

**Pigtail Cable for  
Wi-Fi/Bluetooth Antennas  
U.FL to RP-SMA  
100mm V1.0**

Datasheet





## CSB-RGFB-102-UFFR

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

The CSB-RGFB-102-UFFR cable assembly provides an RP-SMA jack (male pin) to MHF1/U.FL- type plug (female socket) connection on 102 mm of RG-178 coaxial cable.

Operating from 0 Hz to 6 GHz, the CSB-RGFB- 102-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
- RP-SMA jack (male pin)
  - Gold plated
  - Gold plated brass washer and 1/4"-36UNS hex nut provided
- U.FL-type plug (female socket) compatible with:
  - MHF1, AMC, UMCC
- RG-178 coaxial cable

#### 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, GLONASS, BeiDou, QZSS
- Automotive, Industrial, Commercial, Enterprise

#### TABLE 1. ELECTRICAL SPECIFICATIONS

Parameter	Value
Insertion Loss (dB max)	1.6
VSWR (max)	2.0
Impedance	50 Ω
Insulation Resistance	500 MΩ min.

#### ORDERING INFORMATION

Part Number	Description
CSB-RGFB-102-UFFR	RP-SMA bulkhead jack (male pin) to U.FL/MHF1-type plug (female socket) on 102 mm (4.0 in) of RG-178 coaxial cable

Available from Linx Technologies and select distributors and representatives.

## PRODUCT DIMENSIONS

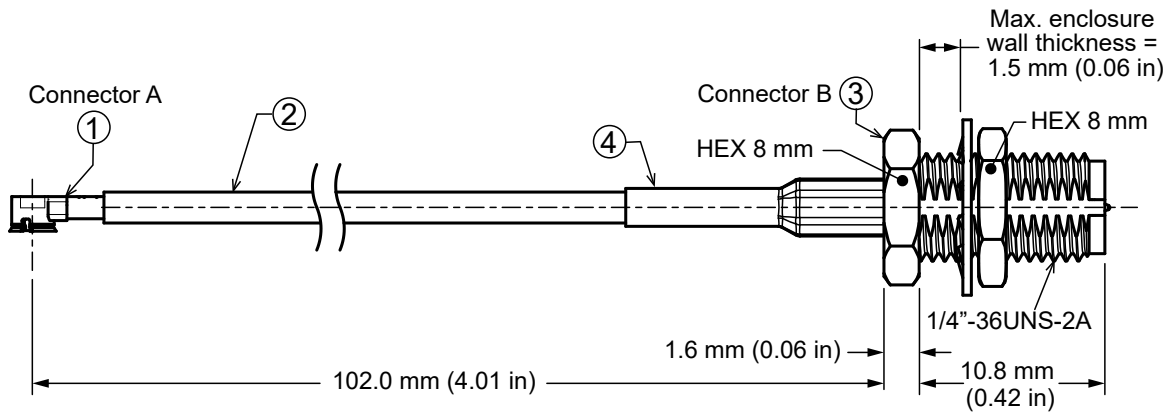


Figure 1. Product Dimensions for the CSB-RGFB-102-UFFR Cable Assembly

## TABLE 2. CABLE ASSEMBLY COMPONENTS

Item #	Description	Material	Finish
1	Connector, U.FL-type plug (female socket)	Brass	Gold
2	RG-178 coaxial cable	RG-178	Natural
3	Connector, RP-SMA bulkhead jack (male pin) with 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 RP-SMA bulkhead jack (male pin)
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	3.6 g (0.13 oz)	

## RECOMMENDED MOUNTING

Figure 2 shows the recommended mounting hole dimensions for the RP-SMA connector (bulkhead) end of the cable assembly. Hex nut torque should not exceed 10.0 in/lbs max or damage may occur to threads. The max enclosure wall thickness = 1.5 mm (0.06 in).

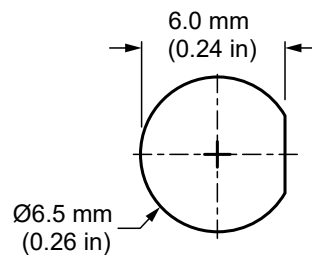


Figure 2. Recommended Mounting Hole Dimensions for the CSB-RGFB-102-UFFR Cable Assembly

## COAXIAL CABLE SPECIFICATIONS

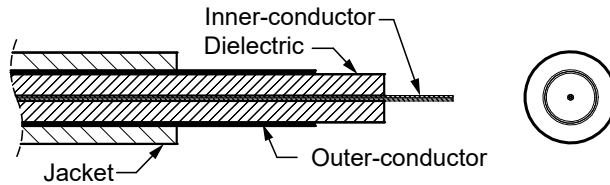


Figure 3. Coaxial Cable Cutaway Diagram

### TABLE 4. COAXIAL CABLE MATERIAL SPECIFICATIONS FOR RG-178

Parameter	Material	Dimensions
Inner-Conductor	Silver plated copper, 7 strand x Ø0.102 mm	Ø0.085 mm (0.003 in)
Dielectric	FEP, natural	Ø0.306 mm (0.012 in)
Outer-Conductor	Silver plated copper braid, 3/0.10, coverage 90%	Ø1.3 mm (0.05 in)
Jacket	FEP, brown	Ø1.78 mm (0.07 in) ±0.05 mm

### TABLE 5. COAXIAL CABLE ELECTRICAL AND PHYSICAL SPECIFICATIONS FOR RG-178

Parameter	Value							
Rated Temp Voltage	105 °C 30 V							
Nominal Impedance	50 ± 3 Ω							
Nominal Capacitance	96 ± 3 pF/m							
Nominal Velocity of Propagation	70%							
Attenuation (dB/1M)	0.1 GHz	0.4 GHz	1 GHz	2 GHz	3 GHz	4 GHz	5 GHz	6 GHz
	0.52	1.2	1.7	2.42	3.08	3.63	4.15	4.8
Minimum Inside Bend radius	10.0 mm (0.04 in)							

## INSERTION LOSS

Figure 4 shows the Insertion Loss for CSB-RGFB-102-UFFR cable assembly. Insertion loss is the loss of signal power (gain) resulting from the insertion of a device in a transmission line.

