	esistance of main contact										
	Ī	Initial	20 MAX.	40		6.67	7.2	6.1	0.37	Pass		
		After testing	25 MAX.	10	mΩ	6.73	7.4	6.4	0.39	Pass		
	Contact re	esistance of ground conta	ct			1						
	ĺ	Initial	10 MAX.	40		5.03	5.7	4.6	0.38	Pass		
		After testing	15 MAX.	10	mΩ	5.19	6.0	4.7	0.48	Pass		
	L	discontinuity		1	I	1	1	1	1	1		
		•	arge, flashover, no insulator brea	kdown shall o	ccur.							
	After testing - 10 - No abnormality							Pass				
	Appearan	•				1	,			1		
		Initial	No abnormality adversely affecting			No abnoi	mality			Pass		
	l L	After testing	the performance shall occur.	10	-	No abnor				Pass		

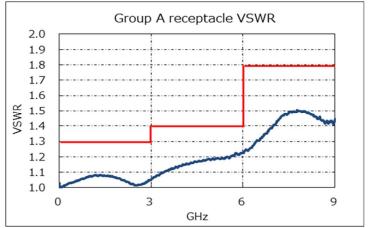
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Group	Test items	Specification	Number of	Unit	AVE.	MAX.	MIN.	S	Judgement		
Gloup	Measurements	ороспісавоп	samples	0	/ (V L .	1017 04.	IVIII V.	Ŭ	Judgement		
K	Thermal shock										
	Contact resistance of main contact	et									
	Initial	20 MAX.	10	mΩ	6.62	8.0	6.1	0.54	Pass		
	After testing	25 MAX.	] '`	11122	6.61	7.6	5.9	0.52	Pass		
	Contact resistance of ground cont	act									
	Initial	10 MAX.	10	mΩ	4.98	6.5	4.2	0.70	Pass		
	After testing	15 MAX.		11122	5.26	6.4	4.3	0.75	Pass		
	Insulation residence										
	Initial	500MΩ MIN.	10	МΩ	10,000M	ΩMIN.			Pass		
	After testing	100MΩ MIN.		IVIZZ	10,000M	ΩMIN.			Pass		
	Appearance		•		<del>!</del>				•		
	Initial	No abnormality adversely affecting	40		No abnor	mality			Pass		
	After testing	the performance shall occur.	10	-	No abnor	Pass					
			<u> </u>		_1						
L	Humidity(Steady State)										
	Contact resistance of main contact	et									
	Initial	20 MAX.	40		6.76	7.2	6.4	0.27	Pass		
	After testing	25 MAX.	10	mΩ	6.41	6.9	6.0	0.26	Pass		
	Contact resistance of ground conf	act	1		1		l		1		
	Initial	10 MAX.			4.55	6.5	3.3	1.08	Pass		
	After testing	15 MAX.	10	mΩ	4.97	6.8	4.2	0.78	Pass		
	Insulation residence	1									
	Initial	500MΩ MIN.	10		10,000M	ΩMIN.			Pass		
	After testing	100MΩ MIN.	10	МΩ	10,000M	ΩMIN.		Pass			
	Appearance	1									
	Initial	No abnormality adversely affecting	10		No abnor	mality			Pass		
	After testing	the performance shall occur.	10	-	No abnor	No abnormality					
		<u>'</u>			1						
М	Salt water spray										
	Contact resistance of main contact	et									
	Initial	20 MAX.	10	_	7.07	8.6	6.3	0.75	Pass		
	After testing	25 MAX.	10	mΩ	6.53	7.2	6.1	0.36	Pass		
	Contact resistance of ground conf		<u> </u>		-1	ļ	ļ	<u> </u>	-		
	Initial	10 MAX.	40		4.73	5.8	3.6	0.63	Pass		
	After testing	15 MAX.	10	mΩ	5.11	6.9	4.1	0.90	Pass		
	Appearance	1	1	1	1	I	ı	I.	1		
	Initial	No abnormality adversely affecting	40		No abnor	mality			Pass		
	After testing	the performance shall occur.	10	-	No abnor	•			Pass		
	10009				1	,					

