

# MHF® I Connector with Lock

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

# Test Report

Product Specification no. PRS-2396

1	T22058	March 14, 2022	S.Taguchi	-	M.Takemoto
0	T17117	August 9, 2017	K.Ikeshita	-	T.Matsumoto
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-13)
- (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 Docule

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		Iai	JIE.I I	531 361	quence	anu	ample						t Item Group							
root nom	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			
Gloup		Measurements	Specification	samples	Offic					Judgemen			
Α	Dielectric withstanding voltage												
		Initial	Spec: No creeping discharge		sulator br	eakdown s	shall occu	r.					
			-	10	-	No abnor	mality			Pass			
В	VSWR												
	Plug						•		1	_			
		0.1~3.0GHz	1.3 MAX.	5	ı	1.037	1.04	1.03	0.004	Pass			
		3.0 <b>~</b> 6.0GHz	1.5 MAX.	5	-	1.121	1.14	1.11	0.009	Pass			
		6.0∼9.0GHz	1.9 MAX.	5	-	1.260	1.31	1.21	0.028	Pass			
	Receptacle												
		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			
		•	<b>-</b>	·									
С	Unmating fo	rce											
	Total force <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			
	ı	•	<b>'</b>	•					ı				
D	Un-mating for	orce <lock state=""></lock>	00.14151	1 40			00.0	1 050					
		Initial	20 MIN.	10	N	36.89	38.0	35.9	0.88	Pass			
E	Crimp strength												
_	Ominp strong		10N MIN.	10	N	16.85	18.6	15.2	0.97	Pass			
			1011111111	10		10.00	10.0	10.2	0.01	1 400			
		<b>L</b>	<b>'</b>										
F	Durahility		•										
F	Durability Contact	resistance of main cor	ntact										
F		resistance of main cor				6 45	71	l 61	0.30	Pass			
F		Initial	20 MAX.	10	mΩ	6.45	7.1 6.8	6.1	0.30	Pass Pass			
F	Contact	Initial After testing	20 MAX. 25 MAX.	10	mΩ	6.45	7.1 6.8	6.1	0.30	Pass Pass			
F	Contact	Initial	20 MAX. 25 MAX.	10	mΩ								

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Group	Test items		Specification	Number of	Unit	AVE.	MAX.	MIN.	S	Judgement	
•		Measurements	·	samples	J	7.1				ou ugoo	
G	Contact resistance with force on the cable										
	Contact resistance of main contact										
		Initial	20 MAX.	10	mΩ	6.84	7.8	5.6	0.74	Pass	
		After testing	25 MAX.	10	11122	6.67	7.7	6.0	0.53	Pass	
	Contact	resistance of ground cor	ntact								
		Initial	10 MAX.	10	mΩ	4.19	4.8	4.0	0.26	Pass	
		After testing	15 MAX.		11122	4.32	5.0	4.0	0.26	Pass	
	Electrica	al discontinuity		-			_				
		Spec: No creeping disc	charge, flashover, no insulator brea	kdown shall o	ccur.						
		After testing	-	10	-	No abno	mality			Pass	
	Appeara	nce	•					ļ.			
		Initial	No abnormality adversely affecting	10		No abnor	mality			Pass	
		After testing	the performance shall occur.	10	-	No abno	mality			Pass	
		-				1				1	
Н	Vibration										
	Contact	resistance of main conta	act								
		Initial	20 MAX.			6.90	7.5	6.6	0.30	Pass	
		After testing	25 MAX.	10	mΩ	6.76	7.4	6.5	0.27	Pass	
	Contact	resistance of ground cor					<u>l</u>				
		Initial	10 MAX.			4.71	6.6	4.0	0.87	Pass	
		After testing	15 MAX.	10	mΩ	4.66	6.5	4.0	0.79	Pass	
	Flectrica	al discontinuity	10 117 0 11			1.00	0.0	1.0	0.10	1	
	2,000,100		charge, flashover, no insulator brea	kdown shall o	ccur						
		After testing	-	10	_	No abno	mality			Pass	
	Appeara	ű		10		110 001101	manty			1 400	
	, ppoura	Initial	No abnormality adversely affecting			No abno	Pass				
		After testing	the performance shall occur.	10	-	No abnor				Pass	
	<u>l</u>	p atter to carrig	<u>'</u>				,			1	
J	Shock										
ŭ		resistance of main conta	ect								
	Contact	Initial	20 MAX.			6.90	7.5	6.6	0.30	Pass	
		After testing	25 MAX.	10	mΩ	7.07	8.0	6.7	0.37	Pass	
	Contact	resistance of ground cor				7.07	0.0	0.1	0.07	1 433	
	Contact	Initial	10 MAX.			4.71	6.6	4.0	0.87	Pass	
		After testing	15 MAX.	10	mΩ	5.01	8.3	4.3	1.19	Pass	
	Electrica	al discontinuity	IJ IVIAN.			3.01	0.5	7.5	1.13	F 433	
	Electrica		charge, flashover, no insulator brea	kdown aball a	00112						
			1			No shar	malit:			D	
	A.c	After testing	-	10	-	No abno	manty			Pass	
	Appeara					Ma -l				I Divi	
		Initial	No abnormality adversely affecting	10	-	No abnor	-			Pass	
		After testing	the performance shall occur.			No abnor	Pass				

