



*Always Thinking*



RF & Microwave Coaxial Connectors  
and Cable Assemblies



0410-11-NG is the first right angle adapter to feature solderless construction. This redesign of a UG-27 C/U delivers dependability equal to a straight plug. The solder-free adapters also address ROHS compliancy issues by reducing lead content. They perform efficiently up to 11 GHz.



This Type N panel receptacle (model UG-58 A/U) features single piece body construction. It's manufactured using a custom machine designed and built by San-tron for fully automated assembly. The one piece construction of the UG-58 also dramatically increases the reliability of the panel receptacle by eliminating interference. The result is consistently smooth signal transfer.

# Always thinking of ways to give you more

At San-tron, we're rethinking every angle of microwave connector design and manufacturing to maintain and even improve performance while reducing costs. Old standards are being reinvented from the inside out and new innovations are helping you reach higher frequencies, while others are allowing you to literally cut corners. It's our way of saying that past price/performance models are history.

## Innovative thinking across the board

Across the globe, across your design, and across our factory floor we've looked at every way we can serve you better. We have set in motion an action plan that includes the promise to never stop thinking.

San-tron is a USA-based family business with our design center, corporate offices, and lead manufacturing operation in Ipswich, Massachusetts, and a wholly-owned support facility in Suzhou, China. We've built upon our 50+ years of history supporting some of the biggest defense and commercial contractors. In addition to rethinking every angle of design, our facilities are constantly being updated. They include the most modern machining equipment as well as custom robots for our unique automated assembly needs.

## Legacy or cutting-edge, you'll find what you need

A few years ago, we embarked on an engineering initiative to look at every one of your standard RF/microwave connectors and ask ourselves, "How can we drive out costs while driving up consumer expectations?" Thus we've introduced a variety of industry firsts you'll find throughout this brochure.

If you visit our website and sign up for our e-mail newsletter, or follow us on any one of our social media outlets, you'll find the latest updates in your inbox. But new products and re-engineered standards aren't all. If you've got a print with a connector on it, odds are we've done it before or we're the original supplier. Our library is all online, and if you need a custom connector, breathe easy; we'll never forget our roots.



ISO 9001:2008  
REGISTERED

ROHS  
COMPLIANT

DFARS  
COMPLIANT

ITAR  
COMPLIANT





### Field tested and globally approved

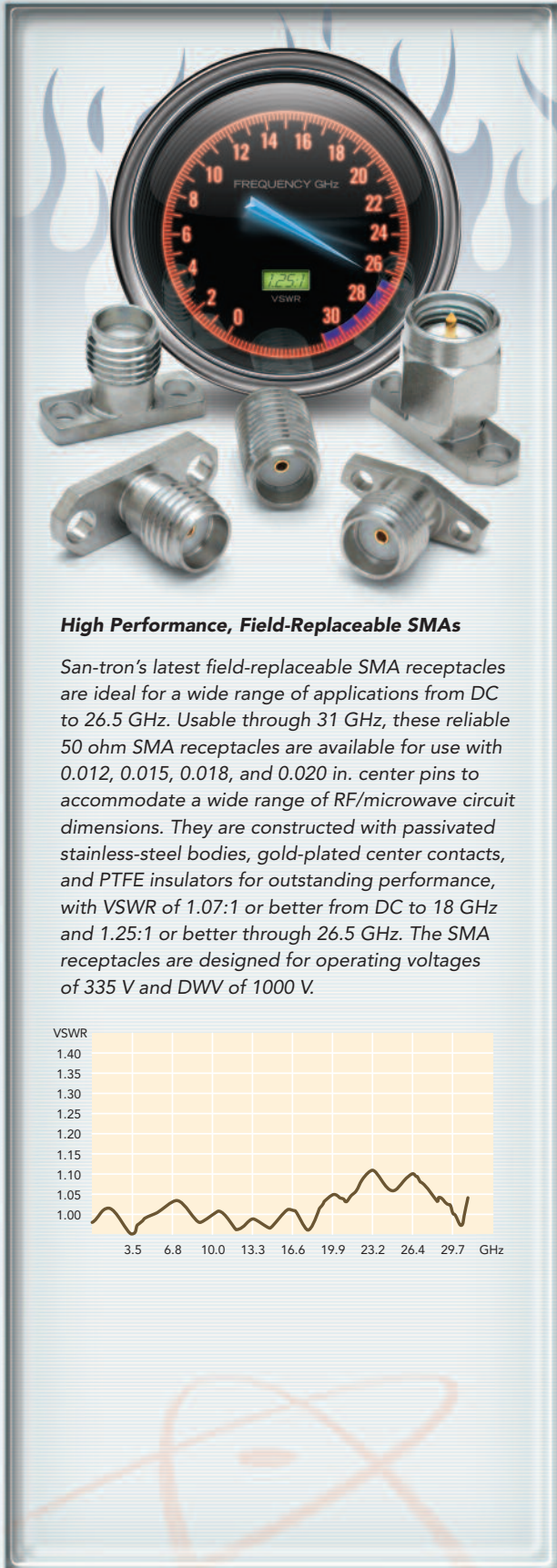
From mobile battlefield radar terminals to tower connections in the arctic tundra, San-tron products have stood up to the test. Military programs such as F-15, JDAM, over-the-horizon radar, and joint military communications all rely on San-tron interconnects to perform. In addition, our dependable connectors are found in high-level homeland security programs and in some of the most demanding wireless and medical applications around the world.



