

MHF® 5L Connector_(φ0.81 Cable)

Part No. Plug:20714-001R-81, Receptacle:20566-001E-01

Test Report

Product Specification no. PRS-2236

2	T21108	October 28, 2021	K. Ikeshita		M. Takemoto
1	T19039	March 8, 2019	K. Tanaka	T. Yamauchi	T. Hirakawa
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Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MHF 5L Connector in accordance with PRS-2236.

2. Specimen

(1) MHF 5L PLUG (Part No: 20714-001R-81)

Cable: AWG#33 coaxial cable (Jacket diameter 0.81 mm)

(2) MHF 5 RECEPTACLE (Part No: 20566-001E-01)

3. Test Sequence

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

4. Result

See Table 2, Graph 1 to 11. For the details of the testing conditions and requirements, see PRS-2236. The "n" in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2236.

Table 1 Test Sequence and Sample Quantity

To ad Harry		Group												
Test Item	А	В	С	D	Е	F	G	Н	J	K	L	М	N	Р
Contact Resistance			1,3			1,3	1,3	1,5	1,5	1,3	1,3	1,3		
Insulation Resistance								2,6	2,6					
D. W. Voltage								3,7	3,7					
VSWR	1													
Unmating Force		1												
Durability			2											
Crimp Strength				1										
Cable Retention Force					1									
Vibration						2								
Shock							2							
Humidity (Steady State)								4						
Thermal Shock									4					
High Temperature Life										2				
H ₂ S Gas											2			
Salt Water Spray												2		
Solder ability													1	
Soldering Heat Resistance														1
Specimen Quantity.	10	10	10	10	10	10	10	10	10	10	10	10	10	10

%Numbers indicate sequence in which tests are performed.

Table 2-1

				rable 2-	<u> </u>								
Group	Test items	Measurements	Specification	N	Unit	AVE.	MAX.	MIN.	S	Judgement			
Α	VSWR												
	Plug												
		0.1∼3.0GHz	1.3 MAX.			1.118	1.13	1.10	0.007	Pass			
		3.0∼6.0GHz	1.4 MAX.	10	-	1.142	1.17	1.12	0.014	Pass			
		6.0~12.0 GHz	1.5 MAX.			1.151	1.17	1.12	0.015	Pass			
	Receptacle												
		0.1∼3.0GHz	1.3 MAX.			1.054	1.08	1.03	0.024	Pass			
		3.0∼6.0GHz	1.4 MAX.	10	-	1.087	1.11	1.07	0.017	Pass			
		6.0~12.0 GHz	1.5 MAX.			1.298	1.33	1.27	0.025	Pass			
	III												
В	Unmating force		1 4 51 54151	1	1	1445	1440	40.4	I 0.00	D			
