



## CSI-SGFI-150-UFFR

### SMA Bulkhead Jack to U.FL Plug Cable Assembly

The CSI-SGFI-150-UFFR cable assembly provides an SMA bulkhead jack (female socket) to MHF1/U.FL-type plug (female socket) connection on 150 mm of 1.13 mm coaxial cable.

Operating from 0 Hz to 6 GHz, the CSI-SGFI-150-UFFR cable assembly combines superior performance, compact size, and convenient snap-on and threaded mating interfaces to provide a reliable, easy-to-use cable assembly. Additionally, all Linx coaxial cables and connectors meet RoHS lead free standards and are tested to meet requirements for corrosion resistance, vibration, mechanical and thermal shock.

#### FEATURES

- 0 Hz to 6 GHz operation
- SMA jack (female socket)
  - Gold plated
  - Silicone O-ring, gold plated brass washer and 1/4"-36UNS hex nut provided
- U.FL-type plug (female socket) compatible with:
  - MHF1, AMC, UMCC

#### APPLICATIONS

- LPWA
  - LoRaWAN®, Sigfox®, WiFi HaLow™ (802.11ah)
- Cellular IoT - LTE-M (Cat-M1), NB-IoT
- Cellular - 5G/4G LTE/3G/2G
- PC, LAN
- ISM - Bluetooth®, ZigBee®
- GNSS - GPS, Galileo, BeiDou, QZSS
- Automotive, Industrial, Commercial, Enterprise

#### TABLE 1. ELECTRICAL SPECIFICATIONS

Parameter	Value
Insertion Loss (dB max)	1.8
VSWR (max)	2.0
Impedance	50 Ω
Insulation Resistance	500 MΩ min.

#### ORDERING INFORMATION

Part Number	Description
CSI-SGFI-150-UFFR	SMA bulkhead jack (female socket) to U.FL/MHF1-type plug (female socket) on 150 mm (5.91 in) of 1.13 mm coaxial cable

Available from Linx Technologies and select distributors and representatives.

## PRODUCT DIMENSIONS

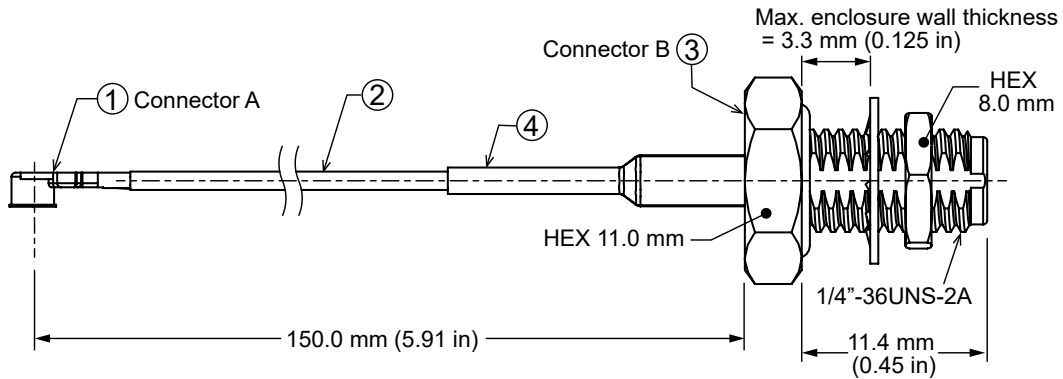


Figure 1. Product Dimensions for the CSI-SGFI-150-UFFR Cable Assembly

## TABLE 2. CABLE ASSEMBLY COMPONENTS

Item #	Description	Material	Finish
1	Connector, U.FL-type plug (female socket)	Brass	Gold
2	1.13 mm coaxial cable	1.13 mm cable	Black
3	Connector, SMA bulkhead jack (female socket) with gasket, hex nut and washer	Brass	Gold
4	Heat Shrink Tubing	PTFE	Black

## TABLE 3. CABLE ASSEMBLY MECHANICAL SPECIFICATIONS

Parameter	Connector A U.FL-type plug (female socket)	Connector B SMA bulkhead jack (female socket)
Fastening Type	Snap-on coupling	1/4"-36 UNS-2A threaded coupling
Recommended Torque	-	0.9 N m (8.0 in lbs)
Coupling Nut Retention	-	60 lbs. min.
Connector Durability	30 cycles min.	500 cycles min.
Weight	5.2 g (0.18 oz)	

## RECOMMENDED MOUNTING

Figure 2 shows the recommended mounting hole dimensions for the SMA connector (bulkhead) end of the cable assembly. The hex nut torque should not exceed 10.0 in/lbs max or damage may occur to threads. The max enclosure wall thickness = 3.3 mm (0.13 in).

