

## TCOM®-195

### Low Loss Low Passive Intermod Coax

#### Ideal for...

- -155 dBc Intermodulation Distortion
- Low Loss UHF/Microwave Interconnect
- Wireless Base Station Interconnect
- Flexible for Easy Routing

• **TCOM®** standard is a UV Resistant Polyethylene jacketed cable designed for 20-year service outdoor use. The bending and handling characteristics are significantly better than any air-dielectric and corrugated hard-line cables. **TCOM®-FR** is a non-halogen (non-toxic), low smoke, fire retardant cable designed for in-building runs that can be routed anywhere except air handling plenums. TCOM-FR has a UL/NEC & CSA rating of 'CMR' and 'FT4' respectively.

**Flexibility** and bendability are hallmarks of the TCOM cable design. The flexible outer conductor enables the tightest bend radius available for any cable of similar size and performance.

**Low Loss** is another hallmark feature of TCOM. Size for size LMR has the lowest loss of any flexible cable and comparable loss to semirigid hard-line cables.

**Passive Intermod** is lower than -155 dBc exceed the performance levels for most wireless applications.

**RF Shielding** is 60 dB greater than typical single shielded coax (40 dB). The multi-ply bonded foil outer conductor is rated conservatively at > 100 dB (i.e. >200 dB between two adjacent cables).

**Weatherability:** TCOM cables designed for outdoor exposure incorporate the best materials for UV resistance and have life expectancy in excess of 20 years.

**Connectors:** A wide variety of connectors are available for TCOM cable, including all common interface types, reverse polarity, and a choice of solder or non-solder center pins. Most LMR connectors employ crimp outer attachment using standard hex crimp sizes.

**Cable Assemblies:** All TCOM cable types are available as pre-terminated cable assemblies. Refer to the section on FlexTech for further details.



| Part Description |                  |        |       | Stock |
|------------------|------------------|--------|-------|-------|
| Part Number      | Application      | Jacket | Color | Code  |
| TCOM-195         | Outdoor          | PE     | Black | 55021 |
| TCOM-195-FR      | Indoor-Riser CMR | FRPE   | Black | 55012 |

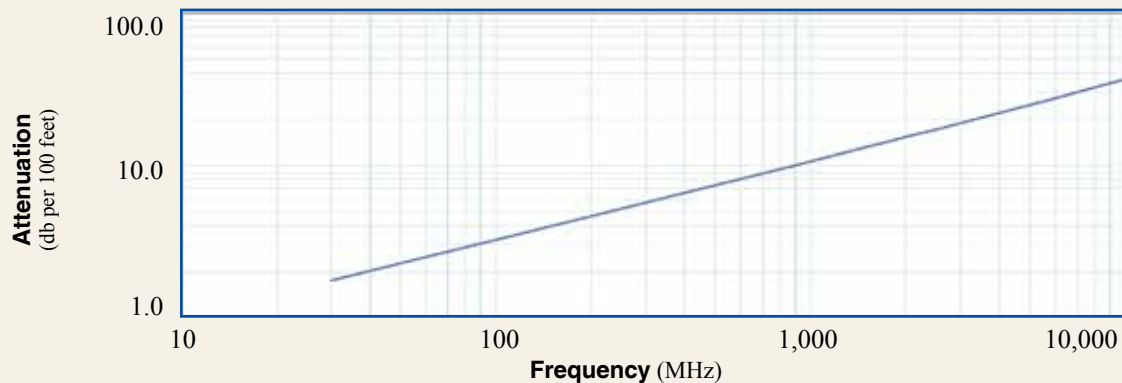
| Construction Specifications |                       |       |        |
|-----------------------------|-----------------------|-------|--------|
| Description                 | Material              | In.   | (mm)   |
| Inner Conductor             | Solid BC              | 0.037 | (0.94) |
| Dielectric                  | Foam PE               | 0.110 | (2.79) |
| Outer Conductor             | SPC Strip Braid       | 0.120 | (3.05) |
| Overall Braid               | TC Braid over Al tape | 0.148 | (3.76) |
| Jacket                      | (see table above)     | 0.195 | (4.95) |

| Mechanical Specifications |                |       |          |
|---------------------------|----------------|-------|----------|
| Performance Property      | Units          | US    | (metric) |
| Bend Radius: installation | in. (mm)       | 0.5   | (12.7)   |
| Bend Radius: repeated     | in. (mm)       | 2     | (50.8)   |
| Bending Moment            | ft-lb (N-m)    | 0.2   | (0.27)   |
| Weight                    | lb/ft (kg/m)   | 0.035 | (0.05)   |
| Tensile Strength          | lb (kg)        | 40    | (18.2)   |
| Flat Plate Crush          | lb/in. (kg/mm) | 15    | (0.27)   |

| Environmental Specifications   |          |         |
|--------------------------------|----------|---------|
| Performance Property           | °F       | °C      |
| Installation Temperature Range | -40/+185 | -40/+85 |
| Storage Temperature Range      | -94/+185 | -70/+85 |
| Operating Temperature Range    | -40/+185 | -40/+85 |

| Electrical Specifications |                   |       |          |
|---------------------------|-------------------|-------|----------|
| Performance Property      | Units             | US    | (metric) |
| Velocity of Propagation   | %                 | 76    |          |
| Dielectric Constant       | NA                | 1.56  |          |
| Time Delay                | nS/ft (nS/m)      | 1.27  | (4.17)   |
| Impedance                 | ohms              | 50    |          |
| Capacitance               | pF/ft (pF/m)      | 25.4  | (83.3)   |
| Inductance                | uH/ft (uH/m)      | 0.064 | (0.21)   |
| Shielding Effectiveness   | dB                | >100  |          |
| DC Resistance             |                   |       |          |
| Inner Conductor           | ohms/1000ft (/km) | 7.6   | (24.9)   |
| Outer Conductor           | ohms/1000ft (/km) | 3.42  | (11.2)   |
| Voltage Withstand         | Volts DC          | 1000  |          |
| Jacket Spark              | Volts RMS         | 3000  |          |
| Peak Power                | kW                | 2.5   |          |
| Passive Intermod          | dBc               | -155  |          |

