

WE MEET @ DIGITAL DAYS



MAKING YOUR SIGNAL TRANSMISSION
WITH WE UMRF PRODUCT RANGE-
QUICK AND SMALL IN YOUR DESIGN

PM eiCan WERI
Jason Chang

WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

AGENDA

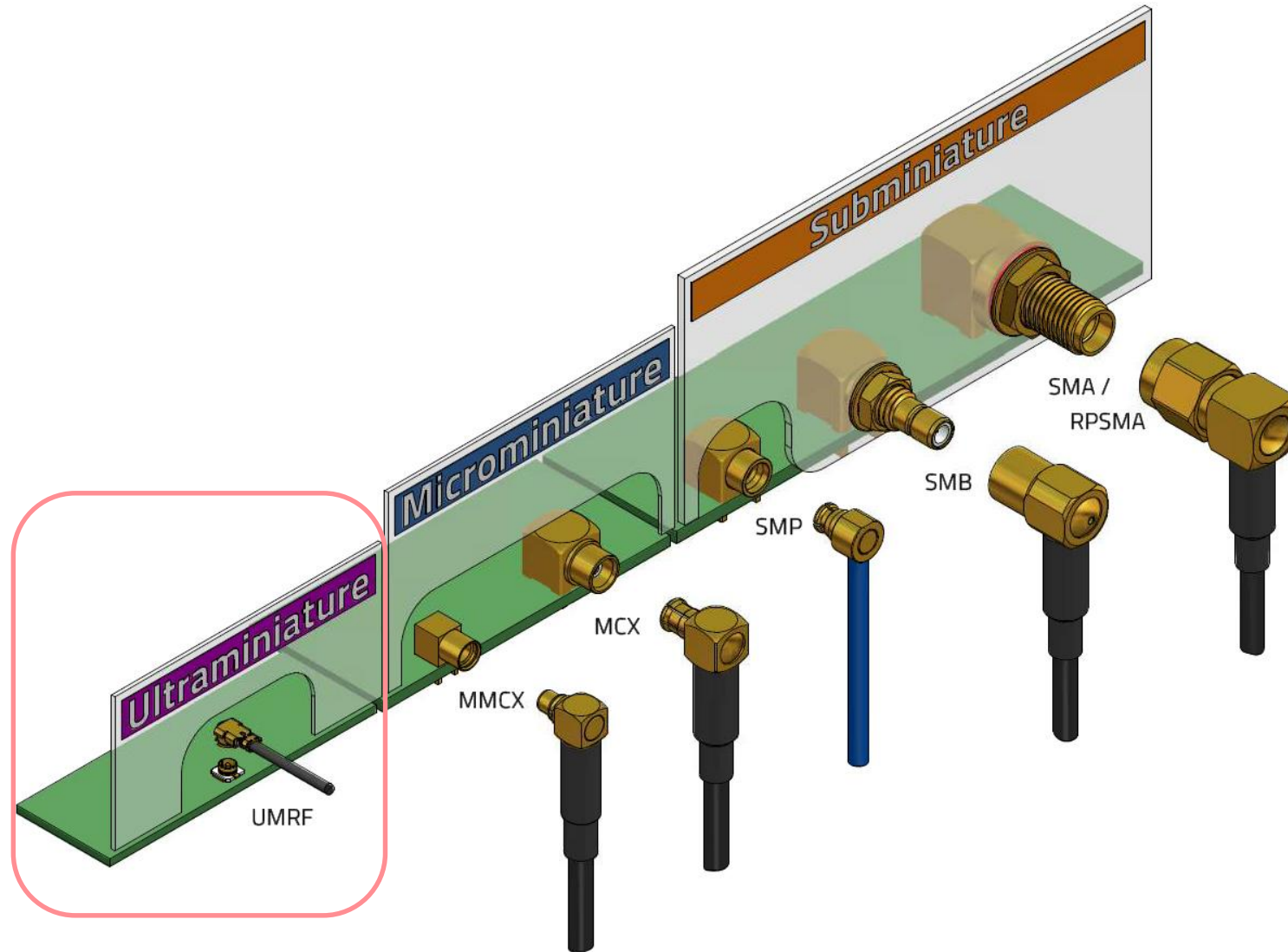
- Coaxial Connector Product Line
- Introduce WR-UMRF
- Application for UMRF
- WR-UMRF Products
- Structure and Key Specification
- Market Player
- Customize Solution
- Summary