### **S292™: K-Band for the Masses**

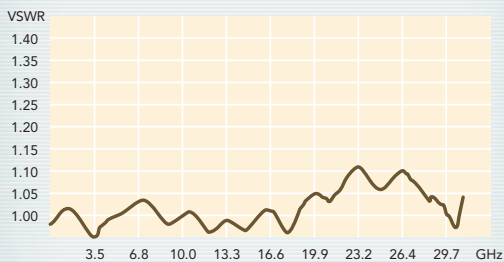
San-tron has launched a new series of 2.92 mm connectors that operate through K band. Initiating a design standardized to a Thunderline-Z TL-150 glass-to-metal feedthru, San-tron has developed a transitional RF geometry that greatly reduces the tolerance sensitivity of the final interconnection. The launch diameters of these S292 connectors are specifically oriented to the Thunderline-Z .012 pinned glass beads and are RF matched to the dielectric properties of Corning glass #7070. Thus, San-tron S292 connectors achieve impressive VSWR figures through 40 GHz. As a baseline, data shows that two connectors mated via the Thunderline-Z feedthru exhibit VSWR of < 1.04 through 12 GHz and < 1.18 through 40 GHz. Future offerings are planned to support microstrip and stripline applications. This product line offers a compatible mating style to K Connectors®, SMA, WSMA, and 3.5 mm connectors.

# SMA Connectors



## High Performance, Field-Replaceable SMAs

San-tron's latest field-replaceable SMA receptacles are ideal for a wide range of applications from DC to 26.5 GHz. Usable through 31 GHz, these reliable 50 ohm SMA receptacles are available for use with 0.012, 0.015, 0.018, and 0.020 in. center pins to accommodate a wide range of RF/microwave circuit dimensions. They are constructed with passivated stainless-steel bodies, gold-plated center contacts, and PTFE insulators for outstanding performance, with VSWR of 1.07:1 or better from DC to 18 GHz and 1.25:1 or better through 26.5 GHz. The SMA receptacles are designed for operating voltages of 335 V and DWV of 1000 V.



