CSE-SGAM-ccc-SGFB

SMA Bulkhead Jack to SMA Plug Cable Assembly

The CSE-SGAM-ccc-SGFB cable assembly provides an SMA bulkhaed jack (female socket) to SMA plug (male pin) connection with the option of 12 in., 24 in., or 36 in. lengths of RG-316/U coaxial cable.

Operating from 0 Hz to 12.4 GHz, the CSE-SGAM- ccc-SGFB cable assembly combines superior performance, compact size, and a convenient threaded mating interface 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 to 12.4 GHz operation
- SMA jack (female socket)
  - Gold plated brass washer and 1/4”-36UNS hex nut provided
- SMA plug (male pin)
  - Gold plated brass
- RG-316/U 50 Ω coaxial cable

APPLICATIONS

- LPWA
- 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)	CSE-SGAM-305-SGFB	CSE-SGAM-610-SGFB	CSE-SGAM-914-SGFB
	2.1	2.8	3.7
VSWR (max)	1.8	1.7	1.7
Impedance	50 Ω		
Insulation Resistance	3000 MΩ min.		

ORDERING INFORMATION

Part Number	Description
CSE-SGAM-305-SGFB	SMA bulkhead jack (female socket) to SMA plug (male pin) on 305.0 mm (12.0 in) of RG- 316/U coaxial cable
CSE-SGAM-610-SGFB	SMA bulkhead jack (female socket) to SMA plug (male pin) on 610.0 mm (24.0 in) of RG- 316/U coaxial cable
CSE-SGAM-914-SGFB	SMA bulkhead jack (female socket) to SMA plug (male pin) on 914.0 mm (36.0 in) of RG- 316/U coaxial cable

Available from Linx Technologies and select distributors and representatives.

PRODUCT DIMENSIONS

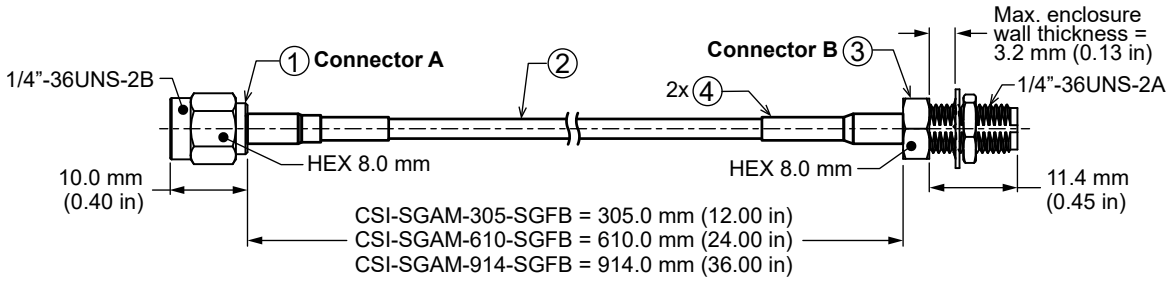

Figure 1. Product Dimensions for the CSE-SGAM-ccc-SGFB Cable Assembly

TABLE 2. CABLE ASSEMBLY COMPONENTS

Item #	Description	Material	Finish
1	Connector, SMA plug (male pin)	Brass	Gold
2	RG-316/U coaxial cable	RG-316/U	Black
3	Connector, SMA bulkhead jack (female socket) with hex nut and washer	Brass	Gold
4	Heat Shrink Tubing	PTFE	Black

TABLE 2. CABLE ASSEMBLY COMPONENTS

Parameter	Connector A SMA plug (male pin)	Connector B SMA bulkhead jack (female socket)
Fastening Type	1/4"-36 UNS-2B threaded coupling	1/4"-36 UNS-2A threaded coupling
Recommended Torque	0.9 N m (8.0 in lbs)	0.9 N m (8.0 in lbs)
Coupling Nut Retention	60 lbs. min.	60 lbs. min.
Connector Durability	500 cycles min.	500 cycles min.
Weight	CSE-SGAM-305-SGFB = 11.6 g (0.41 oz) CSE-SGAM-610-SGFB = 16.1 g (0.57 oz) CSE-SGAM-914-SGFB = 20.5 g (0.72 oz)	