COAXIAL CONNECTOR PRODUCT LINE

2018 - Today

- SMA
- Reverse Polarity SMA
- SMB
- SMP
- MCX
- MMCX
- UMRF



INTRODUCE WR-UMRF

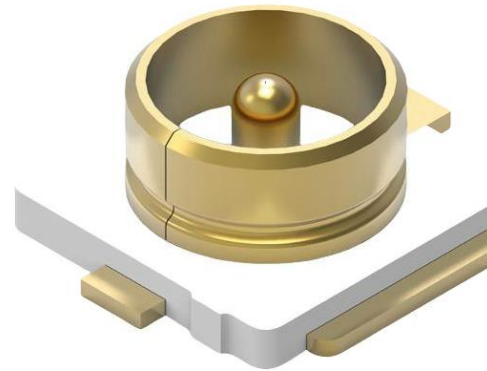
Basics

UMRF named by Wurth Elektronik is Ultra Miniature RF coaxial connectors

Designed with PCB receptacle together with crimping right-angled plug for smaller diameter of coaxial cables from 0.81 to 1.37mm.



Plug



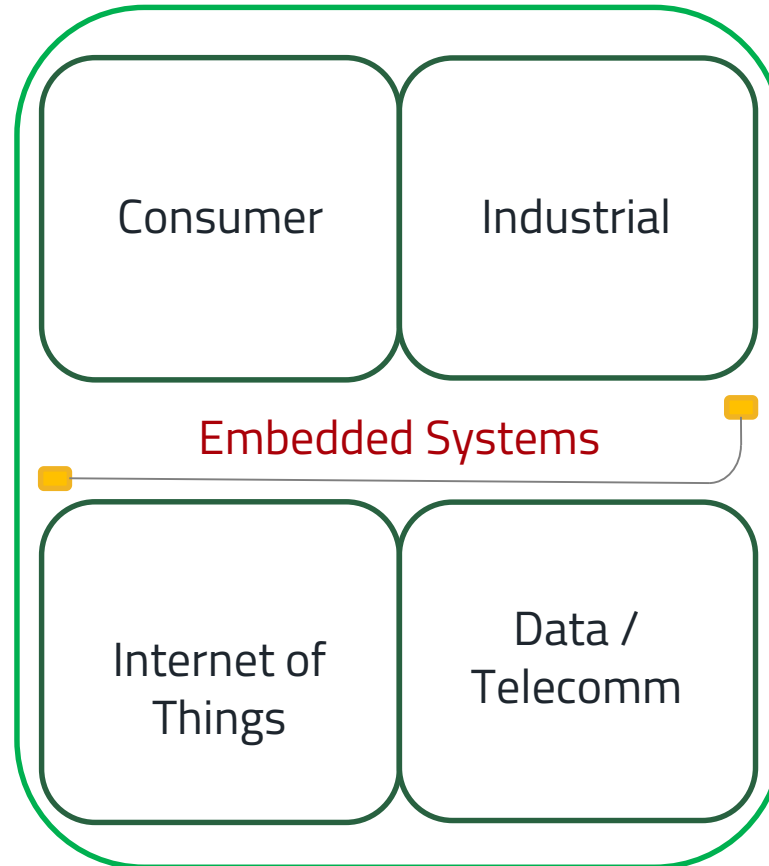
Jack / Receptacle

APPLICATION FOR UMRF

Where could it be?

RF Protocols

- Wi-Fi
 - GSM / CDMA / 3G / 4G (LTE)
 - Bluetooth
 - LoRa
 - Zigbee
 - Z-Wave
 - RFID
 - NFC
 - GPS / Glonass / BeiDou
- and more..



Device Relates to...

- Wireless
 - Portable
 - Home Automation
 - Remote Measuring
 - Monitoring
 - M2M Communication
 - Tracking
- and more...



- Limited space or space saving
- Quick & design realized in "embedded systems"

APPLICATION FOR UMRF

Why relate to Embedded System

PCB receptacles are often designed with RF Modules



(RF modules follows protocols mentioned in previous page)

RF Signal Connection

RF Signal Connection

Connected by coax cable assembled with right-angled plugs on both sides as "**Jumper**" to bridge between the module, motherboard or antenna.



Connected by coax cable assembled with right-angled plugs on one side and SMA/RPSMA Bulkhead Jack on the other side as "**Antenna Cable**" to bridge between the module and external antenna.



