



# Test Cable

## CBL-20FT-NMNM+

50Ω 20FT DC to 18 GHz N-Male

### FEATURES

- Wideband coverage, DC to 18 GHz
- Extra rugged construction with strain relief for longer life
- Stainless steel N-Male connectors for long mating-cycle life
- Useful over temperature range, -55°C to 105°C
- Triple shield cable for excellent shielding effectiveness
- Flexible for easy connection & bend radius
- Superior stability of insertion loss, VSWR & phase vs. flexing
- 6 month guarantee\*



Generic photo used for illustration purposes only

|            |                |
|------------|----------------|
| Model No.  | CBL-20FT-NMNM+ |
| Case Style | GM1106-20      |
| Connectors | N-Male         |

### APPLICATIONS

- High volume production test stations
- Research & development labs
- Environmental & temperature test chambers
- Replacement for OEM test port cables
- Field RF testing
- Cellular infrastructure site testing

#### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our website for methodologies and qualifications

### ELECTRICAL SPECIFICATIONS AT +25°C

| Parameter           | Frequency (GHz) | Min. | Typ. | Max.  | Units |
|---------------------|-----------------|------|------|-------|-------|
| Frequency range     |                 | DC   |      | 18    | GHz   |
| Length <sup>1</sup> |                 |      | 20   |       | FT    |
| Insertion Loss      | DC - 2.5        | —    | 3.3  | 3.85  | dB    |
|                     | 2.5 - 6         | —    | 6.2  | 7.25  |       |
|                     | 6 - 12          | —    | 9.4  | 11.05 |       |
|                     | 12 - 18         | —    | 12.0 | 14.3  |       |
| Return Loss         | DC - 2.5        | 23   | 30   | —     | dB    |
|                     | 2.5 - 6         | 20   | 30   | —     |       |
|                     | 6 - 12          | 17   | 27   | —     |       |
|                     | 12 - 18         | 17   | 22   | —     |       |

1. Custom sizes available, consult factory.

### ABSOLUTE MAXIMUM RATINGS

| Parameter               | Ratings   |
|-------------------------|---|
| Operating Temperature   | -55°C to +105°C   |
| Storage Temperature     | -55°C to +105°C   |
| Shielding Effectiveness | >100 dB   |
| Power Handling at 25°C  | 891W Max. at 0.4 GHz<br>539W Max. at 1 GHz<br>363W Max. at 2 GHz<br>180W Max. at 6 GHz<br>117W Max. at 12 GHz<br>88W Max. at 18 GHz |

Permanent damage may occur if any of these limits are exceeded.

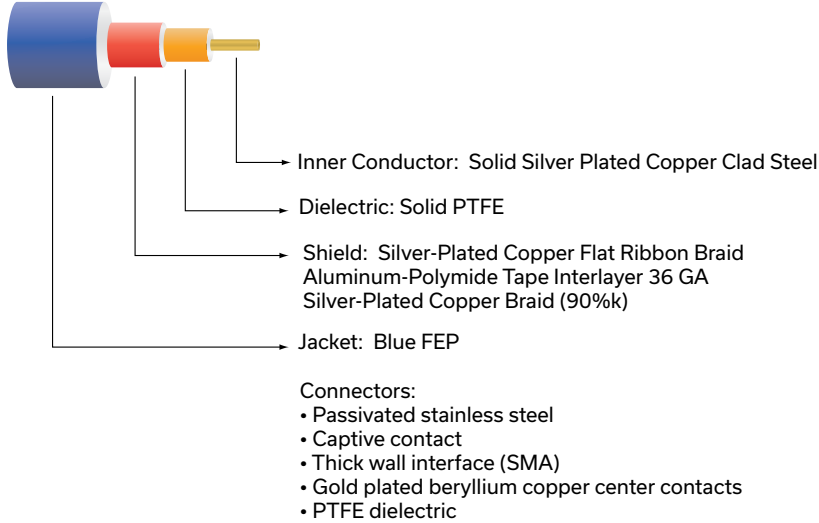
#### Product Guarantee\*

Mini-Circuits\* will repair or replace your test cable at its option if the connector attachment fails within six months of shipment. This guarantee excludes cable or connector interface damage from misuse or abuse.

