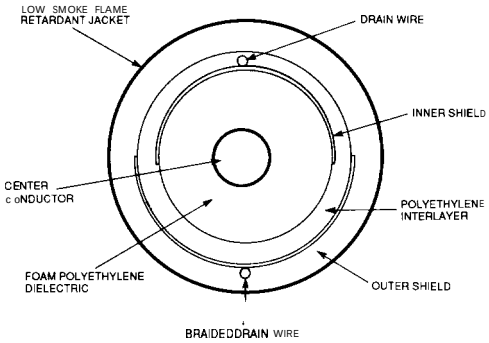
Cable Characteristics



Construction

Center Conductor:
Solid Copper-Clad Aluminum
Dielectric:
Low Loss Foam Polyethylene
Inner Shield:
Aluminum/Polyester
Interlayer:
Solid Polyethylene
Outer Shield:
Aluminum/Polyester
Drain Wires
Braided Tinned Copper
Jacket
Low Smoke, Non-Halogen Polyolefin

The outer conductor of nu-TRAC cable consists of isolated overlapping shields that provide a complete shield for the cable and prevent direct exposure of the coaxial field to the external environment. Most other radiating cables are coaxial cables with less than complete outer shields, This rudimentary design will function as a continuous antenna, but the attenuation of the signal in the cable is affected by its environment and the way it is mounted. Coaxial radiating cables frequently need to be mounted using stand-offs to achieve acceptable performance,

The triaxial design of nu-TRAC cable overcomes this shortcoming. The continuous longitudinal openings between the two outer conductors transfer energy in a manner that results in relatively little sensitivity to the environment and mounting effects. No special mounting hardware is required for nu-TRAC cable and no standoff from mounting surfaces is required. The result is an economical and aesthetically pleasing installation,

The mechanism of radiation from the nu-TRAC cable is fundamentally different than most other radiating cables. Most other designs use openings in the outer conductor which are not longitudinally continuous. This results in a perturbation in the normal longitudinal current within the cable creating a reactive field similar to a series inductance. The reactive field will interact with the external environment, changing the propagation mode within the cable and resulting in an increase in cable attenuation. The longitudinal openings between the outer conductors of nu-TRAC cable do not disturb the current flow in the normal coaxial mode of propagation, but instead create a non-reactive field along the outer conductor of the cable. Interactions between this non-reactive field and the environment will not affect the fields within the cable and therefore, will not result in increased cable attenuation,

Low Smoke Jacketing

" the cable passes the IEEE-383 flame test, without the need for expensive dielectric barrier tapes. "

nu-TRAC cable comes with a standard low smoke non-halogenated jacket. When exposed to a fire condition, this jacket material produces combustion products with extremely low levels of toxicity, acid-gas and smoke. Independent laboratory tests have shown that, when tested to the military's stringent MIL-C-I 7 Revision G shipboard specifications, nu-TRAC cable's jacket has less than half the maximum allowable values for halogen content, acid-gas, toxicity index and smoke index.

Because of the shielding afforded by the metal tapes and the high oxygen index of the jacketing material, the cable also passes the IEEE-383 flame test, without the need for expensive dielectric barrier tapes. UL listing for these cables, which will allow them to be installed in buildings per the National Electric Code, is pending,

Ease of Installation

". nu-TRAC cables are resilient and will not be permanently deformed by a crushing force, "

nu-TRAC cables are flexible and light weight, making installation easy. They have small bending radii and excellent resistance to crush. Because they utilize a foil outer conductor instead of a solid outer conductor, nu-TRAC cables are resilient and will not be permanently deformed by a crushing force, The crush strength of nu-TRAC cable is greater than 200 lbs. per linear inch.

Cable Characteristics

Ease Of Installation *(Continued)*

The corrugated copper outer conductor used on other radiating cables has no resilience and can be readily deformed by moderate crushing loads, Installation time and cost are greatly reduced because nu-TRAC cable does not need to be mounted away from conductive surfaces using expensive stand-offs,

Connectors

Connectors for nu-TRAC cable have been designed so that they can be attached to the cable without the need for special tools, Reliable and quick connection to the inner conductor is made with a simple crimp, which can be accomplished with pliers or a crimp tool, Connections to the outer conductor are made by clamping the drain wires between the connector body and clamping the nut. The drain wires run the length of the cable and provide a reliable electrical path from the connector to the foil outer conductor, They also provide a current path along the cable, which can be used to power in-line amplifiers,

Jumper and Feeder Cables

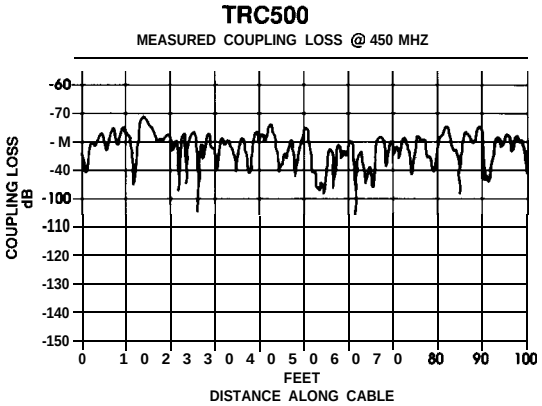
Qualified to MIL-C-l 7/ 180- /200

Times offers the only cables qualified to MI L-C-l 7/180 through 200 for low smoke shipboard applications, These cables are also suitable for use as interconnections for radiating cable systems, Information on these cables is included with this brochure, Times also offers Alumifoam and Flexifoam cables suitable for areas where non-radiating coaxial cables are required, Details are included in Times Catalog: TL-13,

Grounding

Grounding for nu-TRAC cable can be accomplished at the connectors, Unlike a cable with a heavy gauge copper outer conductor which can serve as a current path, the foil conductors of nu-TRAC will serve as a fuse in the unlikely event of a lightning strike, By grounding the cable to system ground at the connectors and following the National Electric Code requirement for minimum 2“ spacing from power circuits, the need for the use of special, expensive grounding straps is eliminated,

Coupling Performance



The difference between the signal level in the radiating cable and the signal received through a O dB gain antenna 20 feet away is defined as the coupling loss, Although frequently only the median value is reported, this is not the best approach, since communication systems are rarely designed for a 50% probability of successful communications,

In order to accurately characterize the coupling performance of nu-TRAC cable, Times has developed an automated testing station that uses a synthesized source, a spectrum analyzer, and a motorized cart with a dipole antenna. The system has been programmed to test 1200 data points along a 100’ track that is located 20’ from the cable under test, The cable is mounted directly to concrete with standard metallic cable clamps, The data is fed directly into a computer. The receiving antenna is horizontally polarized for the data included in this catalog, It has been shown that the vertical polarized signal is of comparable level,

The measured coupling loss data is sorted and graphed to provide a valuable design tool - the Probability of Communication Graph, Its use is explained in the System Design section,