WR-UMRF PRODUCTS

WE UMRF Series

PCB Receptacle

63610111x001

3 pads SMT
T&R Packing- 7" & 13"



CXASY- Jumper

636201xxxxxx

1.13 / 1.32 / 1.37
Black / Gray



CXASY- Antenna Cable

636207xxxxxx

636208xxxxxx

636209xxxxxx

636210xxxxxx

1.13 / 1.32 / 1.37

Black / Gray
SMA / RPSMA
Normal / IP67



Adaptors

64403136111000

SMA Jack to UMRF Receptacle



64403236111000

SMA Plug to UMRF Receptacle



Hand Tool

600636001

Insert & Extraction



Design Kit

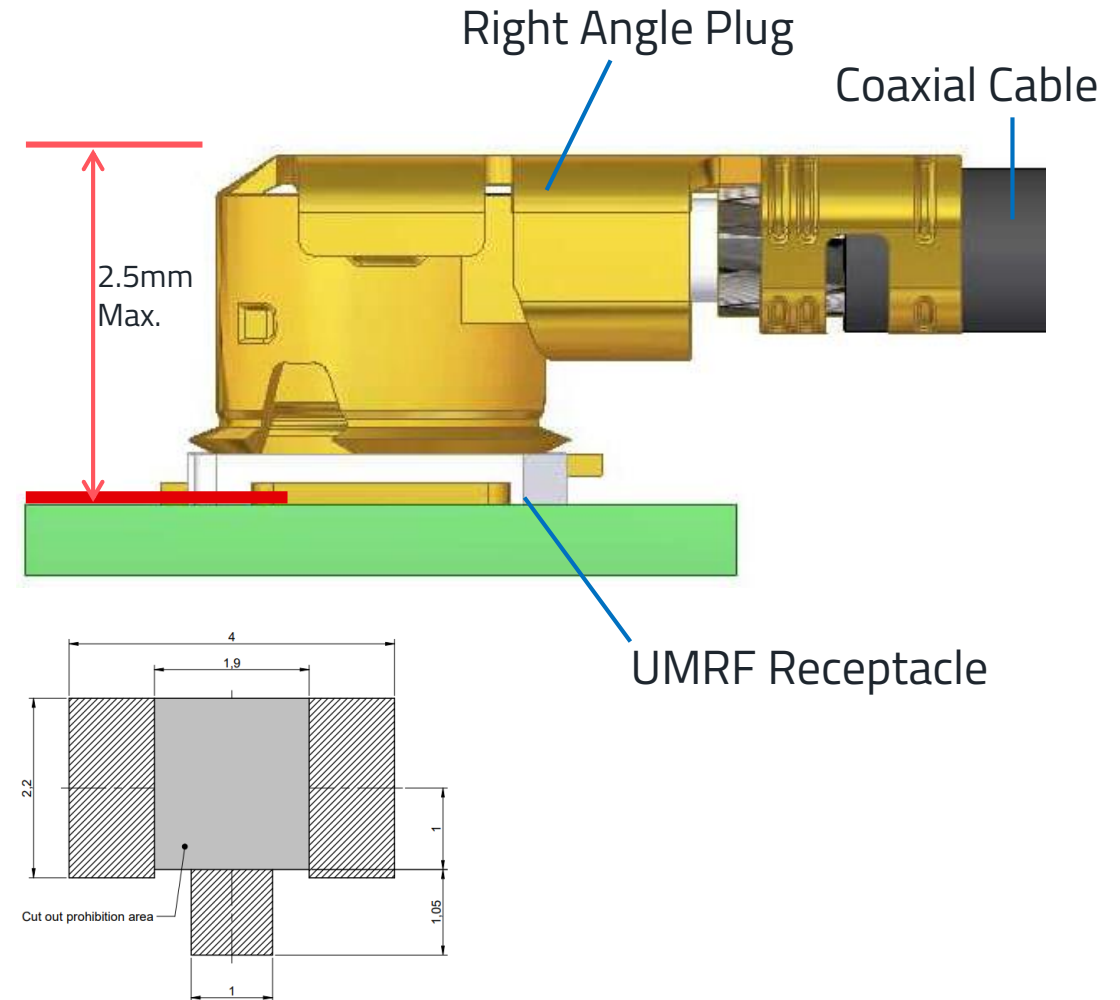
636001



WR-UMRF PRODUCTS

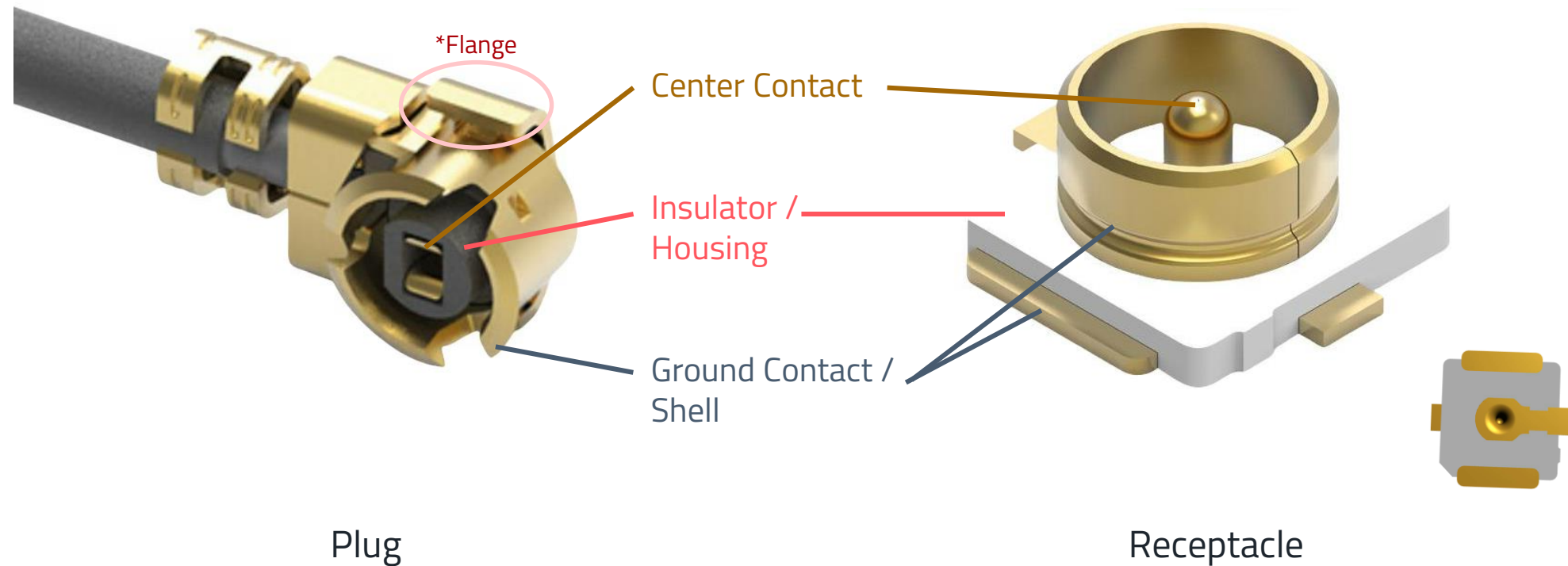
Key Features

- Frequency range up to 6 GHz at 50 ohms
- Slim mating height of 2.5mm max.