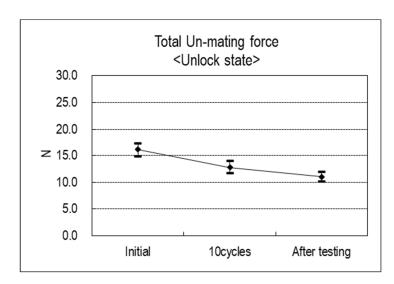
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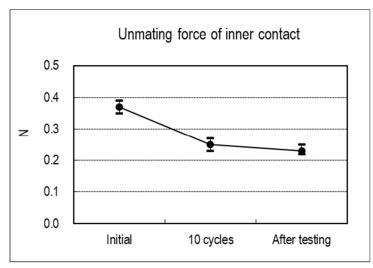
Croup	Test items	Charifornian	Number of	Unit	AVE.	MAX.	MIN.	S	Judgement		
Group	Measurements	Specification	samples		AVE.				Judgement		
N	High Temperature Life				•	•	•		•		
	Contact resistance of main contact										
	Initial	20 MAX.	10	mΩ	6.97	7.5	6.4	0.35	Pass		
	After testing	25 MAX.		11112	7.34	8.2	6.6	0.50	Pass		
	Contact resistance of ground contact										
	Initial	10 MAX.	10	mΩ	5.00	5.9	4.4	0.41	Pass		
	After testing	15 MAX.		11177	5.97	7.4	5.3	0.67	Pass		
	Appearance										
	Initial	No abnormality adversely affecting	10		No abnormality			Pass			
	After testing	the performance shall occur.	10	-	No abnor	Pass					
	lo 11 122										
Р	Solder ability										
	Spec: More than 95%	of the dipped surface shall be even	<u>.                                    </u>								
	After testing	-	10	-	No abnor	mality			Pass		
Q	Deflow coldering host registance										
Q	Reflow soldering heat resistance										
	Appearan <u>ce</u>										
	Spec: No abnormality	adversely affecting the performanc	e shall occur.								
	After testing	-	10	-	No abnoi	mality			Pass		



