Fairview Microwave
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# FMHR0159-100CM DATA SHEET

## Temperature Conditioned Low Loss TNC Male to TNC Male Cable LL142 Coax in 100 cm

Temperature conditioned low loss TNC Male to TNC Male cable assemblies with RF test reports from Fairview Microwave are part of our full line of reliable RF components available to ship same day. These COTS (commercial-off-the-shelf) cable assemblies using LL142 triple shielded coax with expanded PTFE dielectric have traceable processes and materials that are recorded and provided in the included test report. The temperature pre-conditioned coaxial cable and captivated stainless steel RF connectors are assembled with J-STD-001 soldering processes and meet WHMA-A-620 workmanship criteria. The carefully selected materials, temperature conditioning, assembly processes and test sequence ensure a dependable cable assembly for high-reliability applications with wide temperature excursions and where the cost of failure is high. Each serialized TNC to TNC low loss cable assembly is traceable to its component lots and test data ships with every cable.

The data sheet for this low loss temperature tolerant hi-rel cable assembly using LL142 expanded PTFE cable includes specifications, CAD drawing and dimensions that are shown below. Fairview Microwave offers these high-reliability RF cable assemblies with test data and many other RF, microwave and millimeter wave components which allow designers to configure and customize their signal systems however they like. Whether the need is to provide reliable interconnects over wide temperature extremes or have supporting test reports, Fairview Microwave has the right cable assemblies for the job. Fairview can also expertly build your custom RF cable assemblies for you and ship same day.

### Referenced Specifications

| | |
|---|---|
| IPC/WHMA-A-620 | Requirements and Acceptance for Cable and Wire Harness Assemblies |
| MIL-STD-348 | Radio Frequency Connector Interfaces for MIL-DTL-3643, MIL-DTL-3650, MIL-DTL-3655, MIL-DTL-25516, MIL-PRF-31031, MIL-PRF-39012, MIL-PRF-49142, MIL-PRF... |
| IPC J-STD-001 | Requirements for Soldered Electrical and Electronic Assemblies |
| IPC J-STD-006 | Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications |
| SAE AS5942 | Marking of Electrical Insulating Materials |
| SAE AS23053 | Insulation Sleeving, Electrical, Heat Shrinkable, General Specifications For |

### Material Specifications

| Component | Specification |
|---|---|
| Cable | LL142 per LL142 datasheet |
| Connector 1 | FMCN1081 per MIL-STD-348 |
| Connector 2 | FMCN1081 per MIL-STD-348 |
| Heat Shrink 1 | SUMITUBE W3B2(4X) 12/3 per SAE AS23053 as applicable |
| Heat Shrink 2 | SUMITUBE W3B2(4X) 12/3 per SAE AS23053 as applicable |
| Heat Shrink 3 | M23053/4-303-0 per SAE AS23053 |
| Heat Shrink 4 | M23053/4-303-0 per SAE AS23053 |
| Solder | SN63 per J-STD-006 |

### Configuration:

- Connector 1: FMCN1081 (TNC Male)
- Connector 2: FMCN1081 (TNC Male)
- Cable: LL142

### Features:

- Max Frequency 18 GHz
- 80% Phase Velocity
- Triple Shielded
- FEP Jacket
- Temperature Pre-Conditioned Cable
- J-STD Soldering
- Lot Traceability
- Captivated Stainless Steel Connectors
- Expanded PTFE dielectric
- Serialized Test Data & Report
- In-stock and ships same day

### Applications:

- General Purpose
- Laboratory Use
- Extreme Temperatures
- Hi-Reliability
- Unmanned Systems
- COTS Solutions
- Avionics
- Electronic Countermeasures(ECM)

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## Electrical Specifications

| Description | Min | Typ | Max | Units |
|---|---|---|---|---|
| Frequency Range | DC | | 18 | GHz |
| VSWR | | | 1.35:1 | |
| Velocity of Propagation | | 80 | | % |
| Capacitance | | 25 [82.02] | | pF/ft [pF/m] |
| Dielectric Withstanding Voltage (AC) | | | 1,500 | Vrms |

### Specifications by Frequency

| Description | F1 | F2 | F3 | F4 | F5 | Units |
|---|---|---|---|---|---|---|
| Frequency | 1 | 2 | 4.5 | 9 | 18 | GHz |
| Insertion Loss (Max.) | 0.47 | 0.59 | 0.77 | 1.05 | 1.44 | dB |

Electrical Specification Notes:
The Insertion Loss data above is based on the performance specifications of the coax cable used in this assembly. The Insertion Loss includes an estimated insertion loss of 0.1 dB per connector.