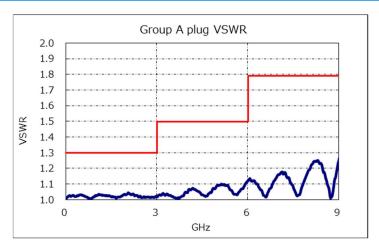
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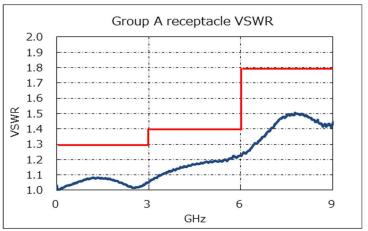
Group	Test items		Specification	Number of	Unit	AVE.	MAX.	MIN.	S	Judgement	
Огоар		Measurements	opeomediem	samples	Onic	7 (V L.	1717 7 (.	IVIII V.	O	daagomont	
K	Thermal shock										
	Contact	resistance of main contac									
		Initial	20 MAX.	10	mΩ	7.05	7.7	6.5	0.48	Pass	
		After testing	25 MAX.	10	11122	6.94	7.8	6.3	0.52	Pass	
	Contact resistance of ground contact										
		Initial	10 MAX.	10	mΩ	4.61	5.0	4.0	0.33	Pass	
		After testing	15 MAX.		11122	4.84	5.7	4.1	0.44	Pass	
	Insulatio	n residence		•			•	•		•	
		Initial	500MΩ MIN.	10	МΩ	10,000M	ΩMIN.			Pass	
		After testing	100MΩ MIN.	10	IVI ZZ	10,000M	ΩMIN.			Pass	
	Appeara	nce		•		ļ.				,	
		Initial	No abnormality adversely affecting	10		No abnor	mality			Pass	
		After testing	the performance shall occur.	10	-	No abnor	mality			Pass	
		<u> </u>				ļ				!	
L	Humidity(Ste	eady State)									
	Contact	resistance of main contac	t								
		Initial	20 MAX.	40	_	5.48	5.9	5.1	0.29	Pass	
		After testing	25 MAX.	10	mΩ	6.39	7.2	5.8	0.45	Pass	
	Contact	resistance of ground conta						l		1	
		Initial	10 MAX.			5.78	6.8	5.0	0.53	Pass	
		After testing	15 MAX.	10	mΩ	5.99	7.1	4.7	0.87	Pass	
	Insulatio	n residence			0.00			0.0.			
	insulatio	Initial	500MΩ MIN.			10,000M	Pass				
		After testing	100MΩ MIN.	10	МΩ	10,000M				Pass	
	Appeara		TOOMISZ WINA.			10,000101	32 IVIII V.			1 433	
	Αμμεαια	Initial	No abnormality adversely affecting			No abnor	mality			Pass	
		After testing	the performance shall occur.	10	-	No abnor			Pass		
		Alter testing	the performance shall occur.			140 abrior	manty			1 433	
М	Salt water s	orav									
		resistance of main contac	<u> </u>								
	001110101	Initial	20 MAX.			6.08	6.4	5.6	0.28	Pass	
		After testing	25 MAX.	10	mΩ	6.44	6.9	6.2	0.24	Pass	
	Contact	resistance of ground conta		1		1	L	L - :- <u>-</u>	<del>-</del> -	1 200	
	2 2	Initial	10 MAX.			4.53	5.7	3.7	0.51	Pass	
		After testing	15 MAX.	10	mΩ	5.04	5.7	4.6	0.35	Pass	
	Appeara		10 1411 A7.			0.04	1 0.1	I	0.00	1 1 400	
	, ppcara	Initial	No abnormality adversely affecting			No abnor	mality			Pass	
		After testing	the performance shall occur.	10	-	No abnor				Pass	
		Titel teating	the performance shall occur.			ויייט מטווטו	manty			F 033	

