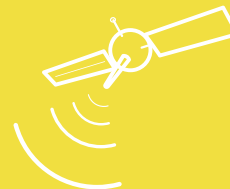
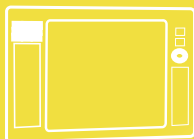




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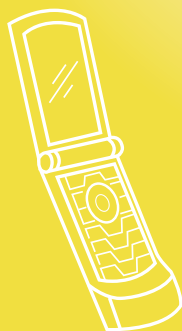


PRODUCT SPECIFICATION

I-PEX MHF4 Micro Coaxial Connector

Plug
P/N 20448-001R-81

Receptacle
P/N 20449-001E



RF Connector, RF Cable & Antenna Manufacturer

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I-PEX MHF4 Micro Coaxial Connector

Mating Height: 1.2 mm MAX

Smallest Coaxial Connector In The World

IPEX MHF4 is the smallest coaxial connector in the world. 1.2mm mated height and quick mating mechanical design allows easy installation in limited space.

MHF4 series can work up to 6GHz and has 50 ohm impedance, therefore MHF4 offers good performance for various portable devices like PND, Smart phone, NB and wireless game equipment.

MHF4 plug 20448-001R is terminated with 0.81mm cable which provides great flexibility and bend radius. Patented "i-Fit" cable termination design saves much time in assembly and increases the productivity.

Receptacle 20449-001E is SMT type has only 3.4mm² mounting area. The tape-and-reel packing allows quick mounting process with automatic equipment.

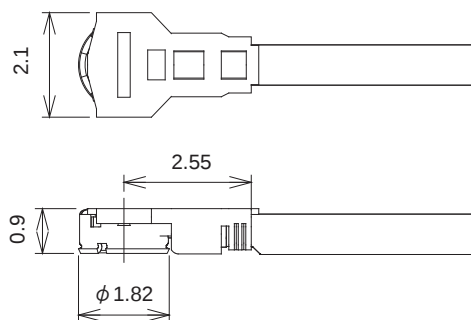
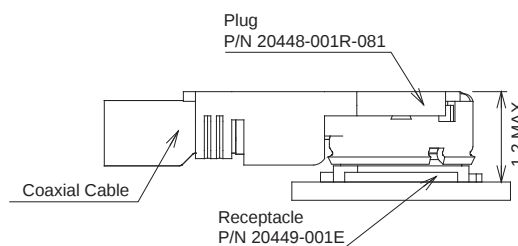
IPEX MHF4 is totally compatible to Murata HSC connector but have lower cost and shorter lead time. IPEX MHF, MHFII, MHFIII and MHF4 pass X-ray inspection for dimensions automatically. After crimping with cable, Wellshow Technology has signal continuity testing to guarantee best quality always.

Contact Wellshow!

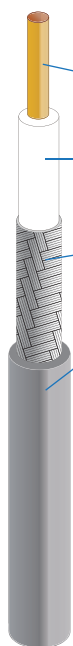
You will get samples in 3 days and get goods in 7 days.



Structure Figure



Applicable cable



Part No.	20448-001R-081 Compatible to Murata HSC Series
Conductor	AWG#36(7/0.05) Silver plating annealed copper wire
Insulation	Fluoro-plastics Diameter 0.4(+0.04,-0.02)mm Nominal thickness 0.125mm
Braid	Nominal diameter 0.65mm Tin plating annealed copper wire
Jacket	Fluoro-plastics Diameter 0.81(+0.04,-0.02)mm Nominal thickness 0.08mm
Requirements	
Characteristic impedance	50(+3,-3)ohm by TDR method
Nominal capacitance (Ref.)	96 pF/m
Conductor resistance of inner conductor at 293K (20°C)	1400 ohm/km MAX.
Insulation resistance	1000 mega-ohm.km MIN.
Dielectric withstand voltage	no breakdown at AC1000V for 1 minutes.

Ratings

Description	Specification
Rated voltage	AC60Vr.m.s
Nominal characteristic impedance	50 Ω
Frequency	DC~6 GHz
VSWR	1.3 MAX. (DC~3GHz) 1.5 MAX. (3~6GHz)
Insertion loss	Cable ass'y: -1.45 MIN.(6GHz)
Service Temperature	233~363K(-40°C~+90°C)



Test methods and performance

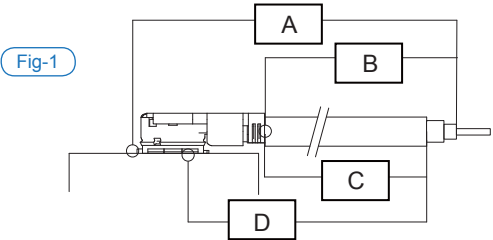
Test condition

The initial condition in this test means the condition before shipment.
Unless otherwise specified, all tests and measurements should be performed under the following

Temperature 288K~308K(15°C~35°C)
Pressure 866hPa~1066hPa(650mmHg~800mmHg)
Relative Humidity 50±2%R.H.

Electrical Performance

1-1 Contact Resistance

Test Conditions	Specifications
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. Open circuit voltage : 20mV MAX. Circuit current : 10mA MAX. Fig-1  Inner contact = A - B Ground contact = D - C	Inner contact Initial: 20mΩ MAX. After testing: ΔR20mΩ MAX. Ground contact Initial: 20mΩ MAX. After testing: ΔR20mΩ MAX.