## Mechanical Specifications

### Cable Assembly

| Description | Min | Typ | Max | Units |
|---|---|---|---|---|
| Length* | 39.3701 [100] | 39.3701 [100] | 40.3701 [102.54] | in [cm] |
| Cable Outer Diameter | 0.19 | 0.195 | 0.2 | in |
| Weight | | | 0.25 [113.4] | lbs [g] |

### Cable Characteristics

| Component | Specification |
|---|---|
| Cable Type | LL142 |
| Impedance | 50 Ohms |
| Inner Conductor Type | Solid |
| Inner Conductor Mat. & Plat. | Copper, Silver |
| Dielectric Type | Expanded PTFE Tape |
| Number of Shields | 3 |
| Shield Layer 1 | Silver Plated Copper Tape |
| Shield Layer 2 | Aluminum Polyester |
| Shield Layer 3 | Silver Plated Copper Wire |
| Jacket Material | FEP |



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### Connector Characteristics

| Description | Connector 1 | Connector 2 |
|---|---|---|
| Type | TNC Male | TNC Male |
| Specification | MIL-STD-348 | MIL-STD-348 |
| Impedance | 50 Ohms | 50 Ohms |
| Contact Mat. & Plat. | Beryllium Copper, Gold over Nickel | Beryllium Copper, Gold over Nickel |
| Contact Plating Spec. | 50 µin minimum | 50 µin minimum |
| Dielectric Type | PTFE | PTFE |
| Body Mat. & Plat. | Passivated Stainless Steel | Passivated Stainless Steel |
| Body Plating Spec. | SAE-AMS-2700 | SAE-AMS-2700 |
| Coupling Nut Mat. & Plat. | Passivated Stainless Steel | Passivated Stainless Steel |
| Coupling Nut Plating Spec. | SAE-AMS-2700 | SAE-AMS-2700 |
| Hex Size | 9/16 inch | 9/16 inch |
| Seal Gasket Material | Silicone Rubber | Silicone Rubber |
| Contact Gage Spec. | 0.210 to 0.230 in | 0.210 to 0.230 in |
| Insulator Gage Spec. | 0.208 to 0.228 in | 0.208 to 0.228 in |

## Environmental Specifications

| Description | Specification |
|---|---|
| Temperature Operating Range | -55 to +125 deg C |

### Compliance Certifications (see product page for current document)

## Process Specifications

| Process | Specification |
|---|---|
| Cable Preconditioning | 5 cycles, -55 °C to +125°C, 20 minute dwells |
| Soldering | in accordance with J-STD-001, class 3 |
| Marking | shall meet the adherence requirements of SAE AS5942 |
| Workmanship | shall be in accordance with IPC/WHMA-A-620, class 3 |

## Tests and Inspections

| Test | Sampling |
|---|---|
| Connector Gaging (pin and insulator position) | 100% |
| Insertion Loss | 100% |
| VSWR | 100% |
| Dielectric Withstanding Voltage (DWV) | 100% |
| Visual - workmanship, configuration and marking | 100% |
| Length | C=0, 1.5 AQL |
| Mass | C=0, 1.5 AQL |



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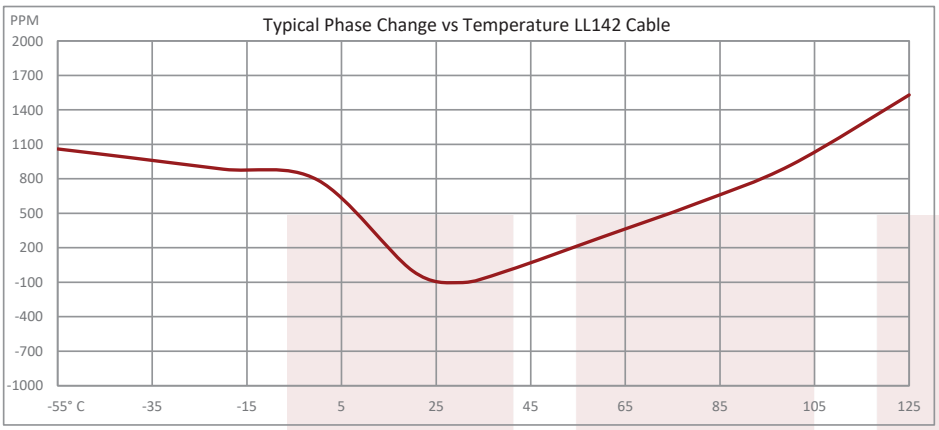
## Plotted and Other Data

Notes:

- Values at 25°C, sea level.