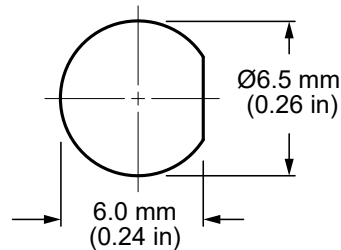


Figure 2. Recommended Mounting Hole Dimensions for the CSI-SGFI-150-UFFR Cable Assembly

## COAXIAL CABLE SPECIFICATIONS

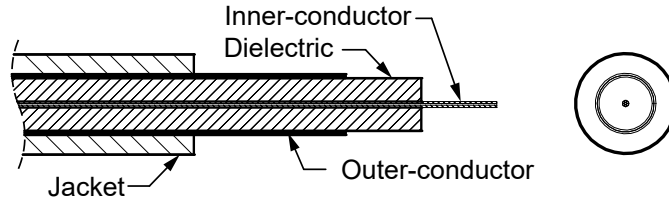


Figure 3. Coaxial Cable Cutaway Diagram

### TABLE 4. COAXIAL CABLE MATERIAL SPECIFICATIONS FOR 1.13 MM CABLE

Parameter	Material	Dimensions
Inner-Conductor	Silver plated copper, 7 strand, 0.08 mm	Ø0.08 mm (0.003 in)
Dielectric	FEP, clear	Ø0.70 mm (0.028 in)
Outer-Conductor	Silver plated copper braid, 4 x 0.05, coverage 90.0%	Ø0.92 mm (0.036 in)
Jacket	FEP, black	Ø1.13 mm (0.04 in) ±0.05 mm

### TABLE 5. COAXIAL CABLE ELECTRICAL AND PHYSICAL SPECIFICATIONS FOR 1.13 MM CABLE

Parameter	Value				
Nominal Impedance	50 ± 2 Ω				
Nominal Capacitance	98 pF/m				
Nominal Velocity of Propagation	70%				
VSWR (0 to 10 GHz)	≤ 1.3 @0 GHz to 6 GHz, ≤ 1.4 @6 GHz to 8 GHz, ≤ 1.5 @8 GHz to 10 GHz				
Attenuation (dB/1M)	1 GHz 2.2	2 GHz 3.1	3 GHz 3.8	4 GHz 4.4	5 GHz 4.9
Minimum Inside Bend radius	4.5 mm (0.18 in)				

## INSERTION LOSS

Figure 4 shows the Insertion Loss for CSI-SGFI-150-UFFR cable assembly. Insertion loss is the loss of signal power (gain) resulting from the insertion of a device in a transmission line.