- Easy and fast snap on/off mating design (Tool available)
- Durability up to 30 mating cycles
- Compact footprint for PCB receptacle of 3.1x3.0 mm



STRUCTURE AND KEY SPECIFICATION

Connector Structure



STRUCTURE AND KEY SPECIFICATION

Characteristics

Electrical Properties

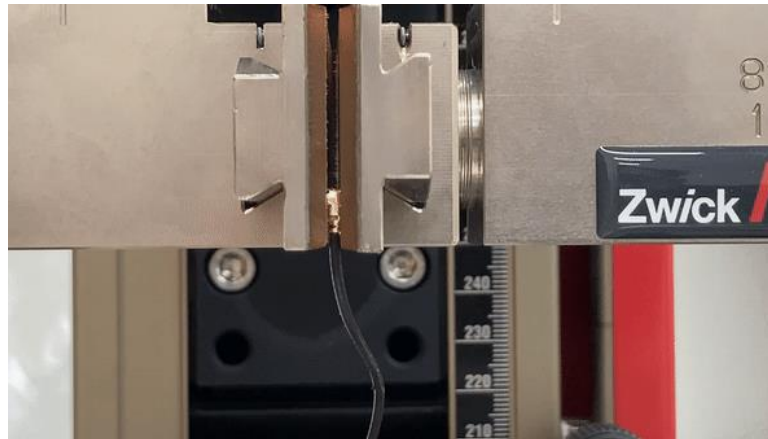
Impedance: 50 Ohm
Frequency Range: DC ~ 6GHz
VSWR
Insertion loss
Insulation Resistance
Withstanding Voltage

Other Properties

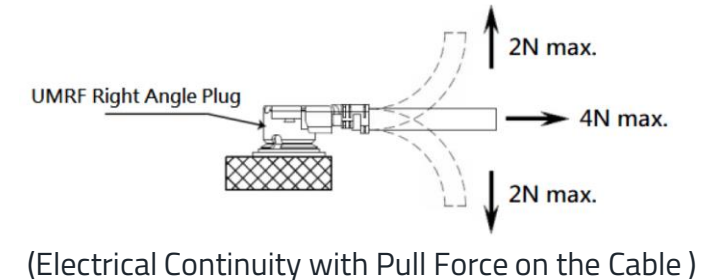
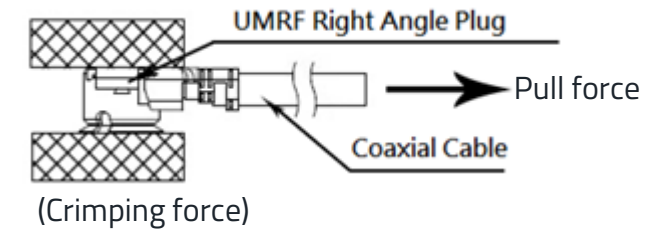
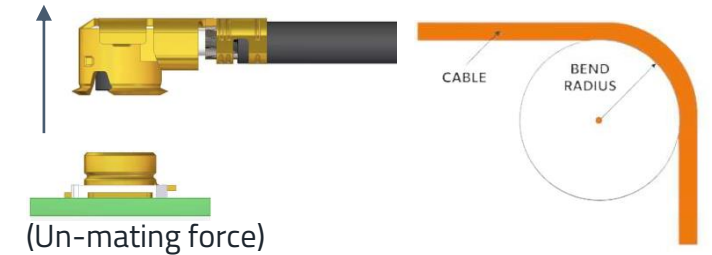
VW-1 Cable Flammability
Operating Temperature: -40 up to +90°C
Black & Grey Cable Colors