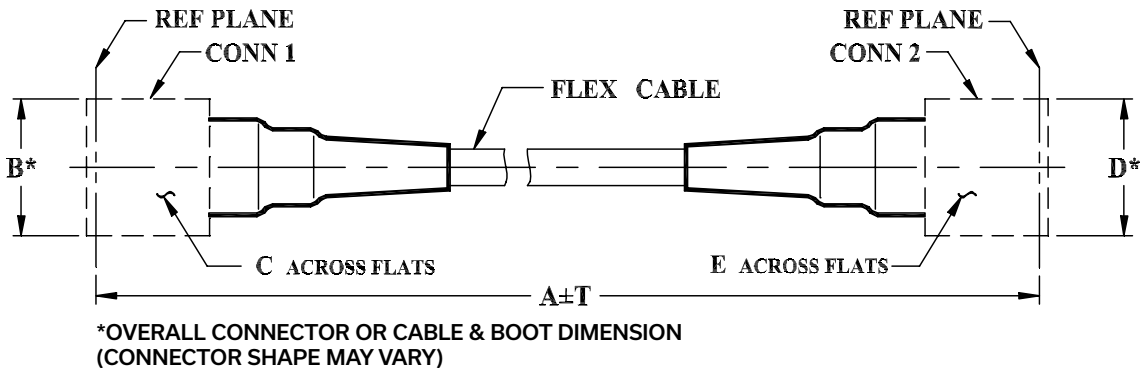




### CABLE CONSTRUCTION



### OUTLINE DRAWING



### OUTLINE DIMENSIONS (Inch/mm)

| A    |        | B   | C    | D   | E    | T    |        | wt    |
|------|--------|-----|------|-----|------|------|--------|-------|
| Feet | Meters |     |      |     |      | Feet | Meters | grams |
| 20   | 6.10   | .88 | .750 | .88 | .750 | 0.6  | 0.18   | 488   |



# Test Cable

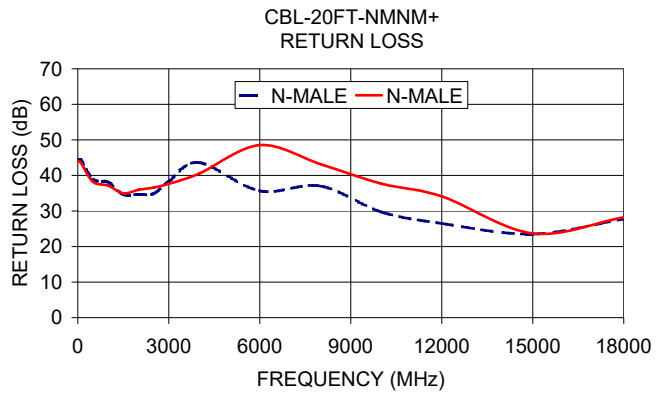
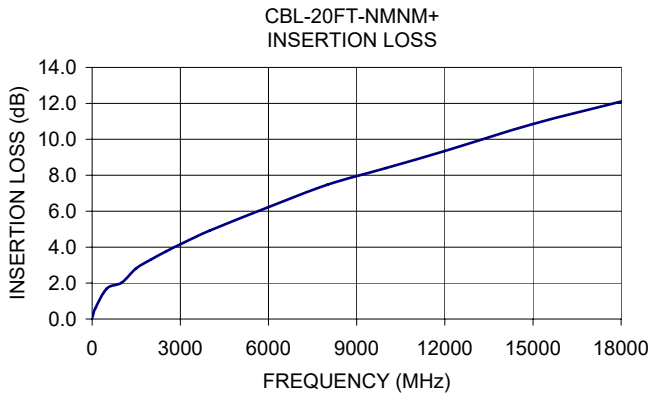
## CBL-20FT-NMNM+

Mini-Circuits

50Ω 20FT DC to 18 GHz N-Male

### TYPICAL PERFORMANCE DATA

| Frequenc (MHz) | Insertion Loss (dB) | Return Loss (dB) |        |
|----------------|---------------------|------------------|--------|
|                |                     | N-MALE           | N-MALE |
| 1.00           | 0.05                | 44.30            | 44.11  |
| 100.00         | 0.57                | 44.39            | 43.60  |
| 500.00         | 1.70                | 38.92            | 38.21  |
| 1000.00        | 2.02                | 38.16            | 37.15  |
| 1500.00        | 2.82                | 34.67            | 34.98  |
| 2000.00        | 3.31                | 34.69            | 35.98  |
| 2500.00        | 3.75                | 34.86            | 36.60  |
| 3000.00        | 4.16                | 38.32            | 37.66  |
| 4000.00        | 4.92                | 43.63            | 40.50  |
| 6000.00        | 6.23                | 35.65            | 48.53  |
| 8000.00        | 7.47                | 37.03            | 43.19  |
| 10000.00       | 8.40                | 29.74            | 37.72  |
| 12000.00       | 9.35                | 26.51            | 34.14  |
| 15000.00       | 10.85               | 23.52            | 23.69  |
| 18000.00       | 12.10               | 27.72            | 28.20  |



#### NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Test Cable, N-Male/N-Male

# CBL-20FT-NMNM+

## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION LOSS<br>(dB) | N-MALE 1<br>RETURN LOSS<br>(dB) | N-MALE 2<br>RETURN LOSS<br>(dB) |
|--------------------|------------------------|---------------------------------|---------------------------------|
| 1                  | 0.05                   | 44.30                           | 44.11                           |
| 100                | 0.57                   | 44.39                           | 43.60                           |
| 500                | 1.70                   | 38.92                           | 38.21                           |
| 1000               | 2.02                   | 38.16                           | 37.15                           |
| 1500               | 2.82                   | 34.67                           | 34.98                           |
| 2000               | 3.31                   | 34.69                           | 35.98                           |
| 2500               | 3.75                   | 34.86                           | 36.60                           |
| 3000               | 4.16                   | 38.32                           | 37.66                           |
| 3500               | 4.55                   | 41.14                           | 37.66                           |
| 4000               | 4.92                   | 43.63                           | 40.50                           |
| 4500               | 5.27                   | 41.83                           | 40.57                           |
| 5000               | 5.59                   | 39.55                           | 42.30                           |
| 5500               | 5.91                   | 36.08                           | 42.30                           |
| 6000               | 6.23                   | 35.65                           | 48.53                           |
| 6500               | 6.54                   | 35.45                           | 49.21                           |
| 7000               | 6.86                   | 37.40                           | 49.36                           |
| 7500               | 7.17                   | 37.80                           | 45.15                           |
| 8000               | 7.47                   | 37.03                           | 43.19                           |
| 8500               | 7.73                   | 34.44                           | 40.57                           |
| 9000               | 7.97                   | 32.46                           | 37.57                           |
| 9500               | 8.18                   | 30.76                           | 37.92                           |
| 10000              | 8.40                   | 29.74                           | 37.72                           |
| 10500              | 8.61                   | 28.80                           | 37.77                           |
| 11000              | 8.84                   | 27.98                           | 36.61                           |
| 11500              | 9.10                   | 27.38                           | 35.94                           |
| 12000              | 9.35                   | 26.51                           | 34.14                           |
| 12500              | 9.60                   | 26.21                           | 30.84                           |
| 13000              | 9.85                   | 25.69                           | 27.46                           |
| 13500              | 10.10                  | 25.75                           | 25.43                           |
| 14000              | 10.39                  | 25.05                           | 24.48                           |
| 14500              | 10.65                  | 24.52                           | 23.88                           |
| 15000              | 10.85                  | 23.52                           | 23.69                           |
| 15500              | 11.07                  | 23.50                           | 23.98                           |
| 16000              | 11.28                  | 24.52                           | 24.33                           |
| 16500              | 11.52                  | 26.68                           | 25.40                           |
| 17000              | 11.73                  | 28.91                           | 26.75                           |
| 17500              | 11.92                  | 29.45                           | 28.05                           |
| 18000              | 12.10                  | 27.72                           | 28.20                           |