### Typical Performance Data




## How to Order

Part Number Configuration: **FMHR0159 - xx uu**

- xx = Length
- uu = cm = Centimeters, <blank> = Inches

Example: FMHR0159-12 = 12 inches long cable
FMHR0159-100cm = 100 cm long cable



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Cable Assembly Length Tolerances:

| Imperial English | | Metric | |
|---|---|---|---|
| "L" ≤ 1 ft | +0.5 in / -0 in | "L" ≤ 0.3 m | +12.5 mm / -0 mm |
| 1 ft < "L" ≤ 5 ft | +1 in / -0 in | 0.3 m < "L" ≤ 1.5 m | +25 mm / -0 mm |
| 5 ft < "L" ≤ 10 ft | +2 in / -0 in | 1.5 m < "L" ≤ 3 m | +50 mm / -0 mm |
| 10 ft < "L" ≤ 25 ft | +3 in / -0 in | 3 m < "L" ≤ 7.5 m | +75 mm / -0 mm |
| 25 ft < "L" | +2%"L" / -0%"L" | 7.5 m < "L" | +2%"L" / -0%"L" |

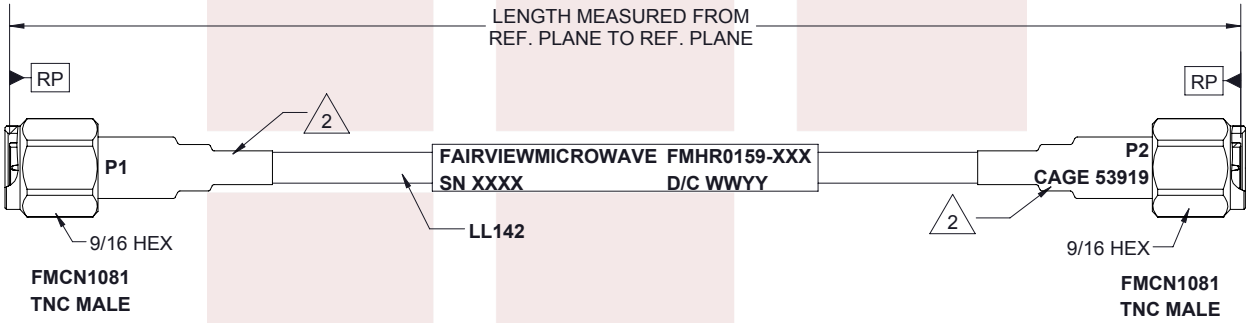
* Cable Length = "L"

Temperature Conditioned Low Loss TNC Male to TNC Male Cable LL142 Coax in 100 cm from Fairview Microwave has same day shipment for domestic and International orders. Our RF, microwave and fiber optic products maintain a 99% availability and are part of the broadest selection in the industry.

Click the following link to obtain additional part information: Temperature Conditioned Low Loss TNC Male to TNC Male Cable LL142 Coax in 100 cm FMHR0159-100CM

URL: https://www.fairviewmicrowave.com/temperature-conditioned-tnc-male-tnc-male-cable-ll142-coax-fmhr0159-100cm-p.aspx

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Fairview Microwave reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Fairview Microwave does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Fairview Microwave does not assume any liability arising out of the use of any part or documentation.




| STANDARD TOLERANCES | |
|---|---|
| .X | ±0.2 |
| .XX | ±0.01 |
| .XXX | ±0.005 |

*STANDARD TOLERANCES APPLY ONLY TO DIMENSIONS IN INCHES

NOTES:
1. ALL BLACK HEAT SHRINK WITH WHITE MARKINGS.
2. TOP LAYER: SUMITUBE W3B2 (4X) - SIZE 12/3.
   BOTTOM LAYER: M23053/4-303-0

Fairview Microwave RF COMPONENTS ON DEMAND. Done!

NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

| TITLE | DWG NO | CAGE CODE | | | |
|---|---|---|---|---|---|
| Temperature Conditioned Low Loss TNC Male to TNC Male Cable LL142 Coax in 100 cm | FMHR0159 | 3FKR5 | | | |
| | CAD FILE 02/15/19 | SHEET 1 OF 1 | SCALE N/A | SIZE A | CN2379 |

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