		Initial	4 N MIN.	10	N	11.15	11.9	10.4	0.32	Pass			
		After 30 cycles	2 N MIN.		<u> </u>	7.24	7.9	6.2	0.24	Pass			
С	Durability												
Ü		stance of main contact											
	Contaction	Initial	20mΩ MAX.			7.30	8.1	6.4	0.59	Pass			
		After testing	-	10	mΩ	8.21	10.0	6.8	1.04	Pass			
		⊿R	⊿R 20mΩ MAX.	'`	11122	0.90	3.0	-0.9	1.29	Pass			
	Contact resis	stance of ground contact	Zitt Zoniaż Wi Vt.		<u> </u>	0.00	0.0	0.0	1.20	1 400			
	Contaction	Initial	20mΩ MAX.			4.84	6.0	3.9	0.68	Pass			
		After testing	-	10	mΩ	5.05	6.1	4.3	0.58	Pass			
		⊿R	⊿R 100mΩ MAX.			0.31	1.8	-1.3	0.87	Pass			
	Appearance	l .	2.000200	l	<u> </u>	0.0.			0.0.	. 0.00			
	Spec: No abnormality adversely affecting the performance shall occur												
		Initial	1			No abnormalit				Pass			
		After testing	No abnormality	10	-	No abnormalit		***************************************		Pass			
	_!	0			L		<u>'</u>						
D	Crimp strength												
	· •	After testing	10N MIN.	10	N	18.66	19.8	17.2	0.69	Pass			
	1	<u> </u>	· I			l .		I	1				
Е	Cable Retention Force												
	Electrical dis	continuity											
		Spec: No electrical discontinu	uity greater than 1µs shall	l occur.									
		After testing	-	10	-	No discontinity				Pass			
	Appearance	-	-										
	1	Spec: No abnormality adver	sely affecting the performa	ance shall occu	r								
		After testing	-	10	-	No abnormalit	/			Pass			
	•	•	•										
F	Vibration												
	Contact resis	stance of main contact											
		Initial	20mΩ MAX.			7.64	8.1	7.0	0.36	Pass			
		After testing	-	10	mΩ	7.42	7.9	6.8	0.40	Pass			
		⊿R	⊿R 20mΩ MAX.	1		-0.21	0.4	-0.8	0.33	Pass			
	Contact resis	stance of ground contact			-								
		Initial	20mΩ MAX.			4.29	4.7	3.9	0.27	Pass			
		After testing	-	10	mΩ	4.36	4.8	4.0	0.27	Pass			
		⊿R	⊿R 100mΩ MAX.			0.07	0.6	-0.4	0.41	Pass			
	Electrical dis	continuity	•	•	-	•	-	•	•	•			
		Spec: No electrical discontinu	uity grater than 1µs shall o	occur.									
		After testing	-	10	-	No discontinity				Pass			
	Appearance)											
		Spec: No abnormality adver	sely affecting the performa	ance shall occu	r								
		Initial	- No abnormality	10		No abnormalit				Pass			
		After testing	INO abilidifiality	10		No abnormalit	/			Pass			
_										-			

