SPEC. NO.: PS-92801-XXXXX-XXX **REVISION:** A

PRODUCT NAME: FAKRA CONN.

PRODUCT NO: 92801 ,92802, 92803

PREPARED:	CHECKED:	APPROVED:
Lin,Liang Ju	**Lee,Kuang En**	**Lee,Kuang En**
DATE: **2018/11/06**	DATE: **2018/11/06**	DATE: **2018/11/06**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	1804297	NEW RELEASE	Chang,Yao Sheng	2018.05.15
A	1811112	REMOVE DUPLICATE TESTS	Lin Liang Ju	2018.11.06

2 SCOPE

This specification covers performance, tests and quality requirements for FAKRA CONN.

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

SAE/USCAR-2 Rev.5 2007: PERFORMANCE SPECIFICATION FOR AUTOMOTIVE ELECTRICAL CONNECTOR SYSTEMS

SAE/USCAR-17 Rev. 4 2013 : PERFORMANCE SPECIFICATION FOR AUTOMOTIVE RF CONNECTOR SYSTEMS

SAE/USCAR-18 2002: FAKRA SMB RF CONNECTOR SUPPLEMENT

ISO-20860-1: INTERNATIONAL ORGANIZATION FOR STANDARDIZATION.

4 REQUIREMENTS

4.1 Design and Construction

4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

4.2.1 Contact: High performance copper alloy
Finish: Refer to the drawing.
4.2.2 Housing: Thermoplastic or Thermoplastic High Temp.,

4.3 Ratings

4.3.1 Voltage: Less than 36 Volts AC (per pin)
4.3.2 Current: 1 Amperes (per pin)
4.3.3 Operating Temperature : -40℃ to +105℃
4.3.4 Impedance: 50 ohms
4.3.5 Frequency Range: 0 to 4000 MHz (cable dependent)

5 Performance

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	**Requirement**	**Standard**
Dry Circuit Resistance	40 m Ω Max. for center conductor. 40 m Ω Max. for center outer/ground conductor.	SAE/USCAR-17, 4.3.1 SAE/USCAR-2 , 5.3.1.4
Isolation Resistance	100 M Ω Min. for center to outer contact.	SAE/USCAR-17, 4.4.1 500 V DC between center conductor and shield for 1 minute. SAE/USCAR-2 , 5.5.1.4
Dielectric Strength	No discharge, flashover or breakdown. Current leakage: 1 mA max.	SAE/USCAR-17, 4.3.2 Test between center conductor and shielding. 800 V AC Min. at sea level for 1 minute.
Voltage Standing Wave Ratio (VSWR)	≤ 1.40 for 0 to 2 GHz ≤ 1.52 for >2 to 4 GHz	SAE/USCAR-17 4.4.2
Shielding effectiveness (dose not apply to printed circuit board connectors)	45 dB Min. for 0 t0 3 GHz	SAE/USCAR-17 4, 4.3
RF Insertion Loss (In-line Connectors only)	0.3 dB Max. from 0 to 3 GHz	SAE/USCAR-17 4, 4.2 ISO-20860-1 6

MECHANICAL		
Item	**Requirement**	**Standard**
Vibration/ Mechanical Shock	Continuity Monitoring: 1 μs Max. Appearance: No deformation, cracks, or breaking.	SAE/USCAR-2 5.4.6 Vibrated for 8 hours in each of the three mutually perpendicular axes (X,Y,Z) Figure 5.4.6.3-E
Shielding BodyPush-out Force	120 N Min.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the terminal assembled in the housing.
Connector to Connector mating/unmating force Without Lock Enabled	75N Max.	SAE/USCAR-2 5.4.2
Center Contact Retention Force	2N Min..	SAE/USCAR-2 5.4.1
Connector Disengage with Lock Enabled	80N Min..	SAE/USCAR-2 5.4..3
Durability	10 cycles.	None (Manually)
Polarization Feature Effectiveness	80 N Min.	SAE/USCAR-17, 4.2.3 (Rotated 90 degrees from normal mating position)

ENVIRONMENTAL		
Item	**Requirement**	**Standard**
Temperature Humidity Cycling	See Product Qualification and Test Sequence Group 5,17	SAE/USCAR-2 Rev 5.6.2 -40°C to +85°C for RG-174 cable. -40°C to +105°C for RG-316 cable. For 40 cycles.
High Temperature Exposure	See Product Qualification and Test Sequence Group 4,18	SAE/USCAR-2 Rev 5.6.3 85°C for RG-174 cable. 105°C for RG-316 cable. For 1008 Hours.
Thermal Shock	See Product Qualification and Test Sequence Group 3,17	SAE/USCAR-2 Rev 5.6.1 -40°C to +85°C for RG-174 cable. -40°C to +105°C for RG-316 cable. For 100cycles.
Salt Spray	Examination of Product	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ for 24 hours. (EIA-364-26)
Solder ability	Solder able area shall have minimum of 95% solder coverage.	And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	T≧350℃, 3sec at least.

Note. Shall meet visual requirements, show no physical damage, and meet requirements of additional test as specified in the Product Qualification and Requalification Test Sequence shown.

6. PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence									
Examination of Product	1	1、13	1、13	1、13	1、13	1、7		1	1	1
Dry Circuit Resistance		2、6、10	2、6、10	2、6、10	2、6、10					
Isolation Resistance		3、7、11	3、7、11	3、7、11	3、7、11					
Dielectric Strength		4、8、12	4、8、12	4、8、12	4、8、12					
Voltage Standing Wave Ratio (VSWR)						2、5				
Shielding effectiveness (dose not apply to printed circuit board connectors)										
RF Insertion Loss (In-line Connectors only)						3、6				
Shielding BodyPush-out Force								2		
Connector to Connector mating/unmating force Without Lock Enabled	2									
Center Contact Retention Force									2	
Connector Disengage with Lock Enabled	3									
Durability		5	5	5	5	4				
Polarization Feature Effectiveness										2
Temperature Humidity Cycling					9					
High Temperature Exposure				9						
Thermal Shock			9							
Vibration/ Mechanical		9								
Salt Spray										
Solder ability										
Hand Soldering										

Temperature Resistance										
Sample Size	**5**	**5**	**5**	**5**	**5**	**5**		**5**	**5**	**5**

Test or Examination	**Test Group**									
	11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	
	Test Sequence									
Examination of Product	1、3	1、3	1、3	1	1、7	1、7	1、7	1、7	1、7	
Dry Circuit Resistance										
Isolation Resistance										
Dielectric Strength										
Voltage Standing Wave Ratio (VSWR)					4	4	4	4	4	
Shielding effectiveness (dose not apply to printed circuit board connectors)				2、4						
RF Insertion Loss (In-line Connectors only)					5	5	5	5	5	
Shielding BodyPush-out Force										
Connector to Connector mating/unmating force Without Lock Enabled										
Center Contact Retention Force										
Connector Disengage with Lock Enabled										
Durability				3	2	2	2	2	2	
Polarization Feature Effectiveness										
Temperature Humidity Cycling									3	
High Temperature Exposure								3		
Thermal Shock							3			
Vibration/ Mechanical					3	3				
Salt Spray	2									
Solder ability		2								
Hand Soldering Temperature Resistance			2							

Sample Size	5	5	5	5	5	5	5	5	5	