

## LMR®-600 Flexible Low Loss Communications Coax

### Ideal for...

- Jumper Assemblies in Wireless Communications Systems
- Short Antenna Feeder runs
- Any application (e.g. WLL, GPS, LMR, WLAN, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable



- **LMR®** standard is a UV Resistant Polyethylene jacketed cable designed for 20-year service outdoor use. The bending and handling characteristics are significantly better than air-dielectric and corrugated hard-line cables.
- **LMR®-DB** is identical to standard LMR plus has the advantage of being watertight. The addition of waterproofing compound in and around the foil/braid insures continuous reliable service should the jacket be inadvertently damaged during installation or in the future.
- **LMR®-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. LMR-FR has a UL/NEC & CSA rating of 'CMR' and 'FT4' respectively. In addition, the LMR-FR series is MSHA-P rated for mining applications.
- **LMR®-FR-PVC** is a general-purpose indoor cable and has a UL/NEC & CSA rating of 'CMR' and 'FT4' respectively. It is less expensive than LMR-FR, however it emits toxic fumes (HCL) and greater smoke density when burned.
- **LMR®-PVC** is designed for low loss general-purpose indoor/outdoor applications and is somewhat more flexible than the standard polyethylene jacketed LMR.
- **LMR®-PVC-W** is a white-jacketed version of LMR-PVC for marine and other indoor/outdoor applications where color compatibility is desired.

- **Flexibility** and bendability are hallmarks of the LMR-600 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 LMR-600.

Size for size LMR has the lowest loss of any flexible cable and comparable loss to semirigid hard-line cables.

- **RF Shielding** is 50 dB greater than typical single shielded coax (40 dB). The multi-ply bonded foil outer conductor is rated conservatively at > 90 dB (i.e. >180 dB between two adjacent cables).
- **Weatherability:** LMR-600 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 LMR-600 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 LMR-600 cable types are available as pre-terminated cable assemblies. Refer to the section on FlexTech for further details.

| Part Description |                    |        |       |            |
|------------------|--------------------|--------|-------|------------|
| Part Number      | Application        | Jacket | Color | Stock Code |
| LMR-600          | Outdoor            | PE     | Black | 54003      |
| LMR-600-DB       | Outdoor/Watertight | PE     | Black | 54093      |
| LMR-600-FR       | Indoor -Riser CMR  | FRPE   | Black | 54032      |
| LMR-600-FR-PVC   | Indoor -Riser CMR  | FRPVC  | Black | 54074      |
| LMR-600-PVC      | Indoor/Outdoor     | PVC    | Black | 54219      |
| LMR-600-PVC-W    | Indoor/Outdoor     | PVC    | White | 54206      |

| Construction Specifications |                   |       |         |
|-----------------------------|-------------------|-------|---------|
| Description                 | Material          | In.   | (mm)    |
| Inner Conductor             | Solid BCCA1       | 0.176 | (4.47)  |
| Dielectric                  | Foam PE           | 0.455 | (11.56) |
| Outer Conductor             | Aluminum Tape     | 0.461 | (11.71) |
| Overall Braid               | Tinned Copper     | 0.490 | (12.45) |
| Jacket                      | (see table above) | 0.590 | (14.99) |

### Mechanical Specifications

| Performance Property      | Units          | US    | (metric) |
|---------------------------|----------------|-------|----------|
| Bend Radius: installation | in. (mm)       | 1.50  | (38.1)   |
| Bend Radius: repeated     | in. (mm)       | 6.0   | (152.4)  |
| Bending Moment            | ft-lb (N-m)    | 2.75  | (3.73)   |
| Weight                    | lb/ft (kg/m)   | 0.131 | (0.20)   |
| Tensile Strength          | lb (kg)        | 350   | (158.9)  |
| Flat Plate Crush          | lb/in. (kg/mm) | 60    | (1.07)   |

