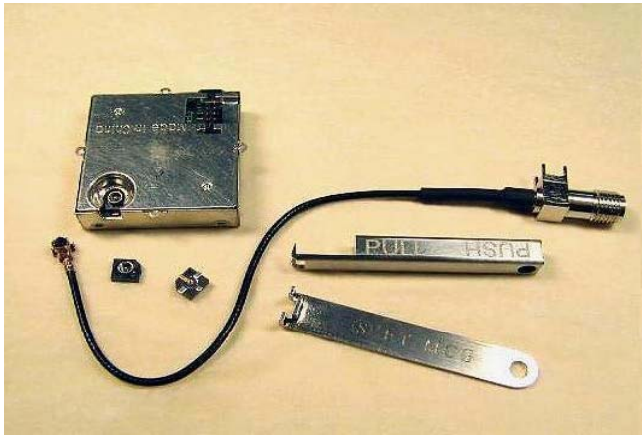


# Sunridge MCG Series – Miniature Coaxial Interconnect, 3.0mm Mated Height for Robust Use



Sunridge MCG series coaxial product fulfills the rigorous demands of both highly reliable RF signal transmission and rugged usage as required in mobile or on-vehicle wireless IT devices. In a small form factor of 4.5mm x 5.0mm footprint and 3.0mm mated height, and designed for 50 Ohm impedance over a working frequency range from DC to 6.0 GHz, MCG features a supreme performance of low insertion loss and a VSWR below 1.10 (at 1575 MHz GPS frequency) and it provides for a sturdy retention force of 1.5Kg. MCG offers a reliable, cost-effective solution for board to board or board to panel integration.

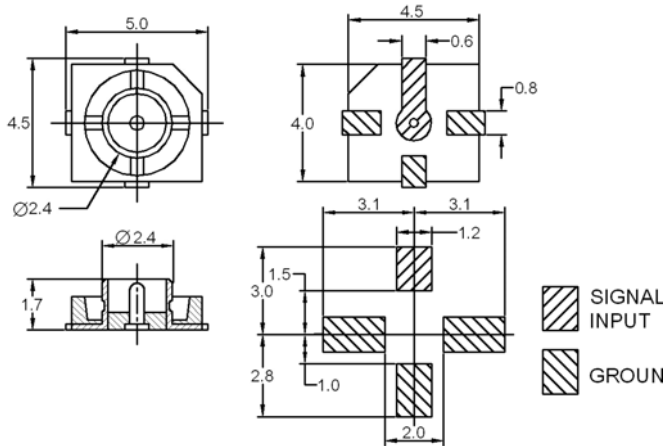


### Typical Application:

Portable or on-vehicle tracking device, monitoring base station equipment. Particularly, telecommunication or GPS module in rugged or vibratory environment.

## PCB Connector

Pn: MCG-ST-00T



Recommended PCB Layout

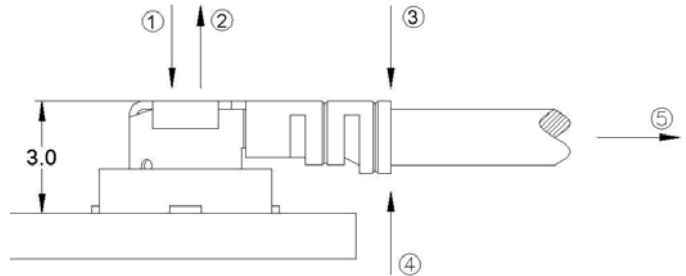
## Material Specification

- Outer Contact:** Copper Alloy, Gold Plated.
- Center Contact:** Copper Alloy, Gold Plated.
- Insulator:** Engineering Plastic.
- Cable:** Silver plated center conductor with Teflon dielectric and jacket.

## Features

- Space Economy: 4.5mmx5.0mm footprint, 3.0mm mated height
- Cable Connector: designed for study mating with PCB socket.
- Teflon Cable: silver plated center conductor and braid, Teflon dielectric and jacket. Cable options available for requirements in routing flexibility, structural strength, or double-shielding.
- PCB socket: On-piece integral molded construction. High temp plastic housing for IR reflow. Protection for mated cable head.
- Strength: Lead-in and interlock features make for easy insertion and sturdy engagement among mating components.
- Accessory: Insertion/extraction tool for open space or recessed area. SMA adapter for connection to network analyzer.