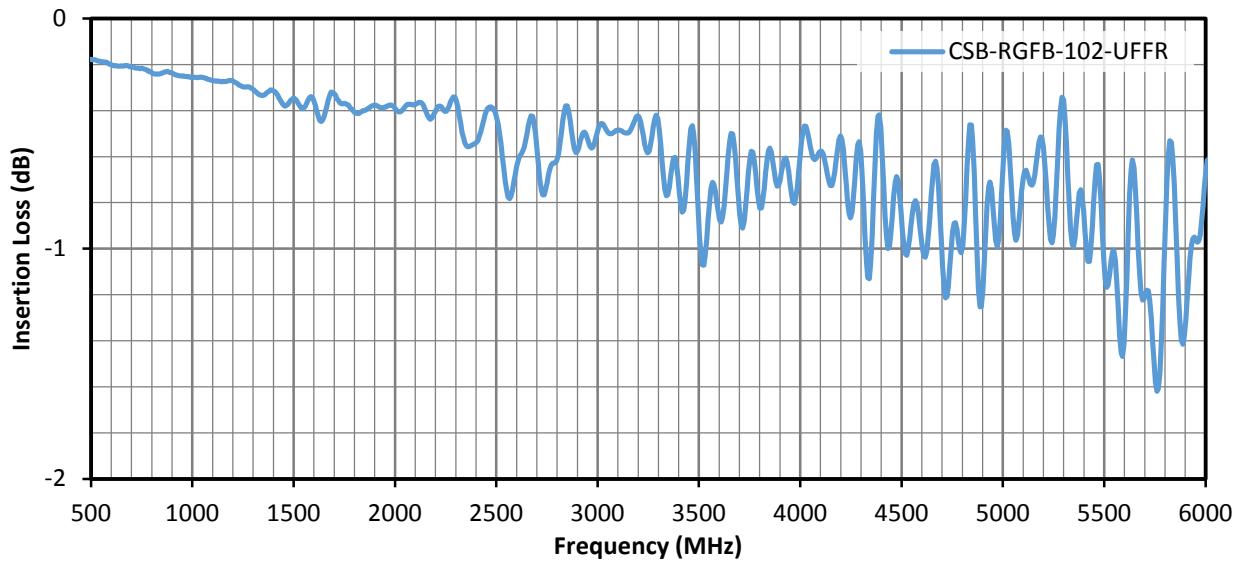


Figure 4. Insertion Loss for the CSB-RGFB-102-UFFR Cable Assembly

## VSWR

Figure 5 provides the voltage standing wave ratio (VSWR) across the cable assembly's bandwidth for the CSB-RGFB-102-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.

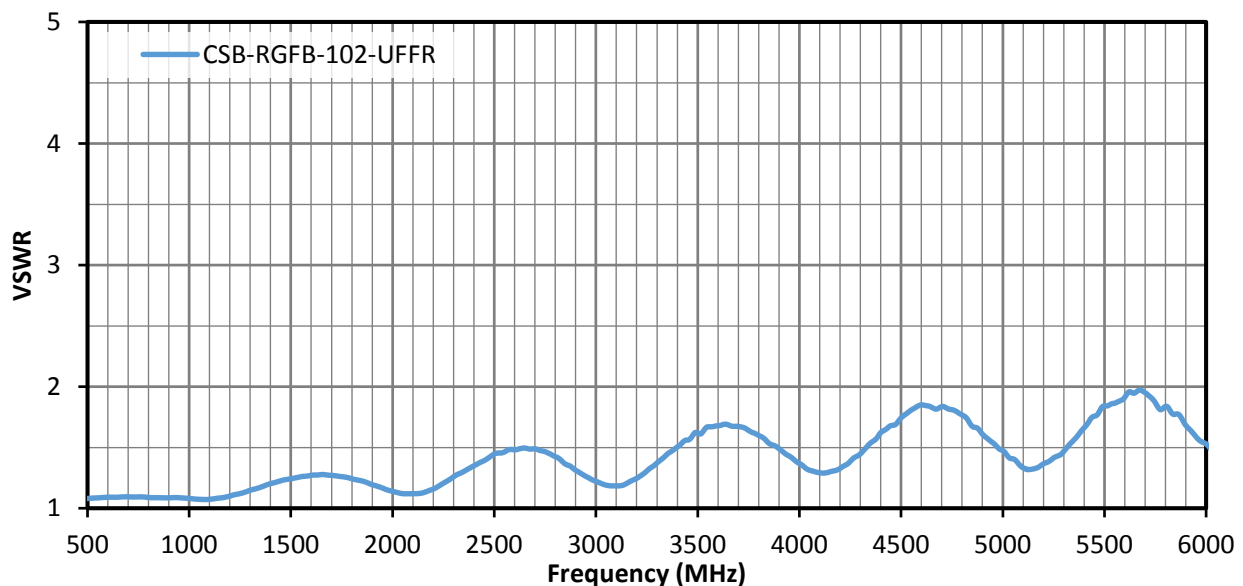


Figure 5. VSWR for the CSB-RGFB-102-UFFR Cable Assembly

## PACKAGING INFORMATION

The CSB-RGFB-102-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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