### Attenuation vs. Frequency (typical)



| Frequency (MHz)       | 30   | 50   | 150  | 220  | 450  | 900  | 1500 | 1800 | 2000 | 2500 | 5800 | 10,000 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Attenuation dB/100 ft | 1.8  | 2.3  | 4.0  | 4.9  | 7.0  | 10.1 | 13.1 | 14.5 | 15.3 | 17.2 | 27.2 | 36.8   |
| Attenuation dB/100 m  | 5.8  | 7.5  | 13.1 | 16.0 | 23.0 | 33.0 | 43.1 | 47.5 | 50.2 | 56.5 | 89.1 | 120.7  |
| Avg. Power kW         | 0.91 | 0.71 | 0.40 | 0.33 | 0.23 | 0.16 | 0.12 | 0.11 | 0.10 | 0.09 | 0.06 | 0.04   |

Calculate Attenuation =  $(0.321011) \cdot \sqrt{\text{FMHz}} + (0.000469) \cdot \text{FMHz}$  (interactive calculator available at [http://www.timesmicrowave.com/cable\\_calculators](http://www.timesmicrowave.com/cable_calculators))  
**Attenuation:** VSWR=1.0 ; Ambient = +25°C (77°F) **Power:** VSWR=1.0; Ambient = +40°C; Inner Conductor = 100°C (212°F);  
 Sea Level; dry air; atmospheric pressure; no solar loading



### Connectors

| Interface               | Description      | Part Number    | Stock Code | VSWR**<br>Freq. (GHz) | Coupling<br>Nut | Inner<br>Contact<br>Attach | Outer<br>Contact<br>Attach | Finish*<br>Body /Pin | Length<br>in (mm) | Width<br>in (mm) | Weight<br>lb (g) |
|-------------------------|------------------|----------------|------------|-----------------------|-----------------|----------------------------|----------------------------|----------------------|-------------------|------------------|------------------|
| 1. N Male               | Straight Plug    | TC-195-NMH-X   | 3190-2880  | <1.25:1 (2.5)         | Knurl           | Solder                     | Crimp                      | S/G                  | 1.5 (38.1)        | 0.75 (19.1)      | 0.073 (33.1)     |
| 2. SMA Male             | Straight Plug    | EZ-195-SM-X    | 3190-6140  | <1.30:1 (6)           | Hex             | Spring Finger              | Crimp                      | A/G                  | 0.9 (22.0)        | 0.37 (9.4)       | 0.019 (8.6)      |
| 3. SMA Male             | Straight Plug    | TC-195-SM-SS-X | 3190-2878  | <1.25:1 (2.5)         | Hex             | Solder                     | Crimp                      | SS/G                 | 1.0 (25.4)        | 0.32 (8.1)       | 0.015 (6.8)      |
| 4. TNC Male             | Straight Plug    | TC-195-TM-X    | 3190-2879  | <1.25:1 (2.5)         | Knurl           | Solder                     | Crimp                      | S/G                  | 1.4 (35.6)        | 0.59 (15.0)      | 0.045 (20.4)     |
| 5. TNC Male             | Reverse Polarity | EZ-195-TM-RP-X | 3190-6142  | <1.35:1 (6)           | Hex             | Spring Finger              | Crimp                      | A/G                  | 1.1 (28.3)        | 0.87 (22.0)      | 0.045 (20.4)     |
| 6. EZ-195-BM-X BNC Male |                  | EZ-195-BM-X    | 3190-6141  | <1.30:1 (4)           | Knurl           | Spring Finger              | Crimp                      | A/G                  | 1.1 (28.4)        | 0.60 (14.5)      | 0.045 (20.4)     |

\* Finish metals: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alloy \*\*VSWR spec based on 3 foot cable with a connector pair

**CT-240/200/195/100**  
3190-667

**CST-195/200**  
3192-102

**DBT-U**  
3192-001

**RB-CST**  
3192-086

| Type                  | Part Number        | Stock Code | Description                                         | Install Tools                 |
|-----------------------|--------------------|------------|-----------------------------------------------------|-------------------------------|
| Crimp Tool            | CT-240/200/195/100 | 3190-667   | Crimp tool for LMR-100, 195, 200 and 240 connectors | <br><b>CCT-02</b><br>3192-165 |
| Deburr Tool           | DBT-U              | 3192-001   | Removes center conductor rough edges                |                               |
| Cutting Tool          | CCT-02             | 3192-165   | Cable end flush cut tool                            |                               |
| Replacement Blade     | RB-02              | 3192-166   | Replacement blade for cutting tool                  |                               |
| Strip Tool            | CST-195/200        | 3192-102   | Combination prep tool for LMR-195 and LMR-200       |                               |
| Replacement Blade Kit | RB-CST             | 3192-086   | Replacement blade kit for all strip tools           |                               |