Mechanical Properties

Mating Height: 2.5mm
Mating Cycle: 30 Cycles
Un-mating force
Crimping force
Electrical Continuity with Pull Force on the Cable
Cable Minimum Bending Force 4mm

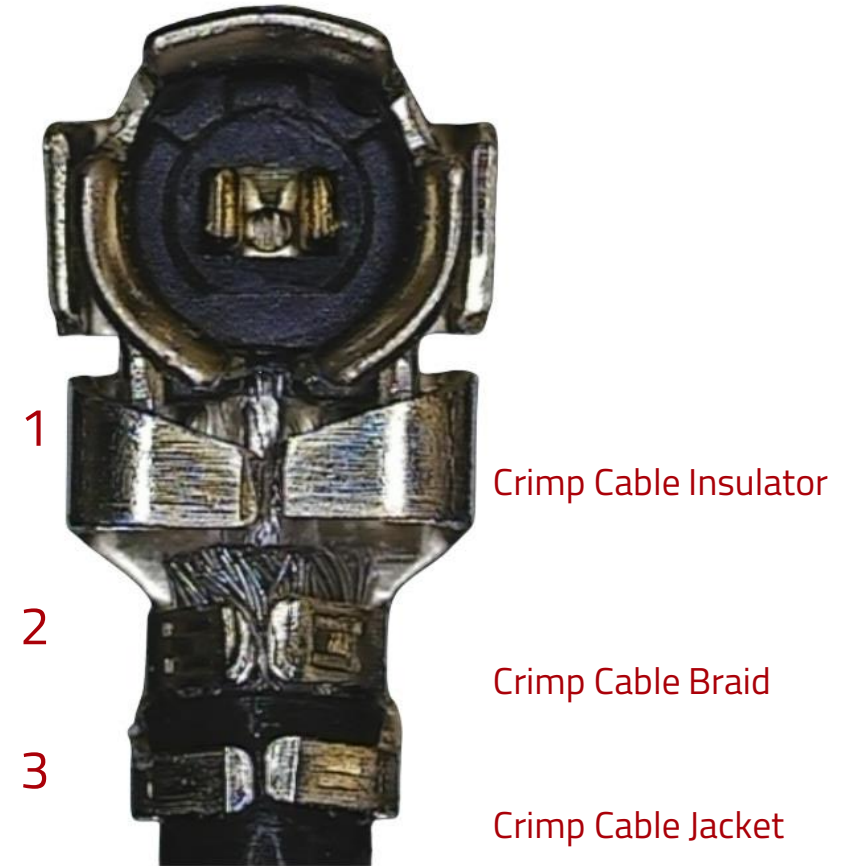
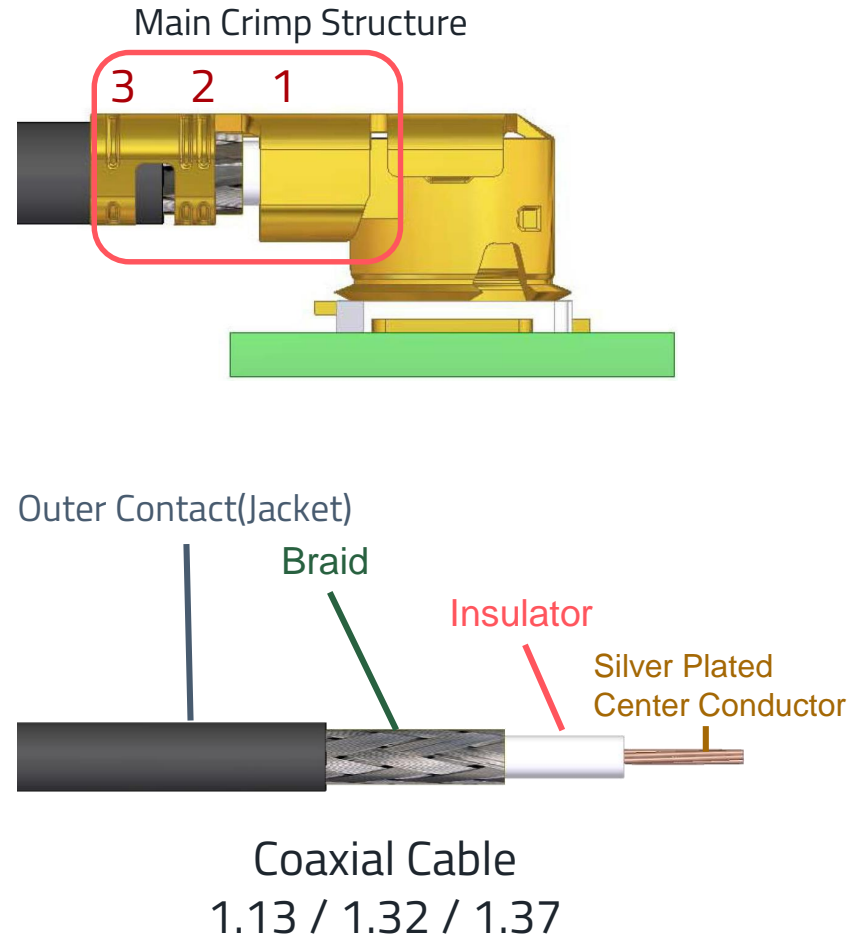