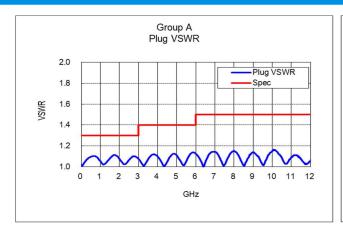


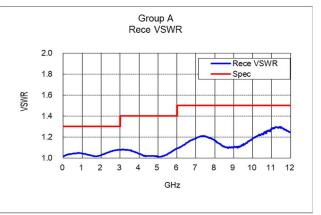
Table 2-2

Group	Test items	Measurements	Specification	N	Unit	AVE.	MAX.	MIN.	S	Judgemei		
G	Shock											
	Contact resis	stance of main contact										
		Inital	20mΩ MAX.			7.30	7.7	7.0	0.27	Pass		
		After testing	-	10	mΩ	7.01	7.7	6.5	0.37	Pass		
		⊿R	⊿R 20mΩ MAX.			-0.30	0.2	-1.0	0.38	Pass		
	Contact resistance of ground contact											
		Initial	20mΩ MAX.			3.81	4.1	3.5	0.19	Pass		
		After testing	-	10	mΩ	4.00	4.4	3.5	0.29	Pass		
		⊿R	⊿R 100mΩ MAX.			0.19	0.6	-0.6	0.31	Pass		
	Electrical dis		2		<u> </u>	00	0.0	0.0	0.01	. 4.00		
	Licotrical dis		uity grater than 1uc chall o	occur								
	Spec: No electrical discontinuity grater than 1µs shall occur. After testing - 10 - No discontinity											
	Annogramo		-	10		INO discortantly				Pass		
	Appearance				_							
		Spec: No abnormality adver-	sely affecting the performa	ance snali occui	r 1	Ta. 1 191						
		Initial	No abnormality	10	-	No abnormality		***************************************		Pass		
		After testing	·			No abnormality	1			Pass		
Н	Humidity (Stead	ly State)										
	Contact resis	stance of main contact										
		Initial	20mΩ MAX.			7.50	8.2	7.0	0.43	Pass		
		After testing	-	10	mΩ	7.46	9.1	6.6	0.70	Pass		
		⊿R	⊿R 20mΩ MAX.			-0.04	1.0	-0.7	0.47	Pass		
	Contact resis	stance of ground contact			•			1				
		Initial	20mΩ MAX.			4.14	4.6	3.8	0.23	Pass		
		After testing	-	10	mΩ	5.17	6.5	4.6	0.52	Pass		
		⊿R	⊿R 100mΩ MAX.			1.03	2.0	0.5	0.46	Pass		
	Insulation residence											
	III Salation 10	Initial	500MΩ MIN.	1		10,000MΩ MIN	.I			Pass		
				10	MΩ			***************************************		Pass		
	After testing 100MΩ MIN. 10,000MΩ MIN. 10,000MΩ MIN.											
	Dielectric withstanding voltage											
		Spec: No creeping discharge, flashover, no insulator breakdown shall occur.										
		After testing	-	10	-	No abnormality	<u>'</u>			Pass		
	Appearance											
		Spec: No abnormality adver-	sely affecting the performa	ance shall occu	r							
		Initial	No abnormality	10		No abnormality	Pass					
		After testing	ino abnormality	10	-	No abnormality	Pass					
										•		
J	Thermal shock											
	Contact resis	stance of main contact										
		Initial	20mΩ MAX.			7.73	8.4	7.0	0.42	Pass		
		After testing	-	10	mΩ	7.39	8.0	7.0	0.33	Pass		
		⊿R	⊿R 20mΩ MAX.			-0.34	0.2	-0.8	0.31	Pass		
	Contact resis	stance of ground contact	211 2011k2 WAX.			-0.54	0.2	-0.0	0.01	1 033		
	Contact resis		20	l	1	4.00	4.0	1 20	1 000			
		Initial	20mΩ MAX.	10		4.28	4.9	3.9	0.30	Pass		
		After testing	-	10	mΩ	6.12	7.2	5.1	0.73	Pass		
		⊿R	⊿R 100mΩ MAX.			1.84	3.0	0.2	0.90	Pass		
	Insulation re		1	1			1					
		Inital	500MΩ MIN.	10	МΩ	10,000MΩ MIN				Pass		
		After testing	100MΩ MIN.	10	14177	10,000MΩ MIN	١.		30000	Pass		
	Dielectric wit	hstanding voltage										
		Spec: No creeping discharge	e, flashover, no insulator	breakdown sha	all occur.							
		After testing	-	10	-	No abnormality	1			Pass		
	Appearance		1	I		1 2 29						
		Spec: No abnormality adver-	selv affecting the performa	ance shall occur	r							
		Initial	anoung the perioritie	21100 011011 00001	1	No abnormality	,			Pass		
		After testing	No abnormality	10	-							
		TAILET TESTITO	1	1	1	No abnormality	,			Pass		