## Form Factor and Application



- ① Insertion force (with tool): 2100 gf.
  - ② Extraction force (with tool): 1500 gf.
  - ③ Retention, downward force: 500gf
  - ④ Retention, upward force: 500gf
  - ⑤ Retention, pull back: 1,500gf min
- Durability: 20 cycles

## Characteristics

| Characteristics       |                |
|-----------------------|----------------|
| Frequency Range       | DC to 6GHz     |
| Nominal Impedance     | 50 ohm         |
| Temperature Range     | -40°C to +90°C |
| Contact Resistance    | 25m ohm max    |
| Withstanding Voltage  | AC 200Vrms     |
| Insulation Resistance | 500M ohm min   |
| Durability            | 20 Cycles      |

[www.sunridgecorp.com](http://www.sunridgecorp.com)

(dimension: mm)



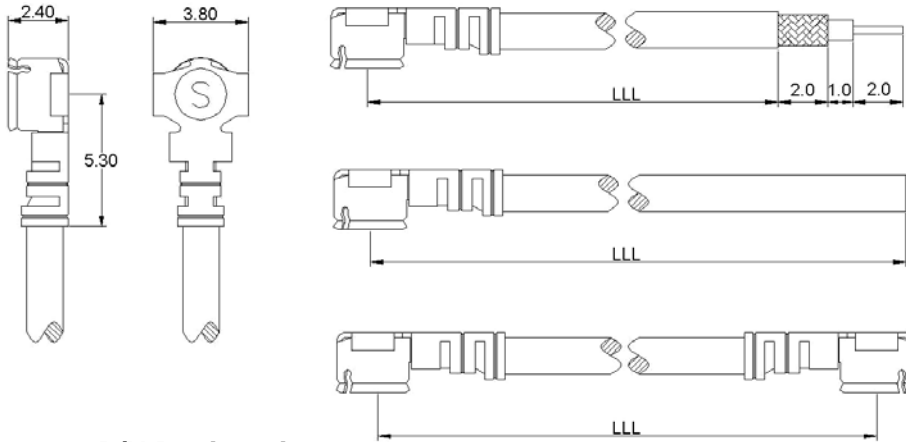
Sunridge Corporation

Specialist in Interconnect Solutions





**MCG Cable Assembly**



Pn: MCG-SH-XX-LLL-T

Pn: MCG-SH-XX-LLL-F

Pn: MCG-DH-XX-LLL

**P/N Designation**

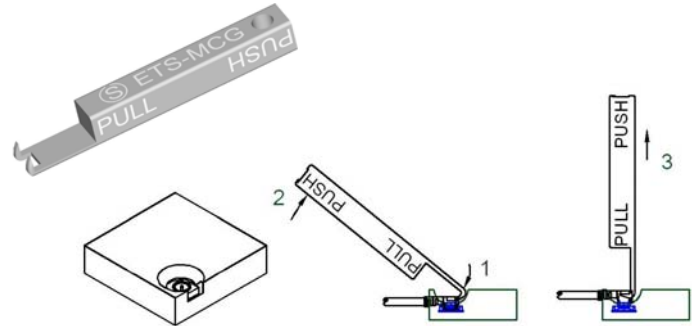
MCG- XX - XX - XXX - X  
 A B C D

- A. Head Configuration: SH: Single-Headed Cable construction  
 DH: Double-Headed Cable construction
- B. Coaxial Cable Code: see cable selection guide
- C. Length (in mm): e.g. LLL = 200 means 200mm.
- D. End Cut (SH only): T : open end striped & tinned.  
 F : open end flat cut

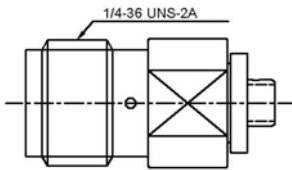
**Insertion/Extraction Tool**

- Pn: ET-MCG (for open space)  
 For insertion and extraction, dual use

- Pn: ETS-MCG (for recess area; e.g. Trimble Lassen module)  
 For extraction use only



