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

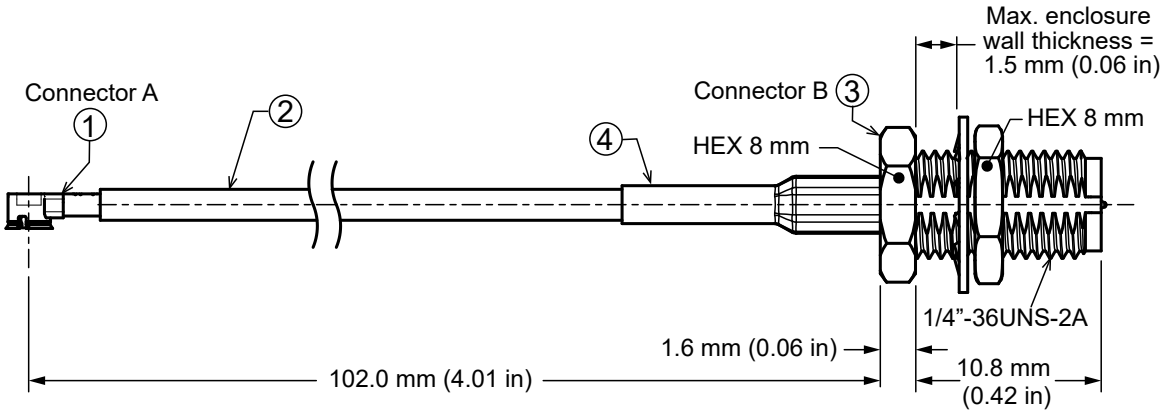

Figure 1. Product Dimensions for the CSB-RGFB-102-UFFR Cable Assembly

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).

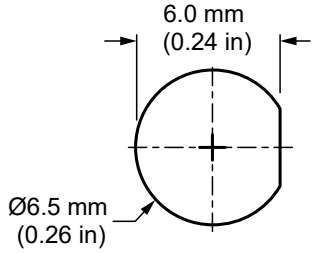

Figure 2. Recommended Mounting Hole Dimensions for the CSB-RGFB-102-UFFR Cable Assembly

Coaxial Cable Specifications

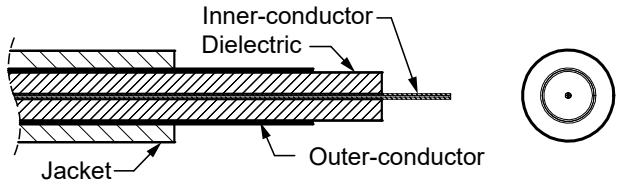

Figure 3. Coaxial Cable Cutaway Diagram

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 0.52	0.4 GHz 1.2	1 GHz 1.7	2 GHz 2.42	3 GHz 3.08	4 GHz 3.63	5 GHz 4.15	6 GHz 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.

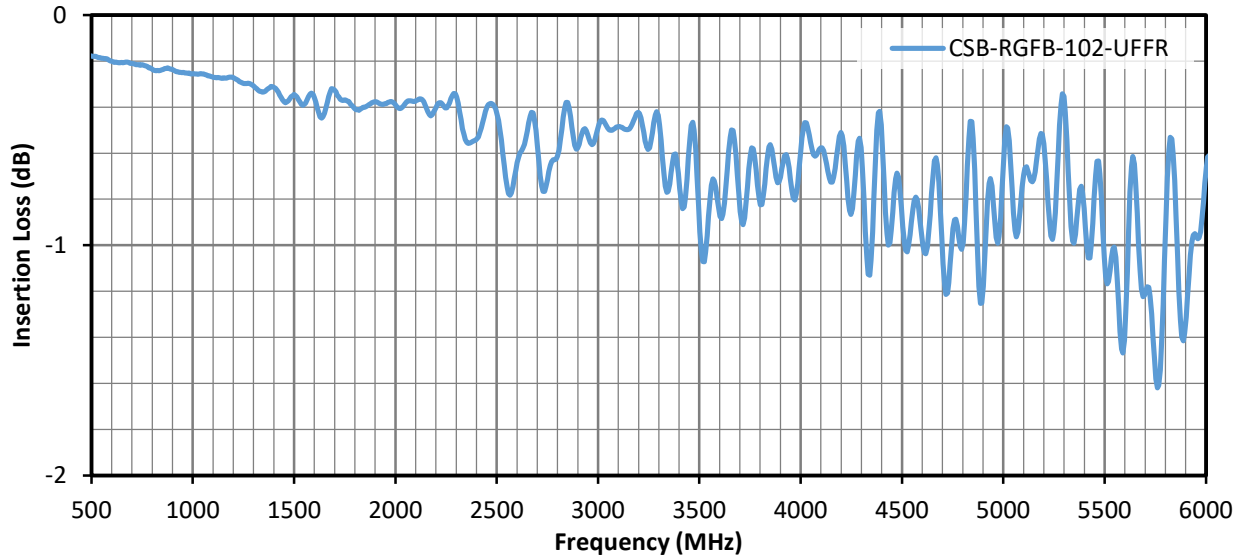

Figure 4. Insertion Loss for the CSB-RGFB-102-UFFR Cable Assembly

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.

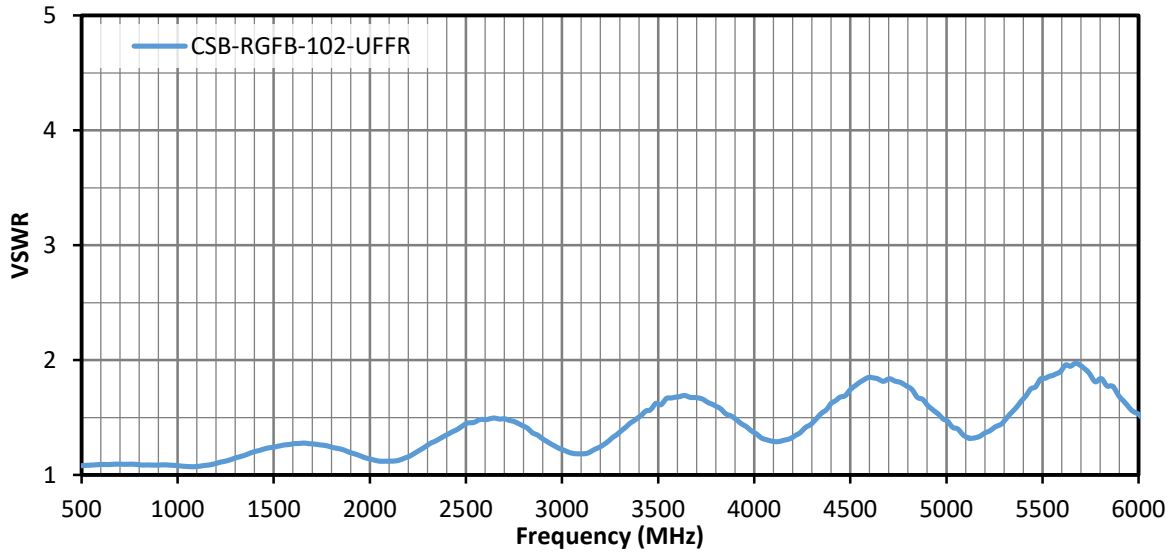

Figure 5. VSWR for the CSB-RGFB-102-UFFR Cable Assembly

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.

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.

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

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.

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

Website: http://linxtechnologies.com
Linx Offices: 159 Ort Lane, Merlin, OR, US 97532
Phone: +1 (541) 471-6256
E-MAIL: info@linxtechnologies.com

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