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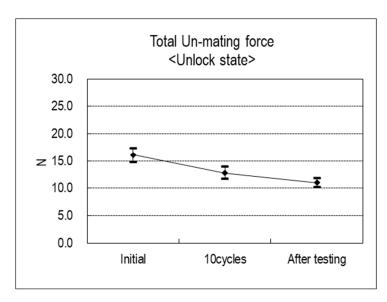
Croup	Test items	Charifornian	Number of	Unit	AVE.	MAX.	MIN.	S	Judgement			
Group	Measurements	Specification	samples						Judgemen			
N	High Temperature Life		•		•				•			
	Contact resistance of main contact											
	Initial	20 MAX.	10	mΩ	5.93	7.5	5.3	0.69	Pass			
	After testing	25 MAX.		11122	6.94	7.8	6.3	0.45	Pass			
	Contact resistance of ground contact											
	Initial	10 MAX.	10	mΩ	5.72	7.6	4.6	1.08	Pass			
	After testing	15 MAX.		11177	7.19	8.9	6.1	1.14	Pass			
	Appearance											
	Initial	No abnormality adversely affecting	10		No abnor	Pass						
	After testing	the performance shall occur.	10	-	No abnor	ormality			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	Poflow soldering heat resistance											
Q	Reflow soldering heat resistance											
	Appearance											
	Spec: No abnormality	adversely affecting the performanc	e shall occur.									
	After testing	-	10	-	No abnor	mality			Pass			

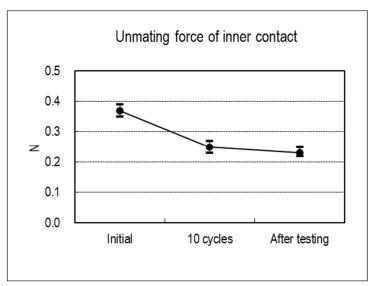
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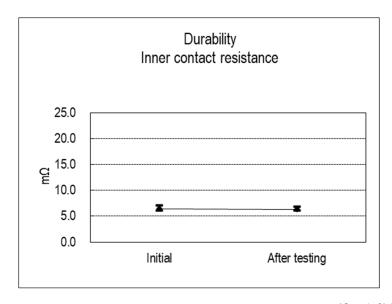