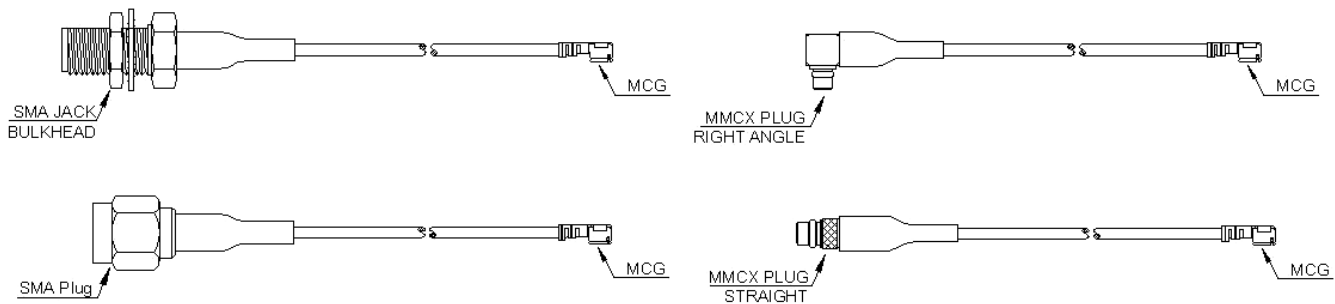
**Test Adaptor Pn: MCGP-SMAJ**



To extract MCG- connector from Trimble module without tearing up the cable assembly

**Integrated Solution**

MCG- single headed cable is typically integrated with another R/F connector for interconnection, say, from module board to panel or to antenna fitting. Sunridge is equally committed to both R/F cable assembly customers and OEM's. Send your application requirement to [engineering@sunridgecorp.com](mailto:engineering@sunridgecorp.com) for a project evaluation.



[www.sunridgecorp.com](http://www.sunridgecorp.com)

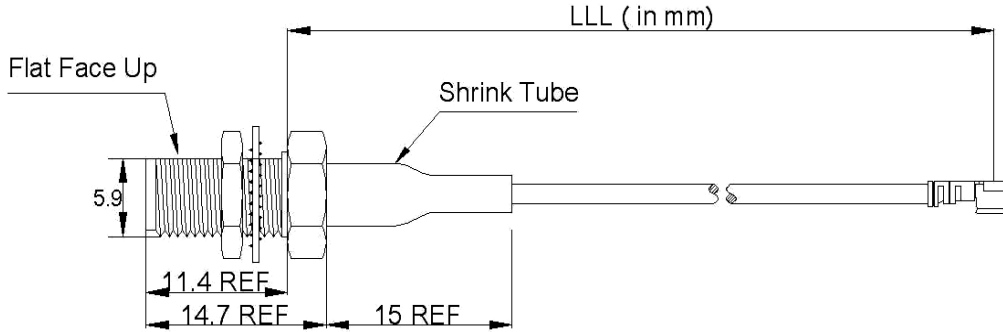
(dimension: mm)



**MCG- Derivative Cable Assembly P/N Selector:**

(Illustration of the most commonly used MCG-RF cable assy. A variety of other RF configurations is readily available at Sunridge Corp. Contact [engineering@sunridgecorp.com](mailto:engineering@sunridgecorp.com) for project inquiry.)

■ **MCG to SMA Bulkhead Jack Cable Assembly:**

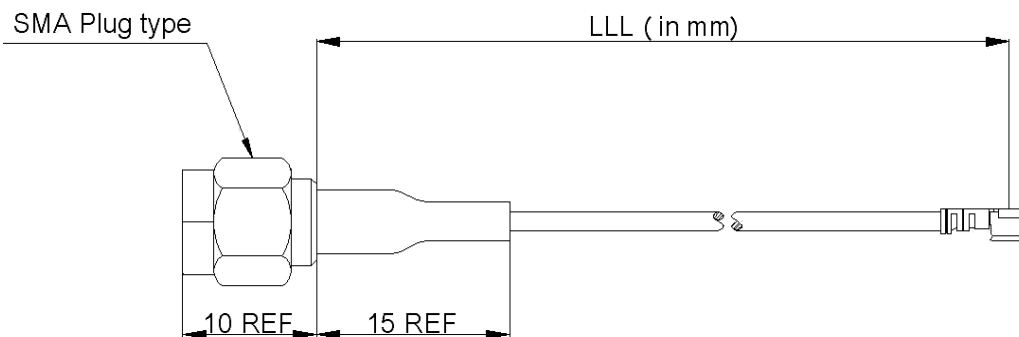


| Range            | Tolerance |
|------------------|-----------|
| 50 < LLL < 100   | ± 2       |
| 100 < LLL < 200  | ± 3       |
| 300 < LLL < 300  | ± 5       |
| 300 < LLL < 500  | ± 10      |
| 500 < LLL < 1000 | ± 25      |
| 1000 < LLL       | ±60       |