Ask About Different Property Question
coax-team@we-online.com



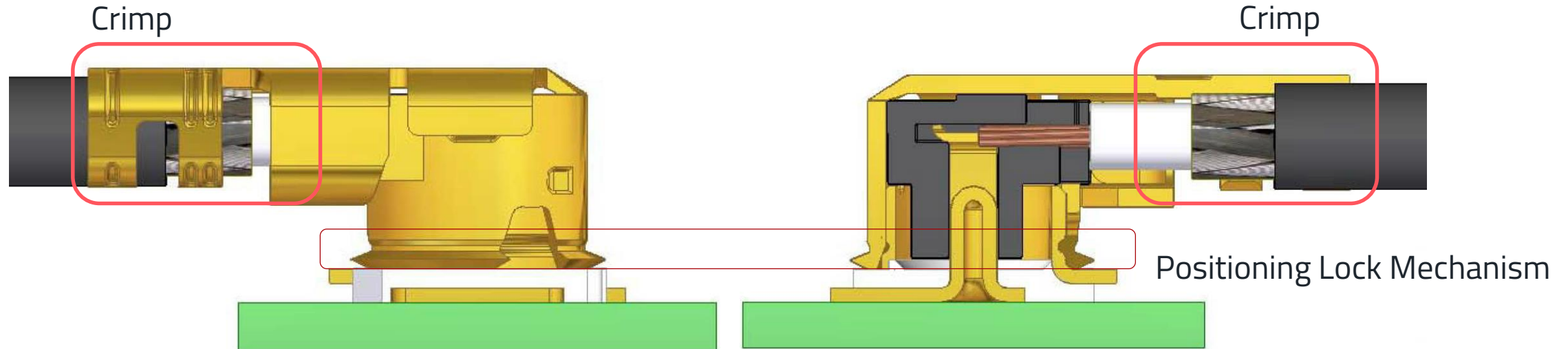
STRUCTURE AND KEY SPECIFICATION

Crimping Structure



STRUCTURE AND KEY SPECIFICATION

Crimping Structure



Plug crimp part holds cable braid and cable jacket

Positioning lock design provides a secure assembly feedback through finger and sound

About the assembly...