San-tron offers a range of SMA connectors and phase matched adapters for a variety of applications from DC to 40 GHz. SMA connectors can be specified for specific frequency ranges, depending upon the requirement. They are available as male and female cable connectors in crimp or solder versions (with San-tron's unique torque-proof safety lock coupling nuts for added reliability) for a number of different cables, and SMA receptacles in bulkhead, press-fit, and panel-mount configurations. Panel-mount receptacles can be supplied in 3/8 and 1/2 in. square flange sizes as well as in two-hole versions, with or without gasket seals. San-tron's SMA receptacles feature solder cup, post or tab contact terminations. The SMA lineup also includes newly developed eSMA plugs and jacks for use with TFlex cables, with outstanding performance through 20 GHz (see cable assemblies). San-tron also supplies a variety of field-replaceable SMA connectors for use with 0.012, 0.015, 0.018, and 0.020 in. diameter pin sizes. They feature 1/2-in. square, 3/8 in. square, and two-hole flanges, and are available with or without EMI gaskets and ground planes.

## Performance

<b>Frequency Range:</b>	DC to 12.4 GHz, DC to 18 GHz, DC to 26 GHz, or DC to 40 GHz (dependent upon cable)
<b>Voltage Rating:</b>	335 to 500 V RMS (sea level) (dependent upon cable)
<b>Nominal Impedance:</b>	50 ohms
<b>DWV:</b>	500 to 1500 V RMS (sea level) (dependent upon cable)
<b>Insulation Resistance:</b>	10,000 megohms
<b>Temperature Range:</b>	-65°C to +165°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon, Type 1, GR1, CLA
<b>Contacts (Female):</b>	Beryllium copper
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Locking Ring:</b>	Beryllium copper
<b>Crimp Sleeves:</b>	DHP copper, CDA-122, soft temper
<b>Other Metal Parts:</b>	Brass or stainless steel

## Plating

<b>Center Contacts:</b>	Gold
<b>Metal Parts:</b>	Passivated, nickel, silver, albaloy





# MHV & SHV Connectors

# BNC & TNC Connectors



San-tron offers a variety of MHV and SHV connectors for demanding high-voltage applications. Weatherproof MHV connectors feature a quick-disconnect bayonet locking coupling mechanism while SHV connectors incorporate an added safety feature with outer contacts that remain grounded throughout the connector mating sequence. The MHV and SHV connector families are available as male and female cable connectors, with standard and polarized interfaces in crimp-on or clamp-on versions for a variety of different cables with diameters from 0.150 to 0.250 in., and in bulkhead and panel-mounted receptacles. They are available with a variety of finish options, including silver, nickel, albaloy, and gold plating. All San-tron MHV connectors will mate with connectors and adapters incorporating MIL-STD-348 MHV interfaces while all San-tron SHV connectors will mate with connectors and adapters based on MIL-STD-348 SHV interfaces.

San-tron's extensive lines of BNC and TNC connectors and adapters are available as male and female cable connectors for cables with diameters from 0.150 to 0.250 in. (versions are also available for cables with diameters from 0.094 to 0.420 in.), and as receptacles with panel, bulkhead, press-fit, and threaded mountings. BNC connectors join with a quick-disconnect bayonet locking coupling mechanism while TNC connectors employ a screw-type threaded connection for harsh environments. The connectors and adapters are constructed of brass with heat-treated beryllium copper female center contacts, with a variety of finish options including silver, nickel, albaloy, or gold plating in any combination. All San-tron BNC connectors mate with connectors and adapters incorporating MIL-STD-348 BNC interfaces while all TNC connectors mate with connectors and adapters based on MIL-STD-348 TNC interfaces.