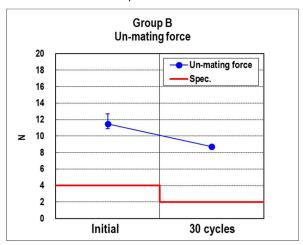
Table 2-3

	Test items	Measurements	Specification	N	Unit	AVE.	MAX.	MIN.	S	Judgeme			
K	High Temperat	ure Life				•		ı					
	Contact resistance of main contact												
		Initial	20mΩ MAX.			7.74	8.2	7.3	0.31	Pass			
		After testing	-	10	mΩ	7.02	7.6	6.4	0.43	Pass			
		⊿R	⊿R 20mΩ MAX.	. •		-0.73	0.0	-1.3	0.46	Pass			
	Contact resis	stance of ground contact	Z11 Z011122 1VII V1.			0.70	0.0	1.0	0.40	1 400			
	Contacties	Initial	20mΩ MAX.			4.25	4.6	3.9	0.23	Pass			
			ZUIIIZ IVIAA.	10	mΩ	4.34	4.8	4.0	0.23	Pass			
		After testing	 ⊿R 100mΩ MAX.	-	11152	0.09	0.7	-0.4	0.23				
	A	⊿R	∠R 100mΩ MAX.			0.09	0.7	-0.4	0.34	Pass			
	Appearance Spec: No abnormality adversely affecting the performance shall occur												
			rsely affecting the performa	ince shall occu	r	1							
		Initial	No abnormality	10	_	No abnormalit	***************************************			Pass			
		After testing	,			No abnormalit	У			Pass			
L	H₂S Gas												
	Contact resis	stance of main contact											
		Initial	20mΩ MAX.			7.71	8.7	6.4	0.66	Pass			
		After testing	-	10	mΩ	7.05	8.2	6.3	0.64	Pass			
		⊿R	⊿R 20mΩ MAX.			-0.65	0.3	-1.2	0.47	Pass			
	Contact resistance of ground contact												
		Initial	20mΩ MAX.			4.08	5.0	3.1	0.47	Pass			
		After testing	_	10	mΩ	4.86	5.3	4.2	0.37	Pass			
		⊿R	⊿R 100mΩ MAX.			0.78	1.4	0.0	0.42	Pass			
	Appearance												
	Spec: No abnormality adversely affecting the performance shall occur												
		After testing	No abnormality	10	-	No abnormalit	·			Pass			
		7 tion tooting	110 abnormality	10		110 abnorman	<i>y</i>			1 400			
М	Salt water spray	M.											
IVI		stance of main contact											
	Contactress		20		1	7.54	0.0		0.27	Dana			
		Initial	20mΩ MAX.	40	0	7.51	8.0	6.8	0.37	Pass			
		After testing	-	10	mΩ	7.46	8.5	6.7	0.61	Pass			
		⊿R	⊿R 20mΩ MAX.			-0.05	1.2	-1.1	0.75	Pass			
	Contact resis	stance of ground contact											
		Initial	20mΩ MAX.			4.15	4.5	3.6	0.25	Pass			
		After testing	-	10	mΩ	5.41	6.2	4.6	0.45	Pass			
		⊿R	⊿R 100mΩ MAX.			1.26	2.0	0.6	0.45	Pass			
	Appearance												
		Spec: No abnormality adve	rsely affecting the performa	nce shall occu	r								
		After testing	No abnormality	10	-	No abnormalit	у			Pass			
	-	•			-								
		Solder ability											
N	Solder ability		Spec: More than 95% of the dipped surface becomes wet and the pinhole that should not gather at one point is less than 5%										
N	Solder ability	Spec: More than 95% of th	e dipped surface becomes	wet and the pir									
N	Solder ability		1		-	No abnormalit	V			Pass			
N	Solder ability	Spec: More than 95% of the After testing	e dipped surface becomes	wet and the pir		No abnormalit	у			Pass			
		After testing	1			No abnormalit	у			Pass			
N P	Reflow solderin	After testing g heat resistance	1			No abnormalit	у			Pass			
		After testing g heat resistance	-	10	-	No abnormalit	у			Pass			
	Reflow solderin	After testing g heat resistance	-	10	-	No abnormalit				Pass			