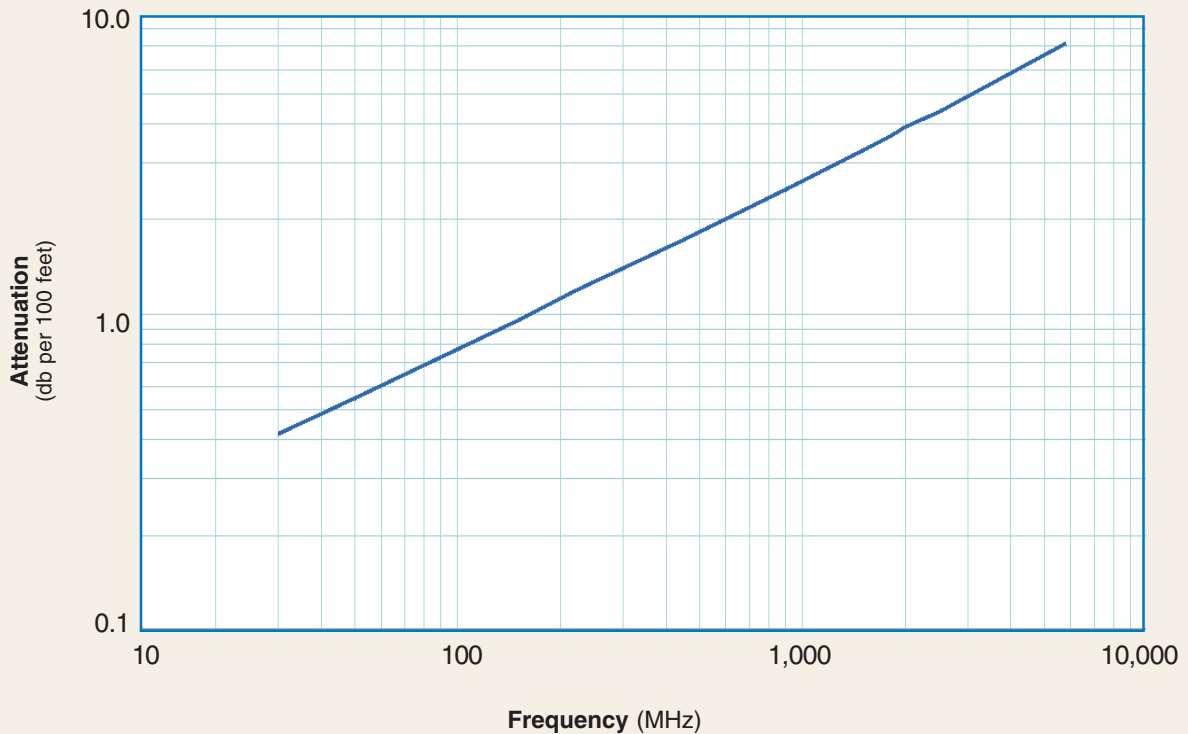
### Environmental Specifications

| 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) |
|-------------------------|-------------------|-------|----------|
| Cutoff Frequency        | GHz               |       | 10.3     |
| Velocity of Propagation | %                 |       | 87       |
| Dielectric Constant     | NA                |       | 1.32     |
| Time Delay              | nS/ft (nS/m)      | 1.17  | (3.83)   |
| Impedance               | ohms              |       | 50       |
| Capacitance             | pF/ft (pF/m)      | 23.4  | (76.6)   |
| Inductance              | uH/ft (uH/m)      | 0.058 | (0.19)   |
| Shielding Effectiveness | dB                |       | >90      |
| <b>DC Resistance</b>    |                   |       |          |
| Inner Conductor         | ohms/1000ft (/km) | 0.53  | (1.7)    |
| Outer Conductor         | ohms/1000ft (/km) | 1.2   | (3.9)    |
| Voltage Withstand       | Volts DC          |       | 4000     |
| Jacket Spark            | Volts RMS         |       | 8000     |
| Peak Power              | kW                |       | 40       |