STRUCTURE AND KEY SPECIFICATION

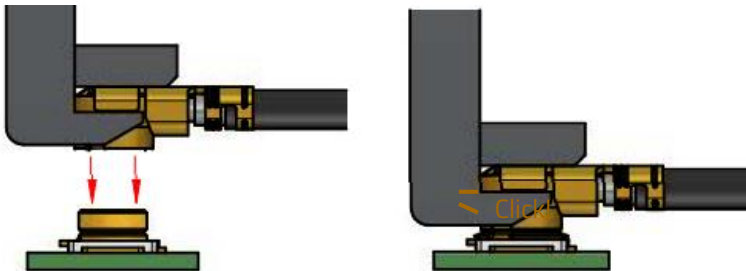
All-in-one Design Hand Tool

Instruction Key Point

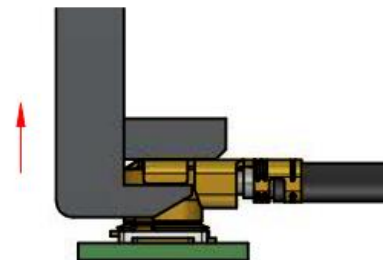
Insert tool to the flanges at UMRF plug



Insert **vertically** until a "click" sound

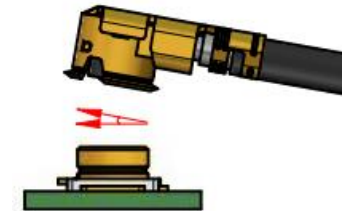


Pull the plug **vertically**



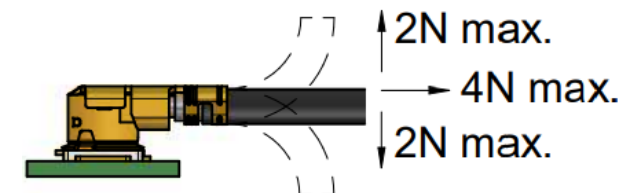
Precaution Notes

Note 1: Do not apply extreme angle when you insert the UMRF Plug to the receptacle



Note 2: Never pull UMRF directly by hands

Note 3: Do not apply pull force higher than defined values indicated in below diagram:



Hand Tool PN: 600636001

MARKET PLAYER

Compatibility



UMRF Plug and Receptacle are fully compatible to other market players

Mating height is all 2.5mm max. between different combination



Identify UMRF Plug for
1.13 / 1.32 / 1.37





| Hirose | I-PEX |
|--------|-------|
| U.FL | MHF1 |



CUSTOMIZE SOLUTION

Cable Assemblies with UMRF

| | <u>Cable Diameter</u> | <u>Jacket Color</u> | <u>Connector Configuration</u> | |
|---------------|-----------------------|---------------------|---------------------------------------|--|
| Jumper Cable | OD 1.13mm | Black | UMRF Plug to UMRF Plug |  |
| | OD 1.32mm | | | |
| Antenna Cable | | Gray | UMRF Plug to SMA Bulkhead Jack |  |
| | OD 1.37mm | | UMRF Plug to SMA Bulkhead Jack IP67 | |
| | | | UMRF Plug to RPSMA Bulkhead Jack | |
| | | | UMRF Plug to RPSMA Bulkhead Jack IP67 | |

CUSTOMIZE SOLUTION

How is IP67 Defined?

Antenna Cable

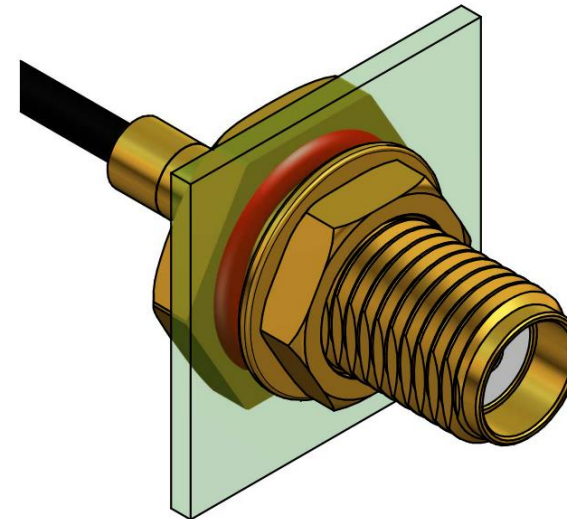
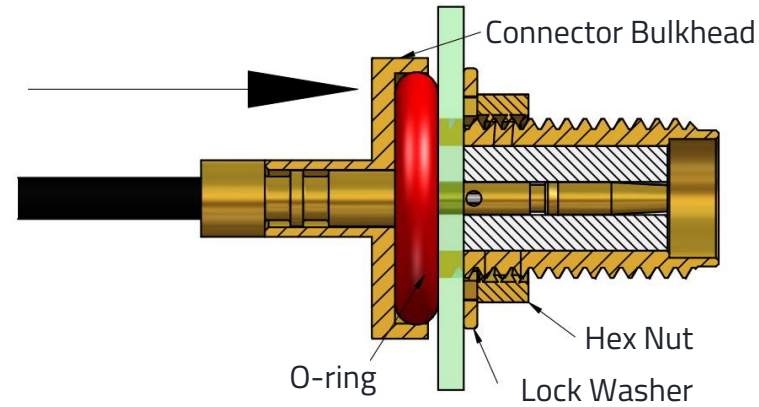
Connector Configuration