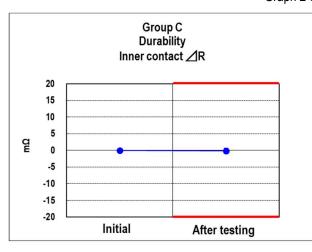


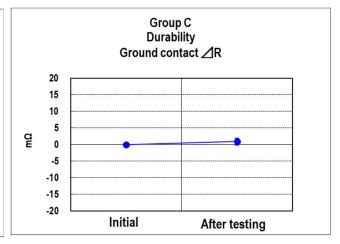


Graph 1 VSWR

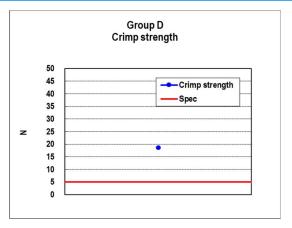


Graph 2 Unmating force

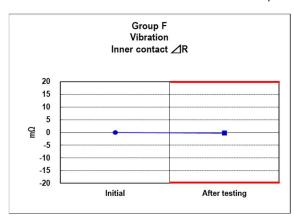


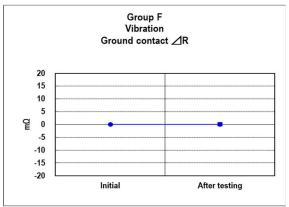


Graph 3 Durability

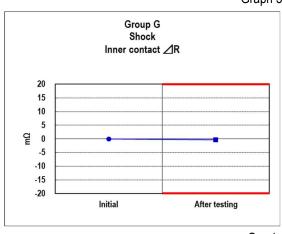


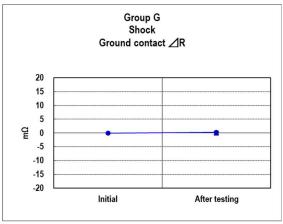
Graph 4 Durability



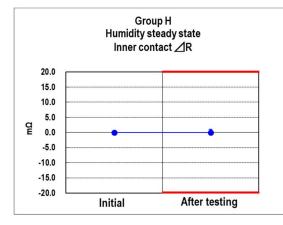


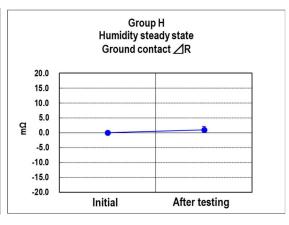
Graph 5 Vibration



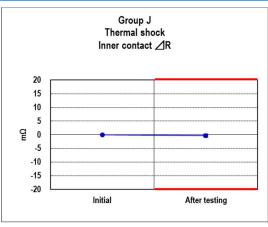


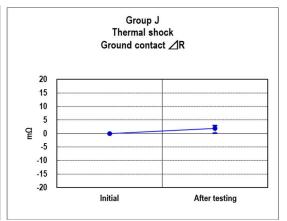
Graph 6 Shock



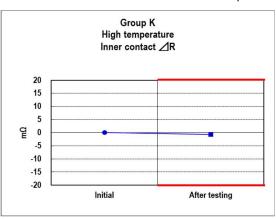


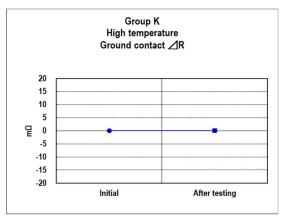
Graph 7 Humidity (Steady State)



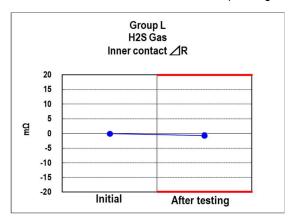


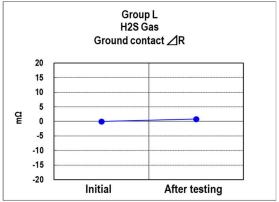
Graph 8 Thermal shock



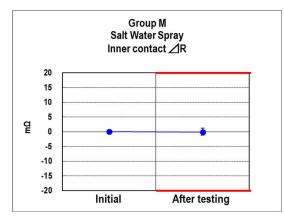


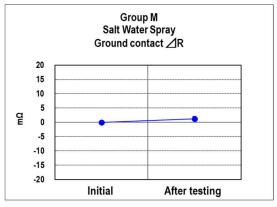
Graph 9 High Temperature Life





Graph 10 H₂S Gas





Graph 11 Salt water spray