## Performance

<b>Voltage Rating:</b>	3500 V RMS, 5000 V DC (sea level)
<b>Nominal Impedance:</b>	Non-constant
<b>DWV:</b>	MHV: 5000 V RMS @ 60 Hz (sea level) SHV: 5000 V RMS @ 60 Hz (sea level), 10,000 V DC min.
<b>Insulation Resistance:</b>	MHV: 5000 megaohms min. SHV: 1,000,000 megaohms min.
<b>Temperature Range:</b>	-65°C to +165°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon, Type 1, GR1, CLA
<b>Contacts (Female):</b>	Beryllium copper
<b>Male Outer Contacts:</b>	Beryllium copper, brass
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Spring Washers:</b>	Beryllium copper
<b>Crimp Sleeves:</b>	DHP copper, CDA-122, soft temper
<b>Other Metal Parts:</b>	Brass

## Plating

<b>Center Contacts:</b>	Silver, gold,
<b>Metal Parts:</b>	Nickel, silver, albaloy

## Performance

<b>Frequency Range:</b>	BNC: DC to 4 GHz TNC: DC to 11 GHz
<b>Voltage Rating:</b>	500 V RMS (sea level)
<b>Nominal Impedance:</b>	50 ohms
<b>DWV:</b>	1500 V RMS @ 60 Hz (sea level)
<b>Insulation Resistance:</b>	5000 megaohms (min.)
<b>Temperature Range:</b>	-65°C to +165°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon, Type 1, GR1, CLA
<b>Contacts (Female):</b>	Beryllium copper
<b>Male Outer Contacts:</b>	Beryllium copper, Brass
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Locking Ring:</b>	Phosphor bronze, spring temper
<b>Crimp Sleeves:</b>	DHP copper, CDA-122, soft temper
<b>Other Metal Parts:</b>	Brass

## Plating

<b>Center Contacts:</b>	Silver, gold,
<b>Metal Parts:</b>	Nickel, silver, albaloy



# C & SC Connectors



San-tron offers selected lines of C and SC connectors and adapters, usable for applications through 11 GHz. The 50 ohm C connectors feature a reliable quick-disconnect bayonet locking coupling mechanism, while the 50 ohm SC connectors employ a threaded, screw-type coupling mechanism. Male and female cable connectors are available in crimp and clamp versions for cables with diameters from 0.350 to 0.450 in. (versions are also available for armored cables and for standard cables with diameters from 0.206 to 0.545 in.), while panel-mount and thread-mount receptacles are also available. They are constructed with brass bodies, heat-treated beryllium copper female center contacts, phosphor bronze male outer contacts, and PTFE dielectric or Fluoroloy® for high power applications. Finish options include silver, nickel, albaloy, or gold, and gold-plated center contacts are also available. San-tron's C connectors will mate with connectors and adapters incorporating MIL-STD-348 C interfaces, while SC connectors will mate with connectors and adapters based on MIL-STD-348 SC interfaces.

## Performance

<b>Frequency Range:</b>	DC to 11 GHz
<b>Voltage Rating:</b>	1000 V RMS min. (sea level)
<b>Nominal Impedance:</b>	50 ohms
<b>DWV:</b>	3000 V RMS min. @ 60 Hz (sea level)
<b>Insulation Resistance:</b>	5000 megaohms (min.)
<b>Temperature Range:</b>	-65°C to +165°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon, Fluoroloy
<b>Contacts (Female):</b>	Beryllium copper
<b>Male Outer Contacts:</b>	Beryllium copper
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Locking Ring:</b>	Phosphor bronze
<b>Spring Washers:</b>	Beryllium copper
<b>Crimp Sleeves:</b>	DHP copper, CDA-122, soft temper
<b>Other Metal Parts:</b>	Brass

## Plating

<b>Center Contacts:</b>	Silver, gold,
<b>Metal Parts:</b>	Nickel, silver, albaloy

# HN Connectors



San-tron offers a number of different high-voltage HN male and female cable connectors for cables with diameters from 0.195 to 0.945 in. and for applications from DC to 4 GHz. Designed with a mechanical cable clamping mechanism, the connectors can also be supplied with armor clamps for use with armored cables. In addition to the cable connectors, a male-to-male HN straight adapter is also available. San-tron's weather-proof, 50-ohm HN connectors feature a reliable screw-type coupling mechanism that enables an operating voltage rating of 1500 V RMS. The HN connectors are constructed of brass bodies with brass or heat-treated beryllium copper center contacts and phosphor bronze male outer contacts and PTFE dielectric material. They are available with a number of finish options, including silver, nickel, albaloy, or gold plating in any combination. All San-tron HN connectors will mate with connectors and adapters incorporating MIL-STD-348 HN interfaces.