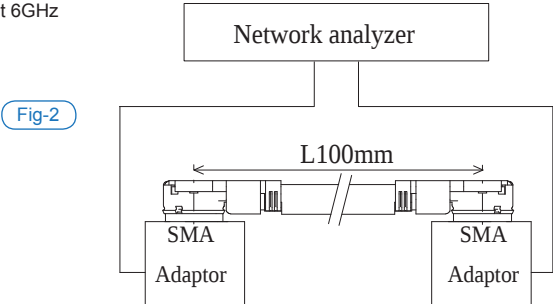
1-2 Insulation Resistance

Test Conditions	Specifications
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.	Initial : 500MΩ MIN. After testing : 100MΩ MIN.

1-3 Dielectric Withstanding Voltage

Test Conditions	Specifications
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.	No creeping discharge, no flashover, and no insulator breakdown.

1-4 VSWR Insertion loss

Test Conditions	Specifications
Measure the VSWR and insertion loss as shown in Fig-2 by the network analyzer. Frequency : VSWR 100M ~ 6GHz , Insertion loss : Value at 6GHz Fig-2 	VSWR 1.3MAX.at 0.1 ~ 3GHz 1.5MAX.at 3 ~ 6GHz Insertion loss -1.45dB MIN. at 6GHz



Mechanical Performance

2-1 Un-mating force

Test Conditions	Specifications
Solder the receptacle connector to the test board and mate the plug connector together then, measure the un-mating force at speed of $25\pm 3\text{mm/minutes}$ in parallel with the mating axis by the push-pull machine.	Total un-mating force Initial : 4N MIN. After 30 cycles : 2N MIN.

2-2 Crimp strength

Test Conditions	Specifications
Pull the cable as shown in Fig-3 at speed of $25\pm 3\text{mm/minutes}$ by the tensile strength machine and measure the retention force.	5N MIN.

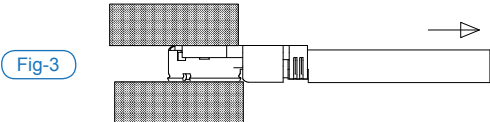


Fig-3

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 $25\pm 3\text{mm/minutes}$ in parallel with the mating axis by the push-pull machine.	Appearance No abnormality Contact Resistance See 1-1

2-4 Contact resistance with Force on the cable

Test Conditions	Specifications
Apply force to the cable as shown in Fig.-4. During the testing, run 100mA DC to check electrical discontinuity.	Appearance No abnormality Electrical discontinuity No electrical discontinuity grater than $1\mu\text{s}$.

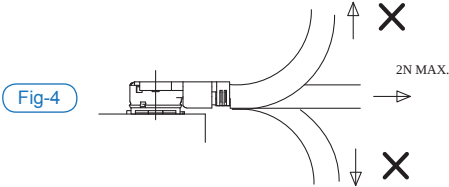


Fig-4

2-5 Vibration

Test Conditions	Specifications
Apply the following vibration to the mating connector. During the testing, run 100mA DC to check electrical discontinuity. Frequency : 10Hz → 100Hz → 10Hz / approx 20minutes. Half amplitude, Peak value of acceleration : 1.5mm or 59m/s^2 (6G) Directions , cycle : 3 mutually perpendicular direction, 3 cycles for each direction	Appearance No abnormality Contact Resistance See 1-1 Electrical discontinuity No electrical discontinuity grater than $1\mu\text{s}$.

2-6 Shock

Test Conditions	Specifications
Apply the following shock to the mating connector. During the testing, run 100mA DC to check electrical discontinuity. Peak value of acceleration : 735m/s^2 (75G) Duration : 11msec Wave Form : Half sinusoidal Directions , cycle : 6 mutually perpendicular direction, 3 cycles for each direction	Appearance No abnormality Contact Resistance See 1-1 Electrical discontinuity No electrical discontinuity grater than $1\mu\text{s}$.



Environmental Performance

3-1 Humidity (Steady State)

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

3-2 Thermal Shock

Test Conditions	Specifications
Apply the following environment to the mating connector in accordance with MIL-STD-202G, Method 107G, Condition A. Temperature : 218K(-55°C):30min. → 358K(85°C):30min. Transition time : 5min. MAX. No. of cycles : 5 cycles	Appearance No abnormality Contact Resistance See 1-1 Insulation Resistance See 1-2 Dielectric Withstanding Voltage See 1-3

3-3 High Temperature Life

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

3-4 H₂S Gas

Test Conditions	Specifications
Apply the following environment to the mating connector. Temperature : 313±2K (40±2°C) Relative Humidity : 80±5%RH Gas : H ₂ S 3±1ppm Duration : 96 hours	Appearance No abnormality Contact Resistance See 1-1

3-5 Salt Water Spray

Test Conditions	Specifications
Apply the following environment to the mating connector. MIL-STD-202G, Method 101E, Condition B. Temperature : 308±2K (35±2°C) Relative Humidity : 95 ~ 98%RH Salt water density : 5±1% (by weight) Duration : 48 hours	Appearance No abnormality Contact Resistance See 1-1