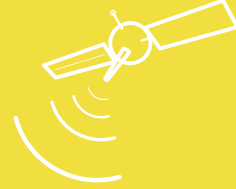




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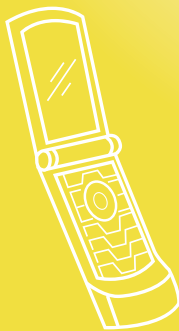
## PRODUCT SPECIFICATION

### **I-PEX MHF2 Micro Coaxial Connector**

Applicable Cable for O.D. 0.81mm Cable

Plug  
P/N 20311-011R-08

Receptacle  
P/N 20279-001E-01



RF Connector, RF Cable & Antenna Manufacturer

E-mail: [sales@wellshow.com.tw](mailto:sales@wellshow.com.tw)  
Tel: +886-2-24239376 Fax: +886-2-24260387  
9F., No.181, Nanrong Rd., Ren-ai Dist., Keelung City 200, Taiwan (R.O.C.)



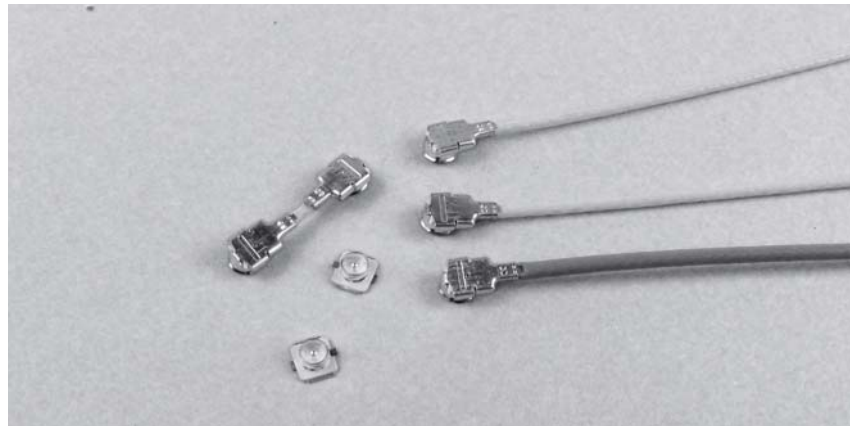
# I-PEX MHF2 Micro Coaxial Connector

Mating Height: 2.0 mm MAX

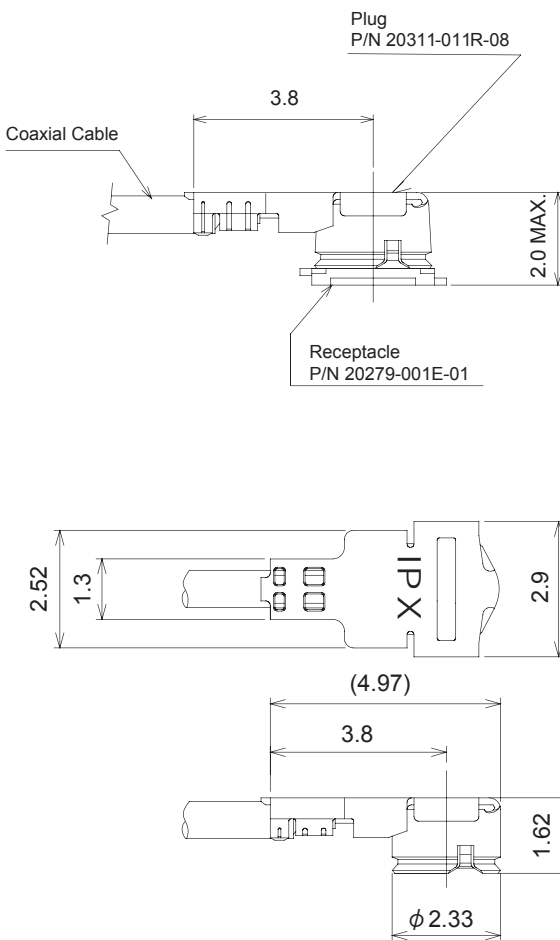
Applicable Cable for O.D. 0.81mm Cable

## Major Application

- Wireless LAN Antenna
- Cellular Phone
- Note Book Computer
- Game Equipment
- Digital Appliance
- Access Point



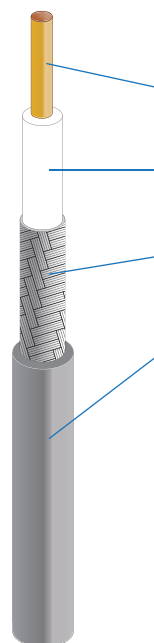
## Structure Figure



## Ratings

Description	Specification
Rated voltage	AC60Vr.m.s
Nominal characteristic impedance	50 Ω
Frequency	DC~6 GHz
VSWR	Plug
	1.3 MAX. (DC~3GHz)
	1.5 MAX. (3~6GHz)
	Receptacle
	1.3 MAX. (DC~3GHz)
	1.4 MAX. (3~6GHz)
Service Temperature	233~363K( -40°C~+90°C)