## Performance

<b>Frequency Range:</b>	DC to 4 GHz
<b>Voltage Rating:</b>	1500 V RMS min. (sea level)
<b>Nominal Impedance:</b>	50 ohms
<b>DWV:</b>	5000 V RMS min. @ 60 Hz (sea level)
<b>Insulation Resistance:</b>	5000 megaohms (min.)
<b>Temperature Range:</b>	-65°C to +165°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon,
<b>Contacts (Female):</b>	Beryllium copper
<b>Male Outer Contacts:</b>	Phosphor bronze
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Locking Ring:</b>	Phosphor bronze, spring temper
<b>Other Metal Parts:</b>	Brass

## Plating

<b>Center Contacts:</b>	Silver, gold,
<b>Metal Parts:</b>	Nickel, silver, albaloy



# Type N Connectors



In addition to a range of standard N connectors, San-tron offers a wide variety of N receptacles with panel, bulkhead, press fit and threaded mountings. Panel mounts are available in 1/2, 11/16, and 1 in. square sizes, and with rectangular flanges. They may be gasket sealed to a panel or not. This allows the user to interchange connector series using the same panel layout. Many of our receptacles have extended dielectrics and feature solder cup, post, tab or threaded contact terminations. Some are pressurized. Plugs and jacks are available in crimp, clamp, or solder versions for a wide range of cables. Plugs are available with either standard knurled or hexagon coupling nuts, with or without safety wire holes. Female contacts may be heat-treated beryllium copper or phosphor bronze where cost is a factor and a variety of finishes including silver, gold, albaloy, or passivation in any combination.

## Performance

<b>Frequency Range:</b>	DC to 11 GHz, DC to 18 GHz
<b>Voltage Rating:</b>	1000 V RMS (sea level)
<b>Nominal Impedance:</b>	50 ohms
<b>DWV:</b>	2500 V RMS min. @ 60 Hz (sea level)
<b>Insulation Resistance:</b>	5000 megohms min.
<b>Temperature Range:</b>	-65°C to +165°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon
<b>Contacts (Female):</b>	Beryllium copper, phosphor bronze
<b>Male Outer Contacts:</b>	Phosphor bronze, brass
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Other Metal Parts:</b>	Brass

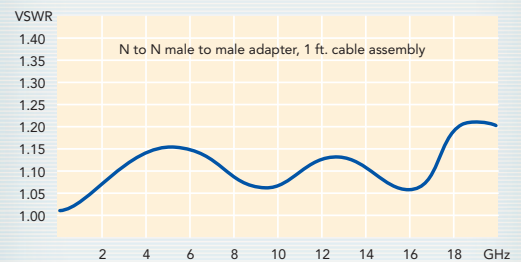
## Plating

<b>Center Contacts:</b>	Silver, gold,
<b>Metal Parts:</b>	Passivated, nickel, silver, albaloy



## Type Ns Offer Smooth Performance up to 18 GHz

San-tron has launched a line of rugged Type N connectors capable of mode-free performance that will allow users and designers of high-frequency components, systems, and test equipment to extend the performance of their hardware.



San-tron's 18 GHz Type Ns utilize an innovative, internal design combined with PTFE dielectric material for outstanding electrical performance. The 50 ohm connectors feature less than -0.2 dB insertion loss from DC to 18 GHz with maximum VSWR of 1.30:1. All other mechanical and electrical characteristics are equal to our standard Type Ns. A variety male and female jacks and plugs are available for use with various flexible and semi-rigid cable types, as are a variety of receptacles with panel, bulkhead, press-fit, and threaded mountings. They're priced competitively with conventional 11 GHz Type N connectors and are ideal for applications requiring continuous, broadband frequency coverage, including commercial communications systems, military radar and electronic-warfare (EW) systems, and in test and measurement equipment.





