



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, 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

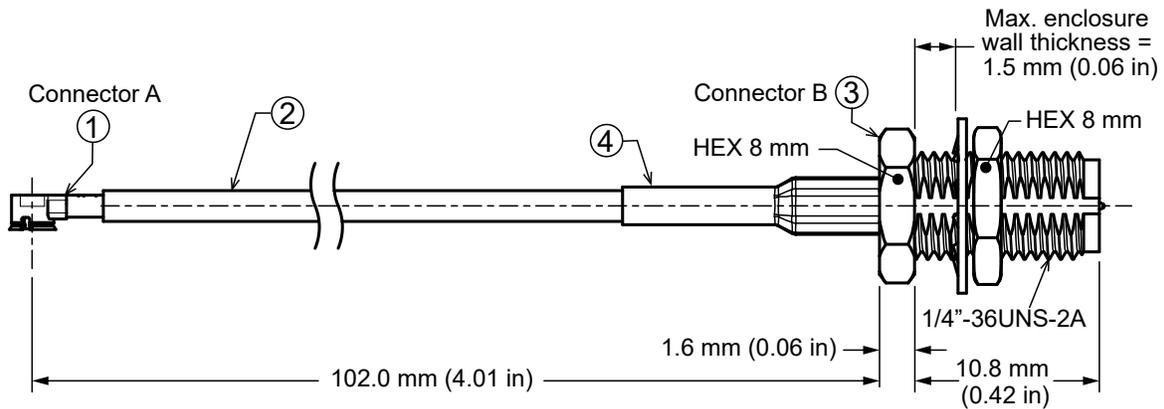


Figure 1. Product Dimensions for the CSB-RGFB-102-UFFR Cable Assembly

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).

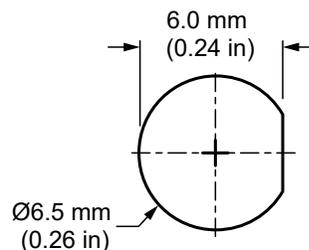


Figure 2. Recommended Mounting Hole Dimensions for the CSB-RGFB-102-UFFR Cable Assembly

COAXIAL CABLE SPECIFICATIONS

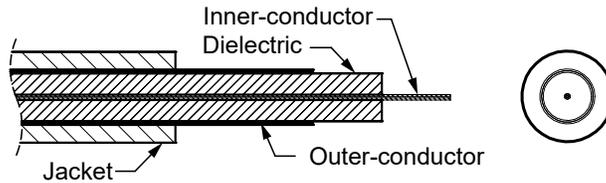


Figure 3. Coaxial Cable Cutaway Diagram

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.