## Applicable cable



Part No.	20311-011R-08 Compatible to Hirose U.FL LP-040
Conductor	AWG#36(7/0.05) Silver plating annealed copper wire
Insulation	Fluoro-plastics Diameter 0.4(+0.04,-0.02)mm Nominal thickness 0.125 mm
Braid	8 / 5 / 0.05 Nominal diameter 0.65 mm Silver plating annealed copper wire
Jacket	Fluoro-plastics Diameter 0.81(+0.04,-0.02)mm Nominal thickness 0.08 mm
<b>Requirements</b>	
Characteristic impedance	50(+2,-2)ohm by TDR method
Nominal capacitance (Ref.)	96 pF/m
Conductor resistance of inner conductor at 293K (20°C)	1400 ohm/km
Insulation resistance	1000 mega-ohm.km MIN.
Dielectric withstand voltage	no breakdown at AC 1000V for 1 minutes.



## Test methods and performance

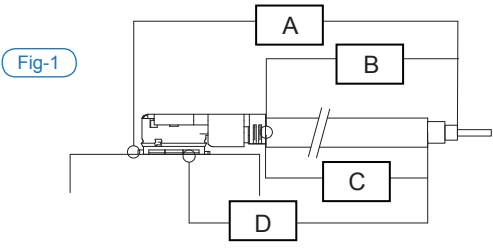
### Test condition

Unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202.

Temperature 288K~308K(15°C~35°C)  
 Humidity 45~75%R.H.

### Electrical Performance

#### 1-1 Contact Resistance

Test Conditions	Specifications
<p>Solder the receptacle connector to the test board and mate the plug connector together, then, measure the contact resistance as shown in Fig-1 by the four terminal method. Apply the low level condition in accordance with MIL-STD-202G, Method 307.</p> <p>Open circuit voltage : 20mV MAX.                      Circuit current : 10mA MAX.</p>  <p>Inner contact = A - B                      Ground contact = D - C</p>	<p><b>Inner contact</b>                      Initial : 20mΩ MAX.                      After testing : ΔR20mΩ MAX.</p> <p><b>Ground contact</b>                      Initial : 10mΩ MAX.                      After testing : ΔR20mΩ MAX.</p>

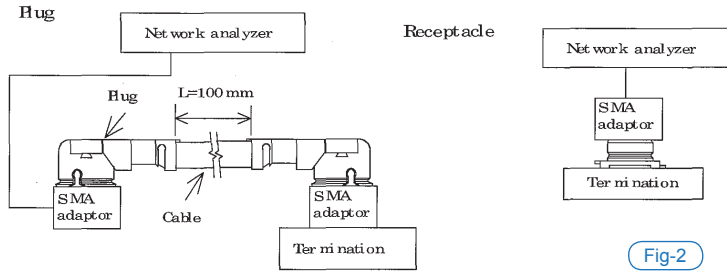
#### 1-2 Insulation Resistance

Test Conditions	Specifications
<p>Mate the plug and receptacle connector together, then, apply DC 100 V between the inner contact and the ground contact in accordance with MIL-STD-202G, Method 302.</p>	<p>Initial : 500MΩ MIN.                      After testing : 100MΩ MIN.</p>

#### 1-3 Dielectric Withstanding Voltage

Test Conditions	Specifications
<p>Mate the plug and receptacle connector together, then, apply AC 200 V rms between the inner contact and the ground contact for a minute in accordance with MIL-STD-202G, Method 301.</p>	<p>No creeping discharge, no flashover, and no insulator breakdown.</p>

#### 1-4 VSWR Insertion loss

Test Conditions	Specifications
<p>Measure the VSWR and insertion loss as shown in Fig-2 by the network analyzer.</p> <p>Frequency : VSWR 100M ~ 6GHz</p> 	<p><b>VSWR</b>                      Plug                      1.3MAX.at 0.1 ~ 3GHz                      1.5MAX.at 3 ~ 6GHz</p> <p>Receptacle                      1.3MAX.at 0.1 ~ 3GHz                      1.4MAX.at 3 ~ 6GHz</p>

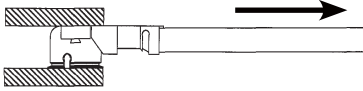


**Mechanical Performance**

**2-1 Un-mating force**

Test Conditions	Specifications
Unmate the receptacle connector (soldered to the test board) and plug at a speed 25±3 mm/minutes along the mating by the push-on/pull-off machine.	<p><b>Total un-mating force</b>                      Initial : 4N MIN.                      After 30 cycles : 2N MIN.</p> <p><b>Unmating force of inner contact</b>                      Initial : 0.15N MIN.                      after 30 cycles : 0.1N MIN.</p>

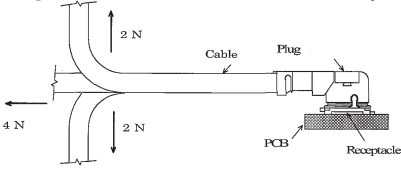
**2-2 Crimp strength**

Test Conditions	Specifications
<p>Pull the cable as shown in Fig-3 at speed of 25±3mm/minutes by the tensile strength machine and measure the retention force.</p> 	7N MIN.