RECOMMENDED MOUNTING

Figure 2 shows the recommended mounting hole dimensions for the 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. Maximum enclosure wall thickness = 3.2 mm (0.13 in)

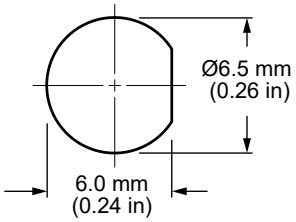

Figure 2. Recommended Mounting Hole Dimensions for the CSE-SGAM-ccc-SGFB Cable Assembly

COAXIAL CABLE SPECIFICATIONS

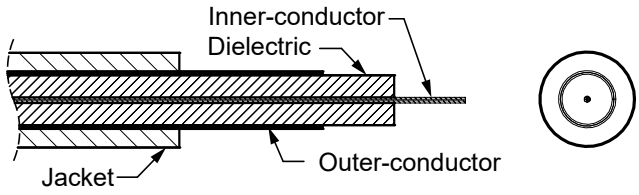

Figure 3. Coaxial Cable Cutaway Diagram

TABLE 4. COAXIAL CABLE MATERIAL SPECIFICATIONS FOR RG-316/U

Parameter	Material	Dimensions
Inner-Conductor	Silver-coated Copper plated steel, 7 strand, 0.175 mm/conductor	Ø0.53 mm (0.020 in)
Dielectric	PTFE	Ø1.53 mm (0.06 in)
Outer-Conductor	Silver plated copper braid, Coverage 92.3%	Ø1.71 mm (0.067 in)
Jacket	FEP	Ø2.53 mm (0.100 in)

TABLE 5. COAXIAL CABLE ELECTRICAL AND PHYSICAL SPECIFICATIONS FOR RG-316/U

Parameter	Value					
Rated Temp Voltage	105 °C 30 V					
Conductor Resistance	302 Ω/km 20 °C					
Insulation Resistance	3000 M Ω-km min.					
Dielectric Strength	AC 1000 V/Minute					
Spark Test	5 kV					
Insulation	Unaged	Tensile Strength	2500 psi min. (1.76 kg/mm2)			
		Elongation	200% min.			
	Aged	Tensile Strength	Unaged min. 75% (168 hrs x 232 °C)			
		Elongation	Unaged min. 75% (168 hrs x 232 °C)			
Jacket	Unaged	Tensile Strength	2500 psi min. (1.76 kg/mm2)			
		Elongation	200% min.			
	Aged	Tensile Strength	Unaged min. 75% (168 hrs x 232 °C)			
		Elongation	Unaged min. 75% (168 hrs x 232 °C)			
Nominal Impedance	50 ± 3 Ω					
Nominal Capacitance	95.8 ± 3 pF/m					
Nominal Velocity of Propagation	69.5%					
VSWR (0 to 6 GHz)	≤ 1.3					
Attenuation (dB/1M)	1 MHz 10.2	100 MHz 34.1	1.8 GHz 180.0	2.4 GHz 206	5.2 GHz 315	6.0 GHz 5.20
Minimum Inside Bend radius	4.0 mm (0.16 in)					

INSERTION LOSS

Figure 4 shows the Insertion Loss for the CSE-SGAM-ccc-SGFB cable assembly. Insertion loss is the loss of signal power (gain) resulting from the insertion of a device in a transmission line.