Attenuation vs. Frequency (typical)



| Frequency (MHz)              | 30   | 50   | 150  | 220  | 450  | 900  | 1500 | 1800 | 2000 | 2500 | 5800 |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Attenuation dB/100 ft</b> | 0.4  | 0.5  | 1.0  | 1.2  | 1.7  | 2.5  | 3.3  | 3.7  | 3.9  | 4.4  | 7.3  |
| <b>Attenuation dB/100 m</b>  | 1.4  | 1.8  | 3.2  | 3.9  | 5.6  | 8.2  | 10.9 | 12.1 | 12.8 | 14.5 | 23.8 |
| <b>Avg. Power kW</b>         | 5.51 | 4.24 | 2.41 | 1.97 | 1.35 | 0.93 | 0.70 | 0.63 | 0.59 | 0.52 | 0.32 |

**Calculate Attenuation =**

$(0.075550) \cdot \sqrt{\text{FMHz}} + (0.000260) \cdot \text{FMHz}$  (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

# LMR<sup>®</sup>-600 Flexible Low Loss Communications Coax



## Connectors

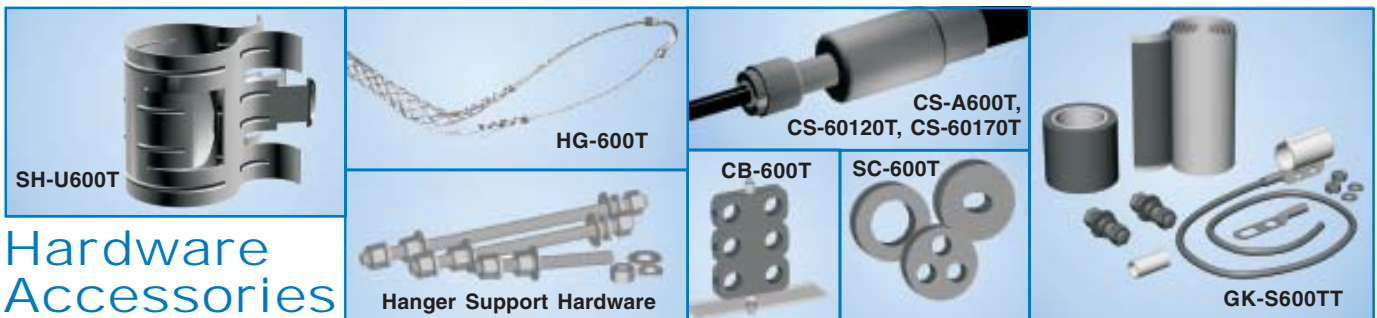
| Interface       | Description      | Part Number    | Stock Code | VSWR**<br>Freq. (GHz) | Coupling<br>Nut | Inner<br>Contact<br>Attach | Outer<br>Contact<br>Attach | Finish*<br>Body<br>/Pin | Length<br>in (mm) | Width<br>in (mm) | Weight<br>lb (g) |
|-----------------|------------------|----------------|------------|-----------------------|-----------------|----------------------------|----------------------------|-------------------------|-------------------|------------------|------------------|
| 7/8 EIA         | Flange           | EZ-600-78EIA   | 3190-1373  | <1.25:1 (2.5)         | NA              | Spring                     | FingerClamp                | S/S                     | 2.3 (58)          | 2.60 (66.0)      | 0.873 (396.0)    |
| 7-16 DIN Female | Straight Jack    | TC-600-716FC   | 3190-375   | <1.25:1 (2.5)         | NA              | Solder                     | Clamp                      | S/S                     | 1.1 (28)          | 1.00 (25.4)      | 0.249 (112.9)    |
| 7-16 DIN Male   | Straight Plug    | EZ-600-716MH   | 3190-503   | <1.25:1 (2.5)         | Hex             | Spring                     | FingerCrimp                | S/S                     | 2.0 (51)          | 1.30 (33.0)      | 0.254 (115.2)    |
|                 | Straight Plug    | TC-600-716MC   | 3190-502   | <1.25:1 (2.5)         | Hex             | Solder                     | Clamp                      | S/S                     | 2.0 (51)          | 1.30 (33.0)      | 0.347 (157.4)    |
| HN Male         | Right Angle      | TC-600-716M-RA | 3190-395   | <1.35:1 (2.5)         | Hex             | Solder                     | Crimp                      | S/S                     | 1.4 (36)          | 1.40 (35.6)      | 0.354 (160.8)    |
|                 | Straight Plug    | TC-600-HNM     | 3190-1429  | <1.25:1 (<1)          | Knurl           | Solder                     | Clamp                      | S/g                     | 2.3 (59.2)        | 0.88 (22.4)      | 0.25 (113)       |
|                 | Straight Plug    | TC-600-LCM     | 3190-1406  | <1.25:1 (<1)          | Hex             | Solder                     | Clamp                      | N/S                     | 3.1 (78.0)        | 1.62 (41.1)      | 1.20 (544)       |
| N Female        | Straight Jack    | EZ-600-NF      | 3190-955   | <1.25:1 (2.5)         | NA              | Spring                     | FingerCrimp                | S/G                     | 2.3 (59)          | 0.87 (22.1)      | 0.150 (68.0)     |
|                 | Bulkhead Jack    | EZ-600-NF-BH   | 3190-616   | <1.25:1 (2.5)         | NA              | Spring                     | Finger Crimp               | S/G                     | 2.4 (61)          | 0.88 (22.4)      | 0.195 (88.5)     |
|                 | Bulkhead Jack    | TC-600-NF-BH   | 3190-589#  | <1.25:1 (2.5)         | NA              | Solder                     | Crimp                      | S/G                     | 2.4 (61)          | 0.88 (22.4)      | 0.195 (88.5)     |