**2-3 Durability**

Test Conditions	Specifications
Mate and un-mate the receptacle connector (soldered to the test board) and plug connector 30 cycles at speed of 25±3mm/minutes in parallel with the mating axis by the push-pull machine.	<p><b>Appearance</b> No abnormality</p> <p><b>Contact Resistance</b> See 1-1</p>

**2-4 Contact resistance with Force on the cable**

Test Conditions	Specifications
<p>Apply force to the cable as shown in Fig-4. During the testing, run 100mA DC to check electrical discontinuity.</p> 	<p><b>Appearance</b> Looseness between the parts, chipping, breakage or other abnormality shall not occur.</p> <p><b>Electrical discontinuity</b> No electrical discontinuity greater than 1 micro-sec. shall occur.</p> <p><b>Contact Resistance</b> See 1-1</p>

**2-5 Vibration**

Test Conditions	Specifications
<p>Apply the following vibration to the mating connector. During the testing, run 100mA DC to check electrical discontinuity.</p> <p>Frequency : 10Hz → 100Hz → 10Hz / approx 15minutes.                      Half amplitude, Peak value of acceleration : 1.5mm or 59m/s<sup>2</sup> (6G)                      Directions , cycle : 3 mutually perpendicular direction,                      5 cycles(approx 75 min) for each direction</p>	<p><b>Appearance</b> Looseness between the parts, chipping, breakage or other abnormality shall not occur.</p> <p><b>Electrical discontinuity</b> No electrical discontinuity greater than 1 micro-sec. shall occur.</p> <p><b>Contact Resistance</b> See 1-1</p>

**2-6 Shock**

Test Conditions	Specifications
<p>Apply the following vibration to the mating connector in accordance with MIL-STD-202, Method 213, Condition B. During the testing, run 100mA DC to check electrical discontinuity.</p> <p>Peak value of acceleration : 735m/s<sup>2</sup> (75G)                      Duration : 11msec                      Wave Form : Half sinusoidal                      Directions , cycle : 6 mutually perpendicular direction,                      3 cycles for each direction</p>	<p><b>Appearance</b> Looseness between the parts, chipping, breakage or other abnormality shall not occur.</p> <p><b>Electrical discontinuity</b> No electrical discontinuity greater than 1 micro-sec. shall occur.</p> <p><b>Contact Resistance</b> See 1-1</p>



## Environmental Performance

### 3-1 Humidity (Steady State)

Test Conditions	Specifications
<p>Apply the following environment to the mating connector in accordance with MIL-STD-202G, Method 103, Condition B.</p> <p>Temperature : 313±2K (40±2°C)            Humidity : 90 ~ 95%RH            Duration : 96 hours</p>	<p><b>Appearance</b> No abnormality</p> <p><b>Contact Resistance</b> See 1-1</p> <p><b>Insulation Resistance</b> See 1-2</p> <p><b>Dielectric Withstanding Voltage</b> See 1-3</p>

### 3-2 Thermal Shock

Test Conditions	Specifications
<p>Apply the following environment to the mating connector.</p> <p>Temperature : 233K(-40°C)/30minutes→278~308K(5~35°C)/5minutes MAX.            →363K(90°C)/30minutes→278~308K(5~35°C)/5minutes MAX.            No. of cycles : 5 cycles</p>	<p><b>Appearance</b> No abnormality</p> <p><b>Contact Resistance</b> See 1-1</p> <p><b>Insulation Resistance</b> See 1-2</p> <p><b>Dielectric Withstanding Voltage</b> See 1-3</p>

### 3-3 High Temperature Life

Test Conditions	Specifications
<p>Apply the following environment to the mating connector.</p> <p>Temperature : 363±2K (90±2°C)            Duration : 96 hours</p>	<p><b>Appearance</b> No abnormality</p> <p><b>Contact Resistance</b> See 1-1</p>

### 3-4 Salt Water Spray

Test Conditions	Specifications
<p>Apply the following environment to the mating connector in accordance with MIL-STD-202G, Method 101, Condition B.</p> <p>Temperature : 308±2K (35±2°C)            Salt water density : 5±1% (by weight)            Duration : 48 hours</p>	<p><b>Appearance</b> No abnormality</p>



Solder

4-1 Solderability

Test Conditions	Specifications
Dip the solder tine of the contact in the solder bath at $518 \pm 5 (245 \pm 5^\circ\text{C})$ for $5 \pm 0.5$ sec. After immersing the tine in the flux of RMA or R type for 5 to 10 seconds in accordance with MIL-STD-202, Method 208.	More than 95% of the dipped surface shall be evenly wet.

4-2 Reflow soldering heat resistance

Test Conditions	Specifications
Put on the receptacle connector to PCB, apply the heat 2 cycles as shown in Fig-5.  <p>Fig-5</p> <p>Temp.</p> <p>Time</p> <p>Gradient 1 ~ 4 K/sec.</p> <p>533(260°C) 10±0.5 sec.</p> <p>Gradient -3 ~ -6 K/sec.</p> <p>433~473K (160~200°C) 1~2 minutes</p>	Appearance no abnormality adversely affecting the performance shall occur.