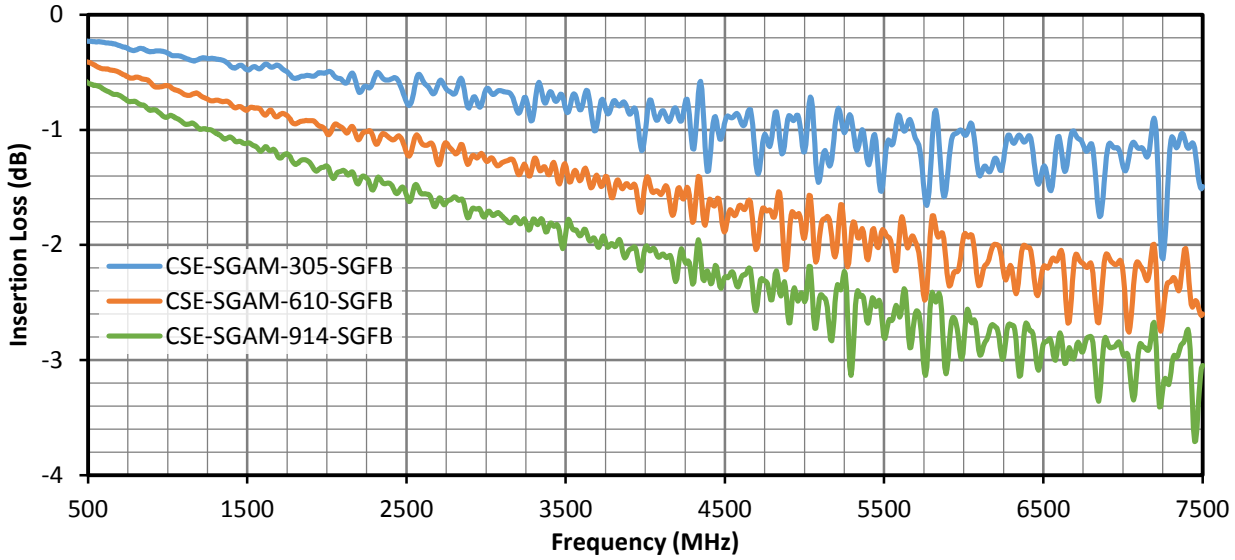

Figure 4. Insertion Loss for the CSE-SGAM-ccc-SGFB Cable Assembly

VSWR

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

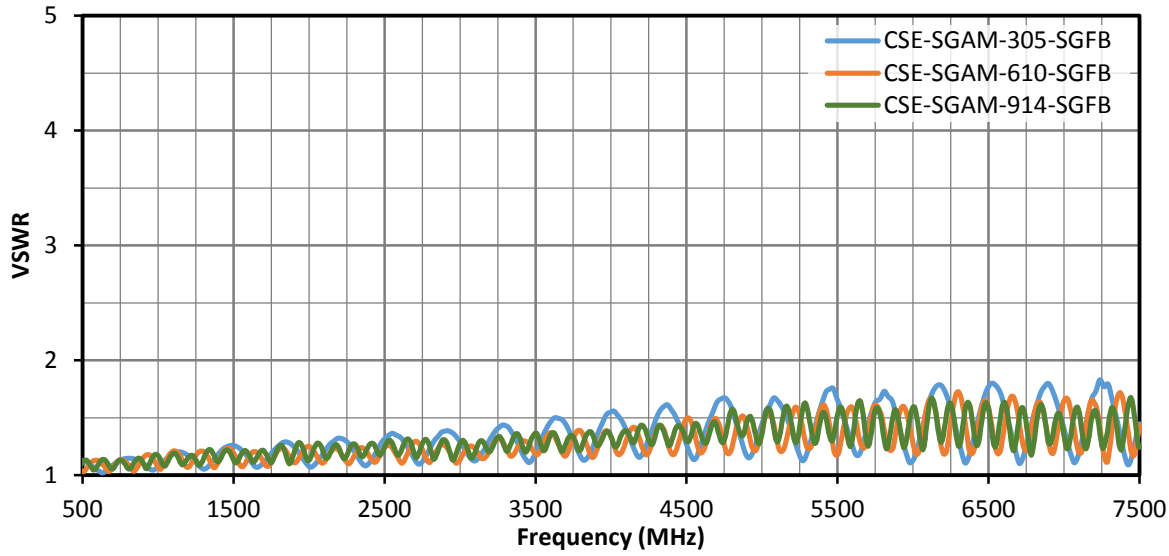

Figure 5. VSWR for the CSE-SGAM-ccc-SGFB Cable Assembly

PACKAGING INFORMATION

The CSE-SGAM-ccc-SGFB cable assembly is packaged in a clear plastic bag, in quantities of 50. 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 PT and the power transmitted to the load after the insertion of the component PR_R.

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

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

10/22 Original