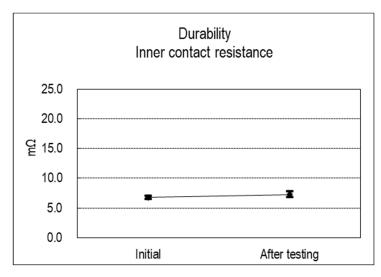


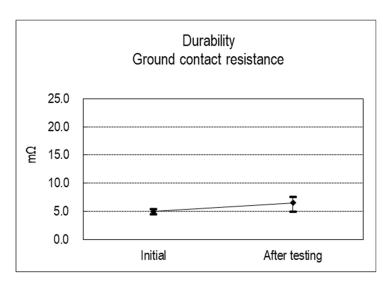
(Graph 1) VSWR



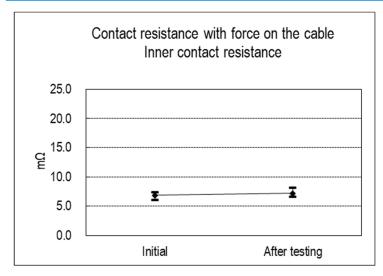


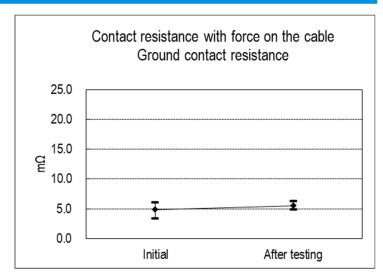
(Graph 2) Unmating force



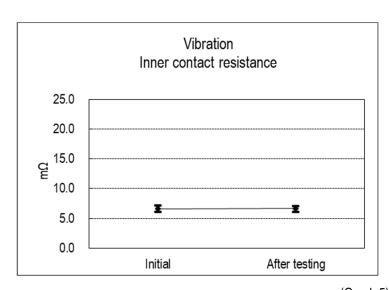


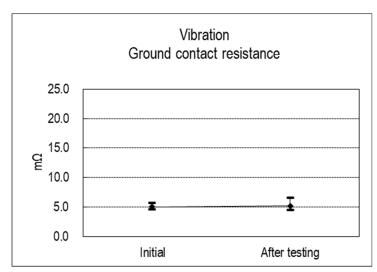
(Graph 3) Durability



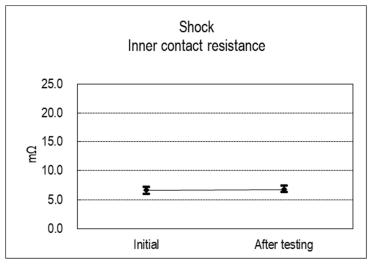


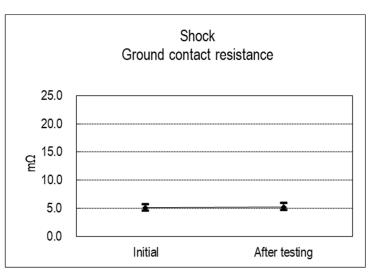
(Graph 4) Cable Retention Force





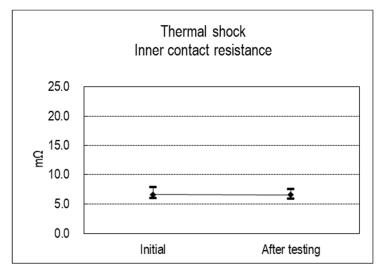
(Graph 5) Vibration

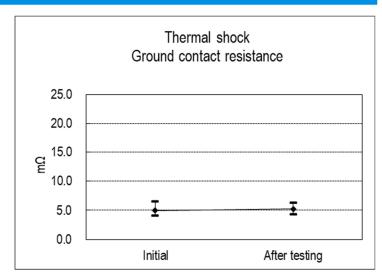




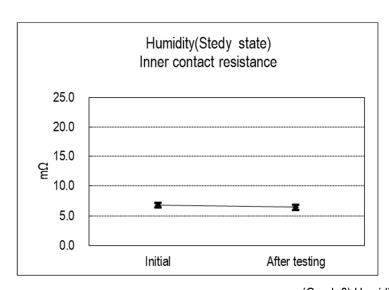
(Graph 6) Shock

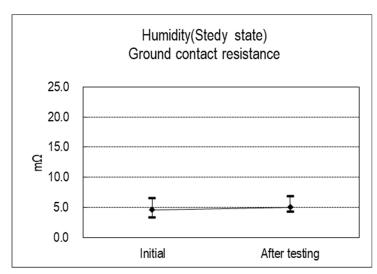
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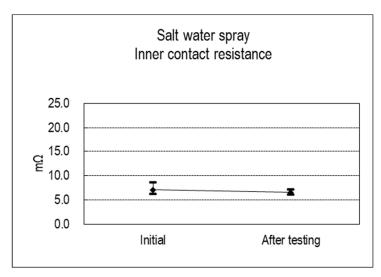


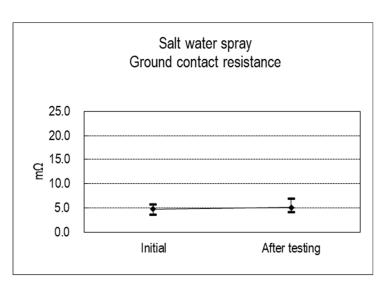
Graph 7) Thermal Shock





(Graph 8) Humidity (Steady State)

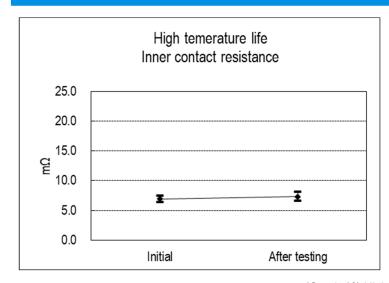


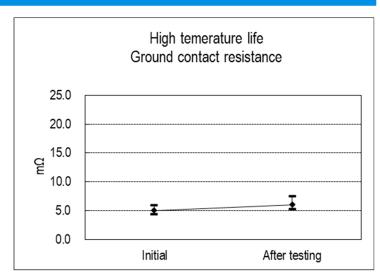


(Graph 9) Salt Water Spray

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(Graph 10) High Temperature Life