REV. X1  
CBL-20FT-NMNM+  
061115  
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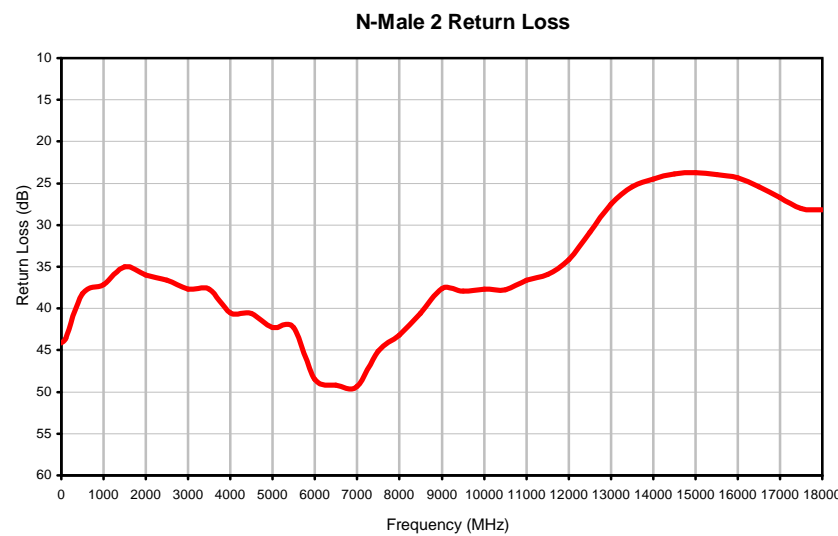
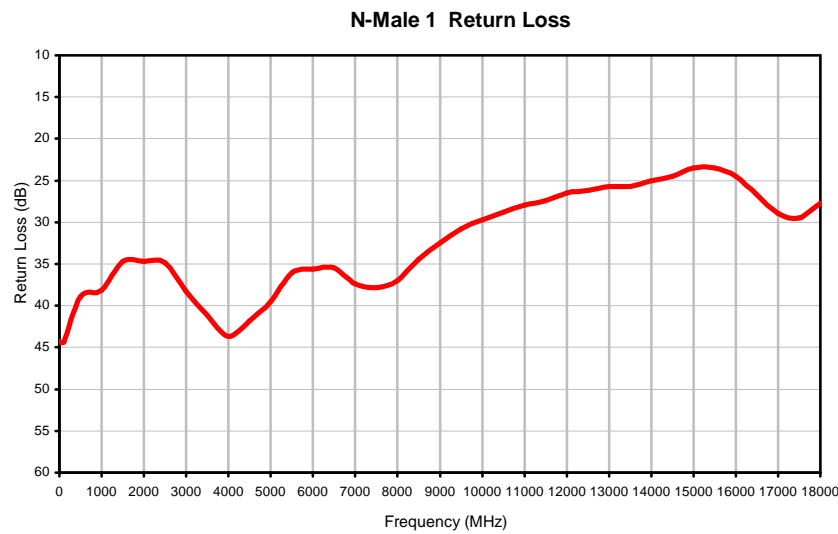
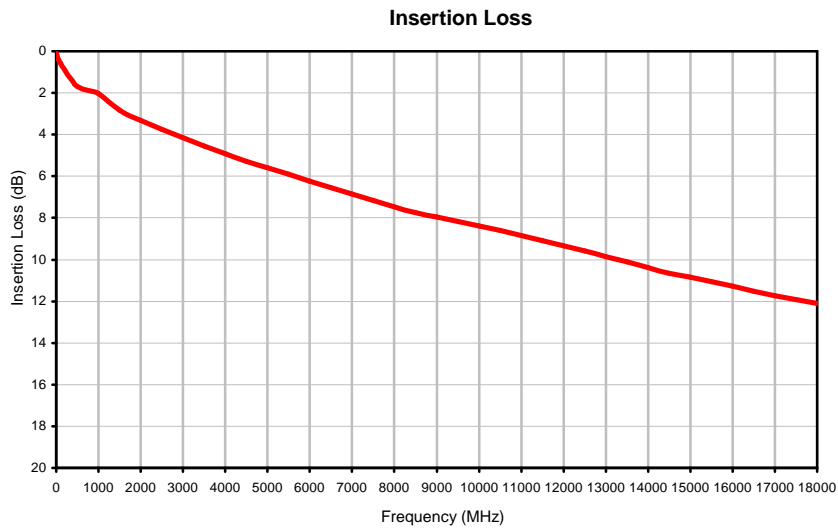
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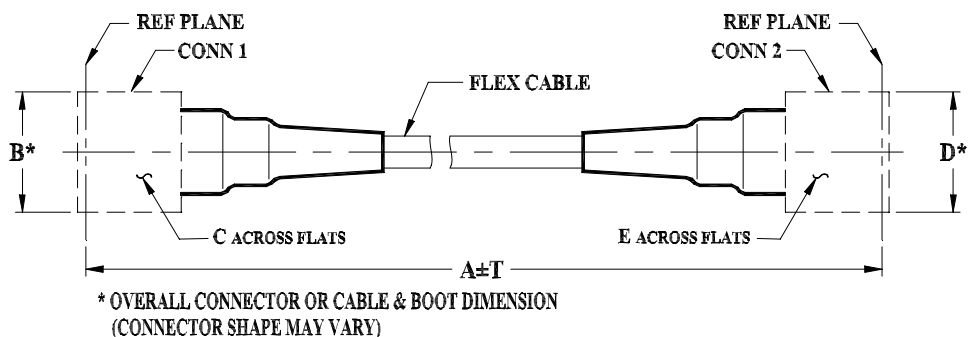
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## Typical Performance Curves