LLL: Length in mm. e.g., LLL = 200 means 200mm; LLL = 073 means 73mm

| Descriptions                       | Cable Material  | Sunridge P/N           |
|------------------------------------|-----------------|------------------------|
| MCG to SMAJB                       | #51, 1.48 mm OD | MCG-RH-51-LLL-SMAJB801 |
| MCG to SMAJB Reverse Polarity (RP) | #51, 1.48 mm OD | MCG-RH-51-LLL-SMAJB881 |
| MCG to SMAJB with O-Ring Seal      | #51, 1.48 mm OD | MCG-RH-51-LLL-SMAJB803 |
| MCG to SMAJB RP, with O-ring Seal  | #51, 1.48 mm OD | MCG-RH-51-LLL-SMAJB883 |
| MCG to SMAJB                       | #54, 1.33 mm OD | MCG-RH-54-LLL-SMAJB207 |
| MCG to SMAJB Reverse Polarity (RP) | #54, 1.33 mm OD | MCG-RH-54-LLL-SMAJB281 |
| MCG to SMAJB with O-Ring Seal      | #54, 1.33 mm OD | MCG-RH-54-LLL-SMAJB209 |
| MCG to SMAJB RP with O-ring Seal   | #54, 1.33 mm OD | MCG-RH-54-LLL-SMAJB283 |

■ **MCG to SMA Plug Cable Assembly:**



| Range            | Tolerance |
|------------------|-----------|
| 50 < LLL < 100   | ± 2       |
| 100 < LLL < 200  | ± 3       |
| 300 < LLL < 300  | ± 5       |
| 300 < LLL < 500  | ± 10      |
| 500 < LLL < 1000 | ± 25      |
| 1000 < LLL       | ±60       |

LLL: Length in mm. e.g., LLL = 200 means 200mm; LLL = 073 means 73mm

| Descriptions                      | Cable Material  | Sunridge P/N          |
|-----------------------------------|-----------------|-----------------------|
| MCG to SMAP                       | #51, 1.48 mm OD | MCG-RH-51-LLL-SMAP801 |
| MCG to SMAP Reverse Polarity (RP) | #51, 1.48 mm OD | MCG-RH-51-LLL-SMAP881 |
| MCG to SMAP                       | #54, 1.33 mm OD | MCG-RH-54-LLL-SMAP205 |
| MCG to SMAP Reverse Polarity (RP) | #54, 1.33 mm OD | MCG-RH-54-LLL-SMAP281 |