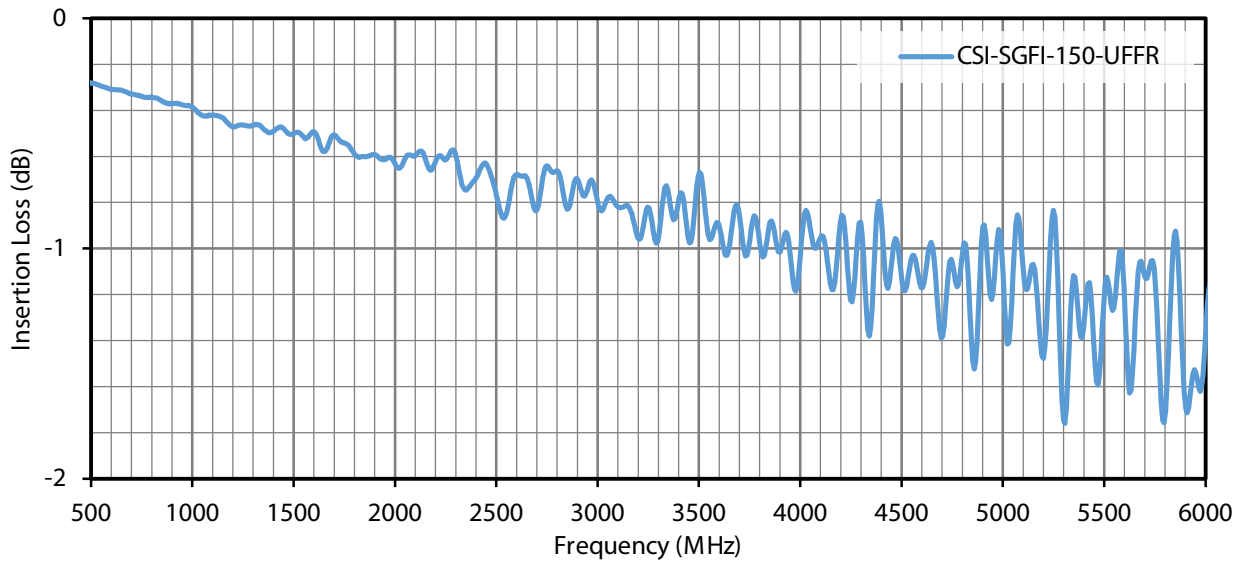


Figure 4. Insertion Loss for the CSI-SGFI-150-UFFR Cable Assembly

## VSWR

Figure 5 provides the voltage standing wave ratio (VSWR) across the cable assembly's bandwidth for the CSI-SGFI-150-UFFR cable assembly. VSWR describes how efficiently power is transmitted through the cable assembly. A lower VSWR value indicates better performance at a given frequency.

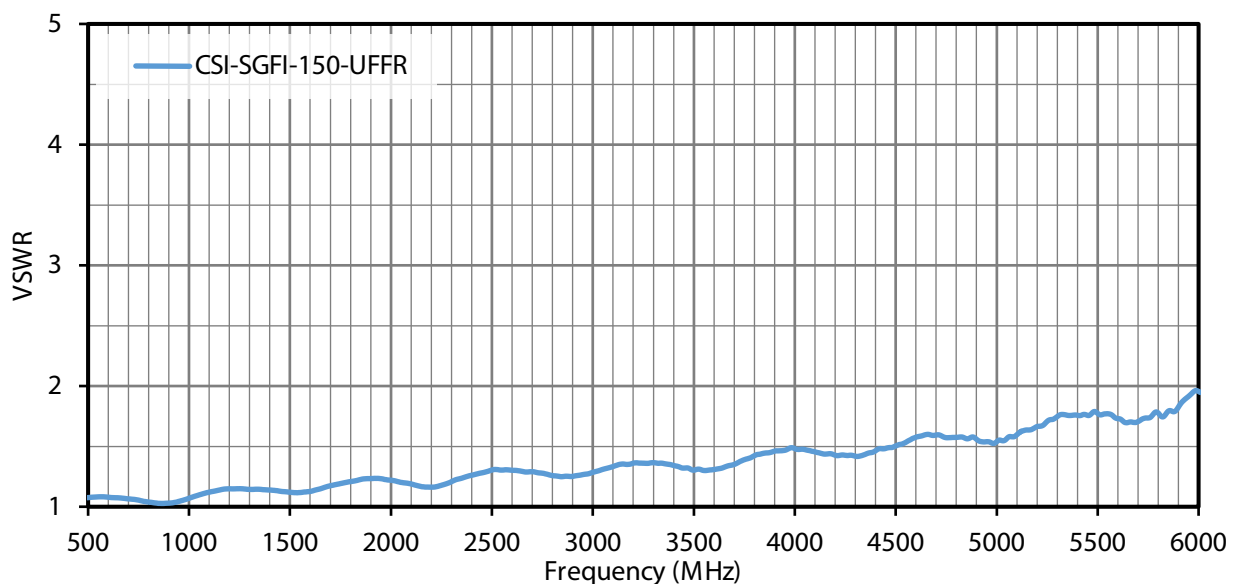


Figure 5. VSWR for the CSI-SGFI-150-UFFR Cable Assembly

## PACKAGING INFORMATION

The CSI-SGFI-150-UFFR cable assembly is packaged in a clear plastic bag, in quantities of 100. Distribution channels may offer alternative packaging options.

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## CABLE ASSEMBLY DEFINITIONS AND USEFUL FORMULAS

**VSWR** - Voltage Standing Wave Ratio. VSWR is a unitless ratio that describes how efficiently power is transmitted through the cable assembly. A lower VSWR value indicates better performance at a given frequency. VSWR is easily derived from Return Loss.

$$VSWR = \frac{10^{\left[\frac{\text{Return Loss}}{20}\right]} + 1}{10^{\left[\frac{\text{Return Loss}}{20}\right]} - 1}$$

**Insertion Loss** - The loss of signal power (gain) resulting from the insertion of a device in a transmission line. Insertion loss can be derived from the power transmitted to the load before the insertion of the component  $P_T$  and the power transmitted to the load after the insertion of the component  $P_R$ .

$$\text{Insertion Loss (dB)} = 10 \log_{10} \frac{P_T}{P_R}$$

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