# 7/16 Connectors



San-tron produces rugged 7/16 connectors for applications requiring high-power transmission and extremely low intermodulation distortion (IMD), such as wired and wireless communications. Available as weather-sealed cable connectors, bulkhead-mount, or panel-mount receptacles, these durable 7/16 connectors incorporate a reliable screw-type coupling mechanism that delivers high-voltage capacity. For critical communications applications, panel receptacles can be supplied with passive intermodulation (PIM) performance as good as -175 dBc, with typical performance for straight 7/16 connectors in excess of -155 dBc. San-tron's precision-machined 7/16 connectors are manufactured in accordance with IEC 169-4 specifications. They feature low-resistance, silver-plated phosphor-bronze female center contacts and solid male outer contacts, with choice of silver, albaloy, or albaloy-gold body. Cable connectors can be used with coaxial cables ranging from 0.141 to 0.545 in. in diameter and are available in clamp, crimp, or solder versions.

## Performance

<b>Frequency Range:</b>	DC to 7.5 GHz
<b>Voltage Rating:</b>	1000 V RMS min. (sea level)
<b>Nominal Impedance:</b>	50 ohms
<b>DMV:</b>	4000 V RMS min. @ 60 Hz (sea level)
<b>Insulation Resistance:</b>	10,000 megohms min.
<b>Temperature Range:</b>	-55°C to +155°C

## Materials

<b>Dielectrics:</b>	PTFE Fluorocarbon, Fluoroloy
<b>Contacts (Female):</b>	Phosphor bronze, beryllium copper
<b>Male Outer Contacts:</b>	Phosphor bronze, brass
<b>Gaskets:</b>	Silicone rubber, GR 50-60
<b>Other Metal Parts:</b>	Brass

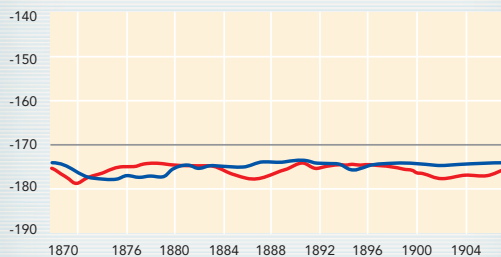
## Plating

<b>Center Contacts:</b>	Silver, gold,
<b>Metal Parts:</b>	Silver, albaloy

## More Power to the Tower

### 7/16 Panel Receptacle Reaches -175 dBc Intermodulation Level

San-tron has announced the release of a new 7/16 panel receptacle that consistently delivers intermodulation levels of -175 dBc. This receptacle is especially suited for up-link communications. It ensures high grade transmission by delivering VSWR < 1.03 (PCS) and PIM of -175 dBc. It is weather sealed and is delivered with an enhanced .232 interface which results in improved mating characteristics and reduction of mating torque. In addition to improved on/off mating, the enhanced .232 interface also offers higher signal integrity. The body, insulator, and center contact are all one-piece constructions.





# LC Connectors



San-tron supplies reliable LC connectors for demanding high-voltage applications from DC to 1 GHz. These weatherproof, 50-ohm connectors are intended for use with high-power 0.500 to 0.730 in. diameter cables and are designed with dependable screw-type cable clamping mechanisms, including armor clamps for use with armored cables. Versions are available rated to 10,000 V RMS. The LC connectors are constructed with extended PTFE dielectric material and nickel, silver, or albaloy-plated brass bodies. Beryllium-copper male outer contacts and phosphor bronze male outer contacts are plated with silver, gold, or albaloy to minimize resistance and increase power-handling capability. All San-tron LC connectors will mate with connectors and adapters equipped with MIL-STD-348 LC interfaces.