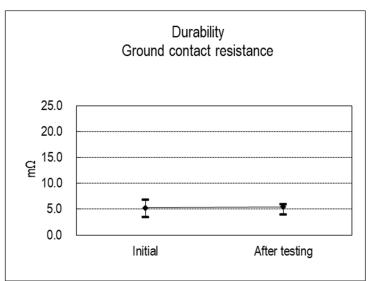
(Graph 1) VSWR



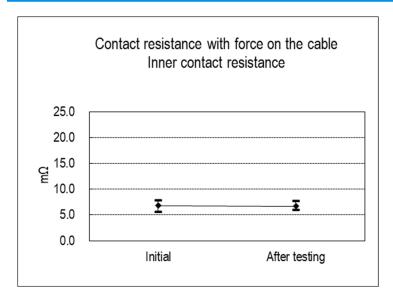


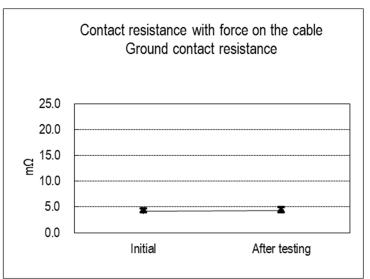
(Graph 2) Unmating force



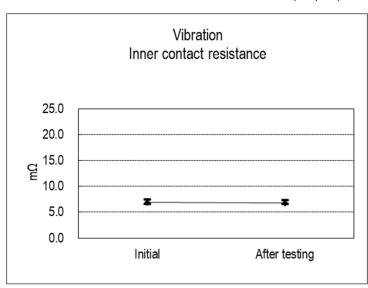


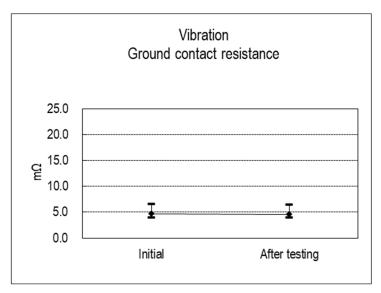
(Graph 3) Durability



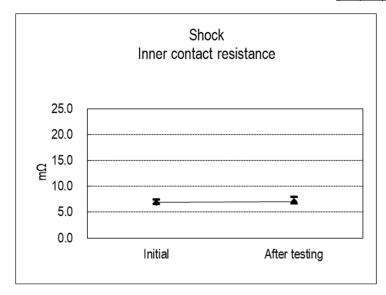


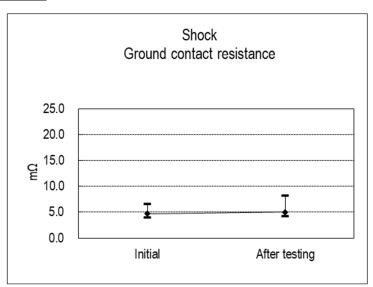
(Graph 4) Cable Retention Force



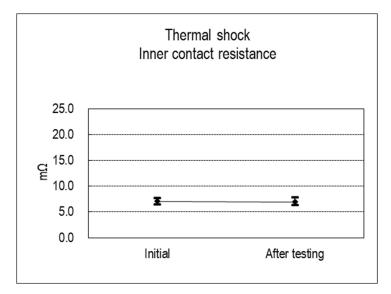


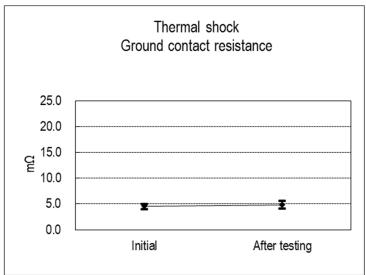
(Graph 5) Vibration



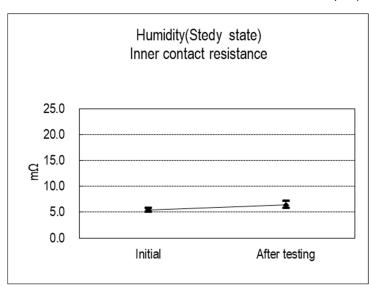


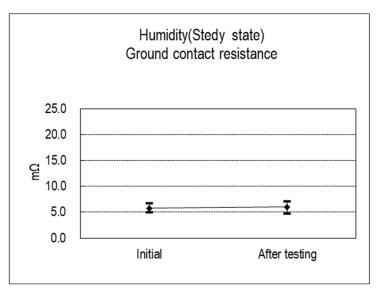
(Graph 6) Shock



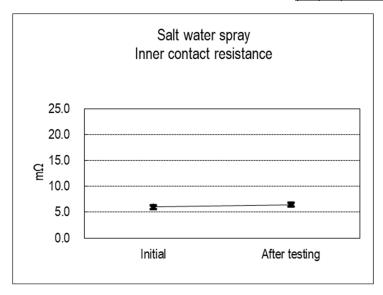


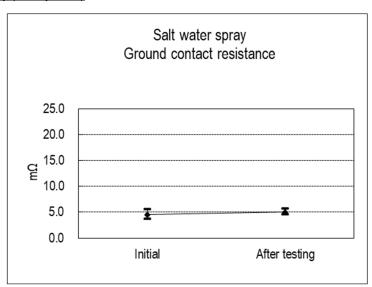
### Graph 7) Thermal Shock



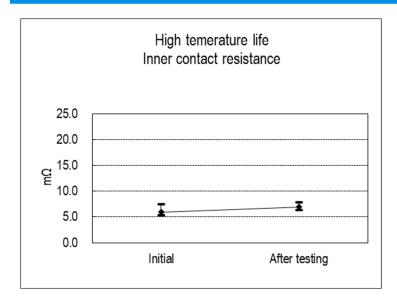


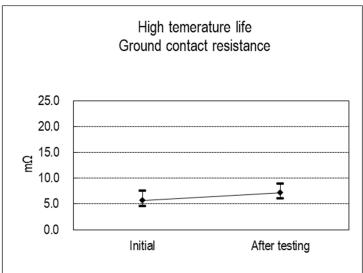
### (Graph 8) Humidity (Steady State)





(Graph 9) Salt Water Spray





(Graph 10) High Temperature Life