UMRF Plug to SMA Bulkhead Jack

UMRF Plug to SMA Bulkhead Jack IP67

UMRF Plug to RPSMA Bulkhead Jack

UMRF Plug to RPSMA Bulkhead Jack IP67



WE Torque Wrench PN:
6006330101

CUSTOMIZE SOLUTION

Cable Assemblies Customized

Jumper Cable

Customized Configuration

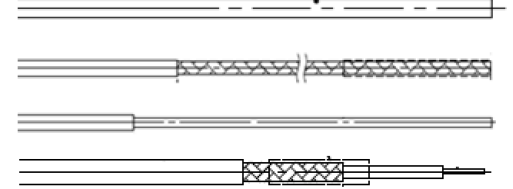
UMRF Plug to UMRF Plug

UMRF Plug to Strip End



Strip end may includes:

- Direct Cut
- Strip Cable Jacket
- Strip Jacket & Braid
- 3 layer stripping



Antenna Cable

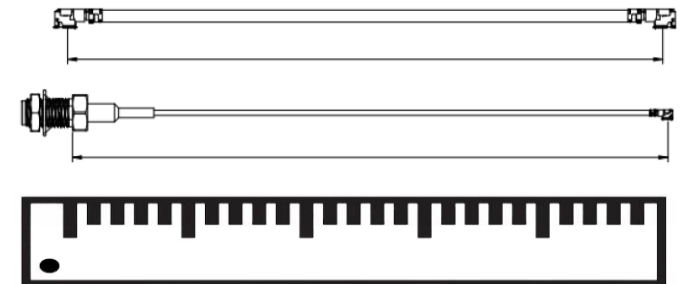
Customized Configuration

UMRF Plug to SMA Bulkhead Jack

UMRF Plug to SMA Bulkhead Jack IP67

UMRF Plug to RPSMA Bulkhead Jack

UMRF Plug to RPSMA Bulkhead Jack IP67



CUSTOMIZE SOLUTION

Cable Selection

Cable Diameter

Jacket Color

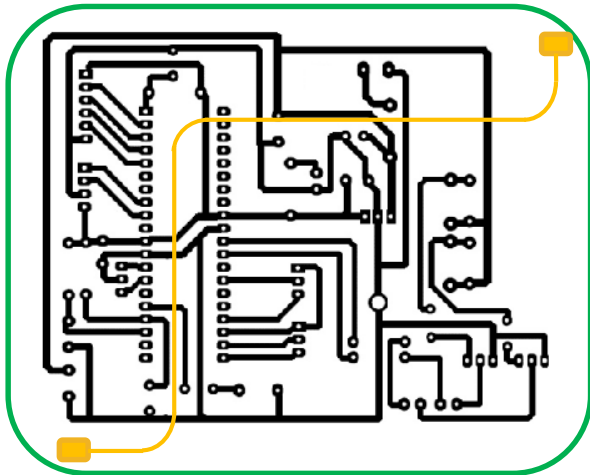
OD 1.13mm

OD 1.32mm

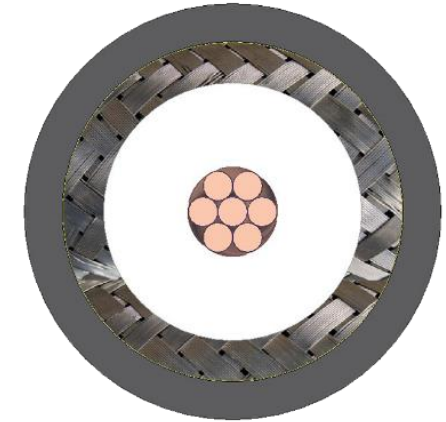
OD 1.37mm

Black

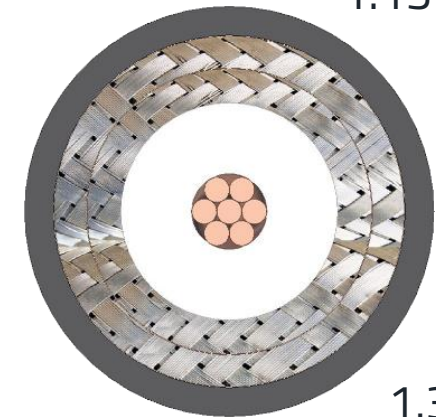
Gray



- 50 ohms
- UL 1354
- VW-1 Cable Flammability Rating
- Weight: 1.32 > 1.37 > 1.13
- 1.32 cable is double shielding
- Same bending radius
- Attenuation at 6 GHz
1.13 & 1.32: 5.4 dB/m
1.37: 4.5 dB/m



1.13 / 1.37



1.32

SUMMARY

- Frequency range up to 6 GHz at 50 ohms
- Slim mating height of 2.5mm max.
- Easy and fast snap on/off mating design
- Customize tailor cable assembly (Jumper or Antenna Cable)
- Panel mount IP67 with SMA or RPSMA
- All-in-one Design Hand Tool (PN: 600636001)
- Design Kit available (PN:636001)