|                 | Bulkhead Jack    | TC-600-NFC-BH  | 3190-466   | <1.25:1 (2.5)         | NA              | Solder                     | Clamp                      | S/G                     | 2.2 (56)          | 0.94 (23.9)      | 0.214 (97.1)     |
| N Male          | Straight Plug    | EZ-600-NMH-D   | 3190-1268  | <1.25:1 (8)           | Hex/Knurl       | Spring                     | Finger Crimp               | A/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.164 (74.4)     |
|                 | Straight Plug    | EZ-600-NMK     | 3190-669   | <1.25:1 (2.5)         | Knurl           | Spring                     | Finger Crimp               | S/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.164 (74.4)     |
|                 | Straight Plug    | TC-600-NMH-D   | 3190-208#  | <1.25:1 (2.5)         | Hex/Knurl       | Solder                     | Crimp                      | A/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.166 (75.3)     |
|                 | Straight Plug    | EZ-600-NMC-2   | 3190-1387  | <1.25:1 (6)           | Hex/Knurl       | Spring                     | Finger Clamp               | S/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.202 (91.6)     |
|                 | Straight Plug    | TC-600-NMC     | 3190-357#  | <1.25:1 (2.5)         | Hex             | Solder                     | Clamp                      | S/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.208 (93.4)     |
|                 | Right Angle      | TC-600-NMC-RA  | 3190-233   | <1.35:1 (2.5)         | Hex             | Solder                     | Clamp                      | S/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.280 (117.9)    |
|                 | Right Angle      | EZ-600-NMH-RA  | 3190-762   | <1.35:1 (2.5)         | Hex             | Spring                     | Finger Crimp               | S/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.185 (83.9)     |
|                 | Right Angle      | TC-600-NMH-RA  | 3190-785#  | <1.35:1 (6)           | Hex             | Solder                     | Crimp                      | S/G                     | 2.1 (53)          | 0.92 (23.4)      | 0.185 (83.9)     |
| QDS Male        | Straight Plug    | TC-600-QDSM    | 3190-846   | <1.25:1 (<1)          | Knurl           | Solder                     | Clamp                      | A/G                     | 2.2 (55.6)        | 1.00 (25.4)      | 0.25 (113)       |
|                 | Right Angle      | TC-600-QDSM-RA | 3190-847   | <1.25:1 (<1)          | Knurl           | Solder                     | Clamp                      | A/G                     | 2.4 (61.5)        | 1.88 (47.8)      | 0.35 (159)       |
| TNC Male        | Straight Plug    | EZ-600-TM      | 3190-418#  | <1.25:1 (2.5)         | Knurl           | Spring                     | Finger Crimp               | S/G                     | 1.7 (43)          | 0.59 (15.0)      | 0.112 (50.8)     |
|                 | Reverse Polarity | EZ-600-TM-RP   | 3190-796   | <1.25:1 (2.5)         | Knurl           | Spring                     | Finger Crimp               | A/G                     | 2.2 (56)          | 0.87 (22.0)      | 0.112 (50.8)     |
| TNC Female      | Reverse Polarity | EZ-600-TF-RP   | 3190-797   | <1.25:1 (2.5)         | NA              | Spring                     | Finger Crimp               | A/G                     | 2.3 (58)          | 0.87 (22.0)      | 0.100 (45.4)     |
| UHF Male        | Straight Plug    | EZ-600-UM      | 3190-615   | <1.25:1 (2.5)         | Knurl           | Spring                     | Finger Crimp               | S/G                     | 1.7 (43)          | 0.88 (22.4)      | 0.164 (74.4)     |
|                 | Straight Plug    | TC-600-UMC     | 3190-213   | <1.25:1 (2.5)         | Knurl           | Solder                     | Clamp                      | S/G                     | 1.7 (43)          | 0.88 (22.4)      | 0.198 (89.8)     |