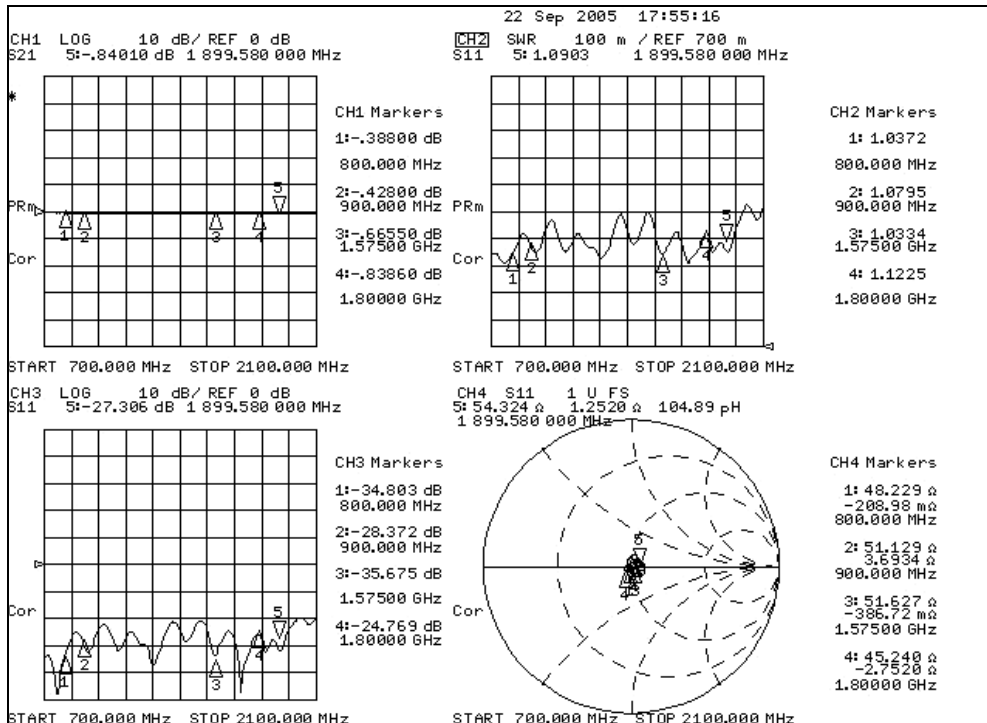
**Cable Selection Guide**

| Cable Designation Code     |                   |           | #51                       | #54                       | #53                       |
|----------------------------|-------------------|-----------|---------------------------|---------------------------|---------------------------|
| Inner conductor            | No. and Dia.      | (No./mm)  | 7/0.102                   | 7/0.102                   | 7/0.08                    |
|                            | Material          | —         | Silver plated copper wire | Silver plated copper wire | Silver plated copper wire |
|                            | Total Dia.        | (mm)      | 0.305                     | 0.305                     | 0.24                      |
| Dielectric                 | Material          | —         | FEP                       | FEP                       | FEP                       |
|                            | Total Dia .       | (mm)      | 0.84                      | 0.88                      | 0.66                      |
| Outer conductor            | Material          | —         | 7/0.102                   | 7/0.102                   | 7/0.08                    |
|                            | Dia. of wire      | (mm)      | Tinned copper wire        | Tinned copper wire        | Tinned copper wire        |
|                            | Total Dia.        | (mm)      | 1.24                      | 1.13                      | 1.12 (double shield)      |
| Jacket                     | Material          | —         | FTFE                      | FEP                       | FEP                       |
|                            | Nominal thickness | (mm)      | 0.12                      | 0.1                       | 0.1                       |
| Overall Dia.               |                   | (mm)      | 1.48                      | 1.33                      | 1.32                      |
| Nominal impedance          |                   | (Ohm)     | 50                        | 50                        | 50                        |
| Voltage rating             |                   | Vrms Max. | 300                       | 300                       | 300                       |
| Nominal static capacitance |                   | (pF/m)    | 95                        | 96                        | 95                        |
| Insertion loss             | dB/m at 1GHz      |           | 1.5                       | 1.61                      | 2.11                      |
|                            | dB/m at 2GHz      |           | 2.2                       | 2.33                      | 3.04                      |
|                            | dB/m at 2.4GHz    |           | 2.8                       | 2.58                      | 3.35                      |
|                            | dB/m at 3GHz      |           | 3.3                       | 2.92                      | 3.77                      |
|                            | dB/m at 5GHz      |           | 3.7                       | 4.10                      | 4.98                      |
|                            | dB/m at 6GHz      |           | 4.2                       | 4.31                      | 5.50                      |

(data as provided by material suppliers, for reference only)

**Performance Measurement Reference:**

(Test sample: MCG dual head cable assy, 200mm; Test instrument: Agilent 8753ES network analyzer.)