### Outline Dimensions



GM1106 SERIES  
N MALE (CONN-1)  
N MALE (CONN-2)

| CASE STYLE # | A      |        | B              | C               | D              | E               | T    |        | WEIGHT GRAMS |
|--------------|--------|--------|----------------|-----------------|----------------|-----------------|------|--------|--------------|
|              | FEET   | METERS |                |                 |                |                 | FEET | METERS |              |
| GM1106-1     | 1.00   | .30    | .88<br>(22.35) | .750<br>(19.05) | .88<br>(22.35) | .750<br>(19.05) | .06  | .02    | 117          |
| GM1106-1.5   | 1.50   | .46    |                |                 |                |                 | .06  | .02    | 127          |
| GM1106-1.64  | 1.64   | .50    |                |                 |                |                 | .06  | .02    | 129          |
| GM1106-2     | 2.00   | .61    |                |                 |                |                 | .06  | .02    | 137          |
| GM1106-3     | 3.00   | .91    |                |                 |                |                 | .09  | .03    | 156          |
| GM1106-3.28  | 3.28   | 1.00   |                |                 |                |                 | .10  | .03    | 161          |
| GM1106-4     | 4.00   | 1.22   |                |                 |                |                 | .12  | .04    | 176          |
| GM1106-4.92  | 4.92   | 1.50   |                |                 |                |                 | .15  | .05    | 193          |
| GM1106-5     | 5.00   | 1.52   |                |                 |                |                 | .15  | .05    | 195          |
| GM1106-6     | 6.00   | 1.83   |                |                 |                |                 | .18  | .05    | 215          |
| GM1106-6.56  | 6.56   | 2.00   |                |                 |                |                 | .20  | .06    | 225          |
| GM1106-7     | 7.00   | 2.13   |                |                 |                |                 | .21  | .06    | 221          |
| GM1106-7.5   | 7.50   | 2.29   |                |                 |                |                 | .23  | .07    | 244          |
| GM1106-8     | 8.00   | 2.44   |                |                 |                |                 | .24  | .07    | 240          |
| GM1106-9     | 9.00   | 2.74   |                |                 |                |                 | .27  | .08    | 273          |
| GM1106-9.84  | 9.84   | 3.00   |                |                 |                |                 | .30  | .09    | 289          |
| GM1106-10    | 10.00  | 3.05   |                |                 |                |                 | .30  | .09    | 293          |
| GM1106-12    | 12.00  | 3.66   |                |                 |                |                 | .36  | .11    | 332          |
| GM1106-13.1  | 13.12  | 4.00   |                |                 |                |                 | .39  | .12    | 353          |
| GM1106-15    | 15.00  | 4.57   |                |                 |                |                 | .45  | .14    | 390          |
| GM1106-16.4  | 16.40  | 5.00   | .49            | .15             | 417            |                 |      |        |              |
| GM1106-20    | 20.00  | 6.10   | .60            | .18             | 488            |                 |      |        |              |
| GM1106-25    | 25.00  | 7.62   | .75            | .23             | 585            |                 |      |        |              |
| GM1106-30    | 30.00  | 9.14   | .90            | .27             | 683            |                 |      |        |              |
| GM1106-50    | 50.00  | 15.24  | 1.50           | .46             | 1073           |                 |      |        |              |
| GM1106-131   | 131.23 | 40.00  | 3.94           | 1.20            | 2656           |                 |      |        |              |

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ±.03; 3Pl. ±.015

**Note:**

1. Flexible Coaxial Cable.



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Mini-Circuits ISO 9001 & ISO 14001 Certified



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification         | Test/Inspection Condition  | Reference/Spec  |
|-----------------------|--|---|
| Operating Temperature | -55° to 105°C<br>Ambient Environment   | Individual Model Data Sheet                           |
| Storage Temperature   | -55° to 105°C<br>Ambient Environment   | Individual Model Data Sheet                           |
| Thermal Shock         | -55° to 105°C, 100 cycles  | MIL-STD-202, Method 107, Condition A-3, except -105°C |
| Mechanical Flexing    | 20,000 cycles<br>During each cycle, cable flexed from 90° through 0° to -90° and back with a Radii of 3 inches | - - -   |