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



## Install Tools

| Type               | Part Number | Stock Code | Description   |
|--------------------|-------------|------------|---|
| Crimp Tool         | HX-4        | 3190-200   | Crimp Handle  |
| Crimp Dies         | Y1720       | 3190-203   | .610" Hex Dies  |
| Crimp Rings        | CR-600      | 3190-831   | Crimp Rings for TC/EZ-600 connectors (pkg of 10)  |
| Strip Tool         | ST-600C     | 3190-230   | For Clamp Style Connectors  |
| Strip Tool         | ST-600EZ    | 3190-310   | For Crimp Style Connectors  |
| Replacement Blades | RB-456      | 3190-421   | Replacement Blades for Strip Tools  |
| Deburr Tool        | DBT-U       | 3190-406   | Removes center conductor rough edges  |
| Midspan Strip Tool | GST-600A    | 3190-1051  | For ground strap attachment   |
| Wrench             | WR600       | 3190-1435  | 15/16" Box Wrench (2 required for EZ-600-NMC-2)   |
| Cutting Tool       | CCT-01      | 3190-1544  | Cable end flush cut tool  |
| Replacement Blade  | RB-01       | 3190-1609  | Replacement blade for cutting tool  |
| Tool Kit           | TK-600EZ    | 3190-1602  | Tool kit for LMR-600 Crimp Connectors (includes CCT-01, ST-600EZ, HX-4, Y1720, DBT-U, Tool Pouch) |



## Hardware Accessories

| Type                             | Part Number | Stock Code | Description  |
|----------------------------------|-------------|------------|--|
| Ground Kit                       | GK-S600TT   | GK-S600TT  | Standard Grounding Kit (each)                              |
| Hoisting Grip                    | HG-600T     | HG-600T    | Split/Laced Type (each)                                    |
| Cold Shrink                      | CS-A600T    | CS-A600T   | Cable to Antenna Junction (each)                           |
| Cold Shrink                      | CS-60120T   | CS-60120T  | LMR-600 to -1200 Junction (each)                           |
| Cold Shrink                      | CS-60170T   | CS-60170T  | LMR-600 to -1700 Junction (each)                           |
| Hanger Blocks                    | CB-600T     | CB-600T    | Dual Cable Support Block (kit of 10)                       |
| Standard Entry                   |             |            |  |
| Port Cushion                     | SC-600T-3   | SC-600T-3  | Three cables (each)  |
| Snap-In Hangers                  | SH-U600T    | SH-U600T   | Snap-In Hangers (Kit of 10)                                |
| Hanger Block Supporting Hardware |             |            | Complete Range of Supporting Hardware & Adapters Available |