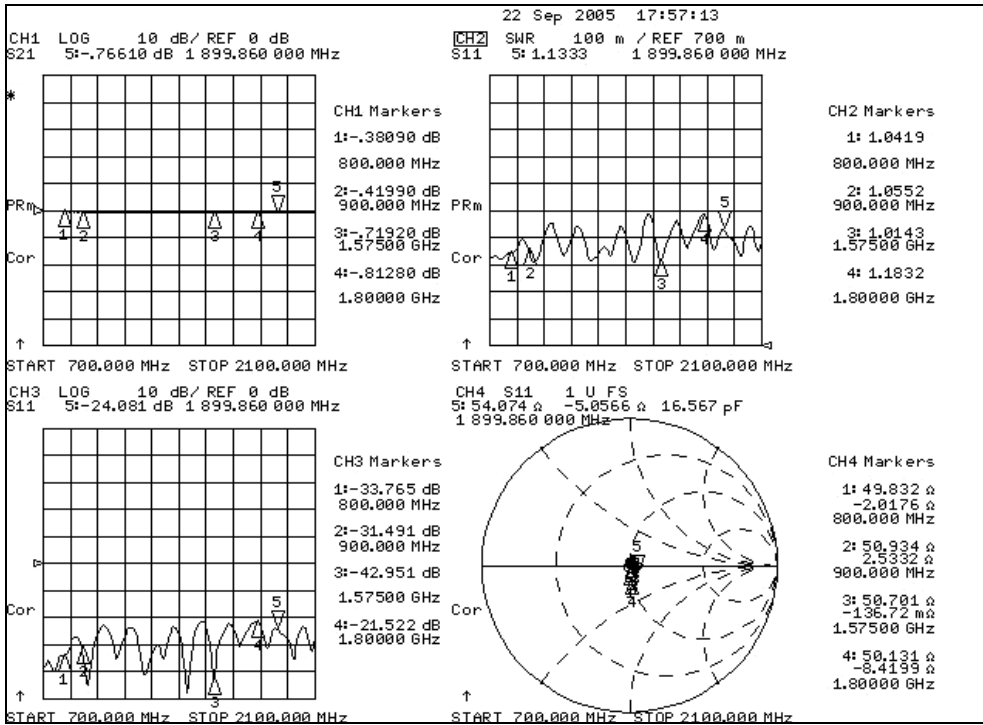
**MCG-DH-51-200**

Length: 200mm  
Cable Code: #51  
Overall Diameter: 1.48mm  
Inner Conductor: 0.31mm Dia.  
Dielectric: 0.84 Dia.  
Outer Conductor: 1.24mm Dia  
Jacket: 1.48mm Dia.



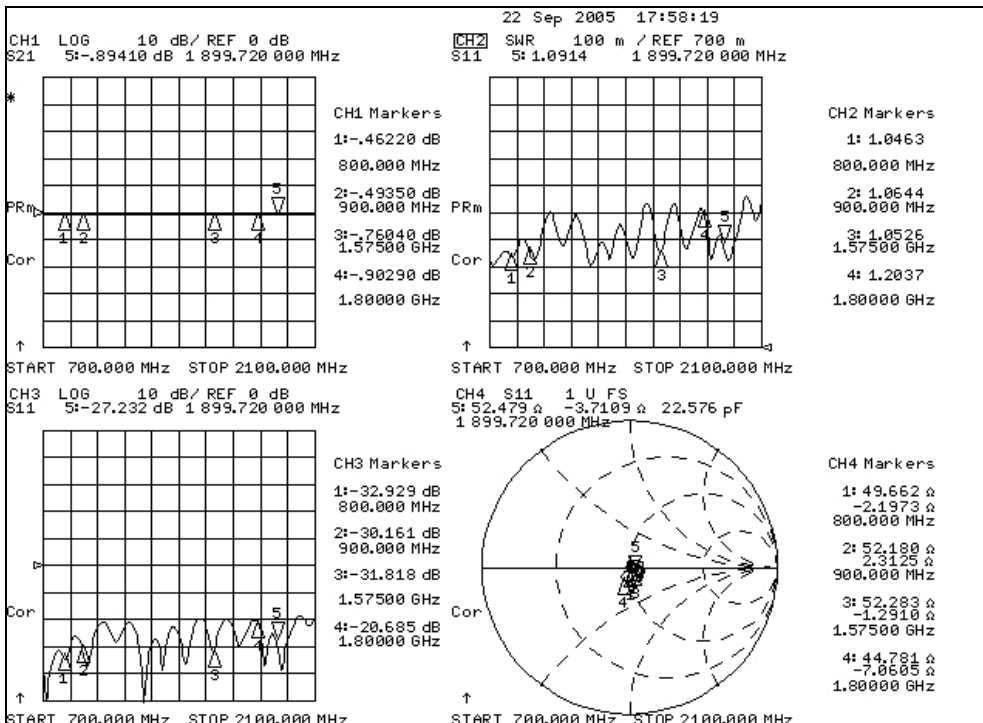
**Performance Measurement Reference:**

(Test sample: MCG dual head cable assy, 200mm; Test instrument: Agilent 8753ES network analyzer.)



**MCG-DH-54-200**

Length: 200mm  
Cable Code: #54  
Overall Diameter: 1.33mm  
Inner Conductor: 0.31mm Dia.  
Dielectric: 0.88 Dia.  
Outer Conductor: 1.13mm Dia.  
Jacket: 1.33mm Dia.



**MCG-DH-53-200**

Length: 200mm  
Cable Code: #53  
Overall Diameter: 1.32mm  
Inner Conductor: 0.24mm Dia.  
Dielectric: 0.66 Dia.  
Outer Conductor (double braid):  
1.12mm  
Jacket: 1.32mm Dia.