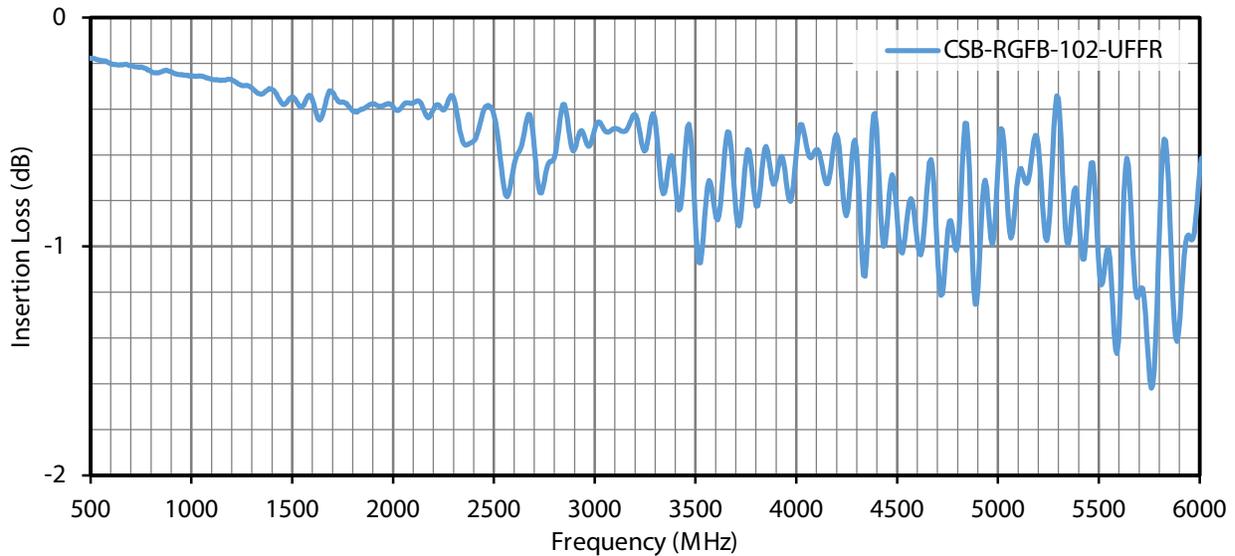


Figure 4. Insertion Loss for the CSB-RGFB-102-UFFR Cable Assembly

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.

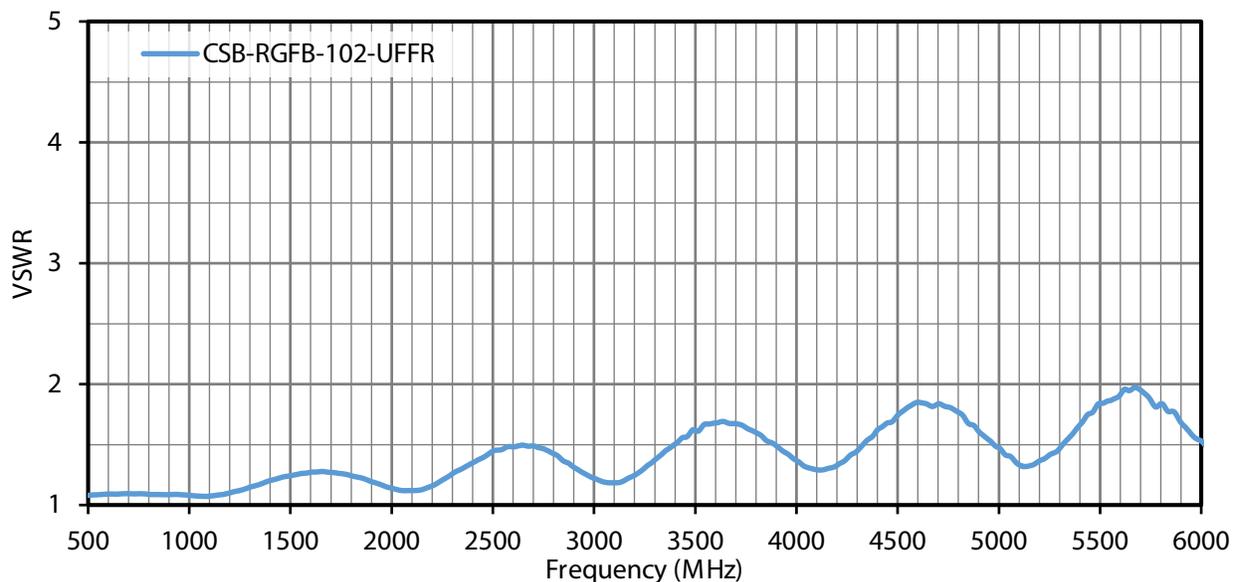


Figure 5. VSWR for the CSB-RGFB-102-UFFR Cable Assembly

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.

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 .

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

TE TECHNICAL SUPPORT CENTER

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
Mexico:	+52 (0) 55-1106-0800
Latin/S. America:	+54 (0) 11-4733-2200
Germany:	+49 (0) 6251-133-1999
UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

te.com

TE Connectivity, TE, TE connectivity (logo), Linx and Linx Technologies are trademarks owned or licensed by the TE Connectivity Ltd. family of companies. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

TE Connectivity warrants to the original end user customer of its products that its products are free from defects in material and workmanship. Subject to conditions and limitations TE Connectivity will, at its option, either repair or replace any part of its products that prove defective because of improper workmanship or materials. This limited warranty is in force for the useful lifetime of the original end product into which the TE Connectivity product is installed. Useful lifetime of the original end product may vary but is not warranted to exceed one (1) year from the original date of the end product purchase.

©2022 TE Connectivity. All Rights Reserved.

10/22 Original