## Performance

Frequency Range:	DC to 1 GHz
Voltage Rating:	5000 V RMS min. (sea level)
Nominal Impedance:	50 ohms
DMV:	5000 V RMS min. @ 60 Hz (sea level)
Temperature Range:	-65°C to +165°C, UG-154A/U to temperature rating of cable

## Materials

Dielectrics:	PTFE Fluorocarbon
Male Contacts:	Beryllium copper
Male Outer Contacts:	Phosphor bronzer
Gaskets:	Buna N, silicone rubber
Locking Ring:	Phosphor bronze
Other Metal Parts:	Brass

## Plating

Center Contacts:	Silver, gold,
Metal Parts:	Nickel, silver, albaloy

# Adapters



For over 50 years, San-tron has been the source for within-series and between-series adapters to the RF & microwave industry. Whether it's for a test application, or in a production environment, San-tron has the solution for any application. For example: our in-series SMA adapters offer matched phase length, supporting test port "swap-outs" for S21 (VSWR) measurements. We also offer a complete line of N to SMA adapters, the most common for OEM applications, and 7/16 to SMA adapters in several configurations. All adapter styles are available in straight for test applications, as well as 4 hole flange and bulkhead mounted style for production applications. Call today for engineering assistance.

## The San-tron Advantages:

- N to SMA adapters, 18 GHz performance
- Phase matched SMA within-series adapters
- Phase matched across series, 7/16 to N and 7/16 within-series adapters, 100 psec lengths
- -168 dBc PIM 7/16 to SMA adapters
- Interchangeable phase lengths









## Cable Assemblies

San-tron is your one-stop solution for all your RF coaxial cable assembly requirements. Building on over 50 years of design, development, and manufacturing experience of RF coaxial connectors, San-tron has become a leading source of cable assemblies. Whether it's for a high power or high frequency application, San-tron has the experience to assist in configuring the proper cabling for your needs. Flexible, semi-rigid, hand-formable, and test cables are available for quick delivery. We'll also work with you to manage your program-based inventory and react to fluctuations in demand seamlessly.

Save time, save money, and save headaches with professionally engineered and manufactured RF and microwave coaxial cable assemblies from San-tron.

## Products:

- Flexible Cable
  - Standard Solid Teflon Dielectric Cables
  - Low Loss/Tape Wrapped Dielectric Cables
  - Foam Dielectric Cables
- Semi-Rigid Cables
  - Pre-Formed or Straight Copper & Aluminum Jacket Cables
  - Tin Dipped Hand-Formable Cables
  - TFlex 402 & 405 (flexible alternative to Semi-Rigid)
- Low Cost/Durable Test Cables (eSMA/TFlex 402/405)
- Phase Matching Capability & Delay Lines up to 40GHz.

## Test Capability:

- VSWR (Return Loss)
- Vector Network Analyzer Test Capability to 40 GHz
- PIM (Passive Intermodulation)
- Phase
- Time Domain
- Hi-Pot/Continuity



## eSMA™ Connectors Create Rugged, Flexible, High Performance Cable Assemblies

San-tron's eSMA connectors bring high performance and increased reliability to flexible cable assemblies. Designed with EZ style solder-free center contacts and an extended ferrule, these durable 50-ohm connectors also incorporate failure-proof coupling nuts for trouble-free RF/microwave performance. Along with low VSWR through 20 GHz, San-tron's eSMA connectors achieve better than -150 dBc intermodulation performance (tested with two 20 W tones). The weatherproof eSMA connectors are available as plugs, bulkhead jacks, and flange-mountable connectors. They feature gold-plated bodies and center contacts, and are supplied professionally installed on TFlex™ flexible cables from Times Microwave Systems as cable assemblies in custom lengths.





Visit our website to stay informed and search our growing library of designs.

[www.santron.com](http://www.santron.com)



*Always Thinking*

4 Newburyport Turnpike, Ipswich, MA 01938 • 978-356-1585

[www.santron.com](http://www.santron.com)