

INCH-POUND

MIL-C-17/181B  
20 February 1991  
SUPERSEDING  
MIL-C-17/181A(EC)  
10 August 1987

MILITARY SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, FLEXIBLE COAXIAL, 75 OHMS,  
M17/181-0001 UNARMORED, M17/181-0002 ARMORED

This specification is approved for use by all Departments  
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist  
of this specification sheet and the issue of the following specification  
listed in that issue of the Department of Defense Index of Specifications  
and Standards (DODISS) specified in the solicitation: MIL-C-17.

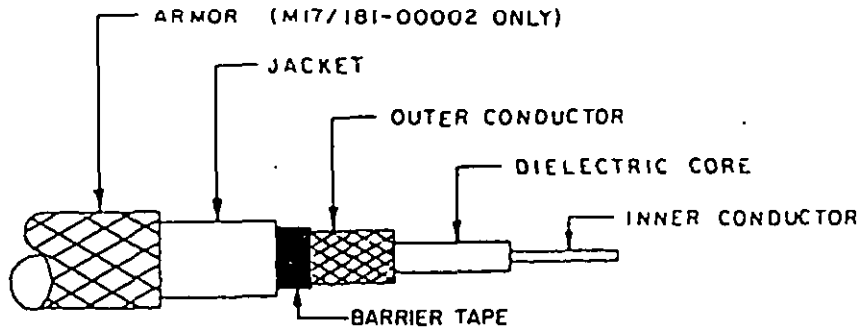


FIGURE 1. Configuration.

TABLE I. Description.

Components	Construction details
Inner conductor	Seven strands of tinned, copper wire, .0159 inch each. Overall diameter: .0477 inch $\pm$ .0020.
Dielectric core	Type A-1: Solid polyethylene. Diameter: .285 inch $\pm$ .007.
Outer conductor	Single braid of AWG No. 33, bare copper wire. Diameter: .330 inch maximum.  Coverage: 95.3% nominal Carriers: 24 Ends: 8 Picks/inch: 6.5 $\pm$ 10%

TABLE I. Description - Continued.

Components	Construction details
Barrier tape	A .001 inch thick polyester tape faced with a .002 inch thick layer of aluminum. The tape will be applied with a 50% lap, aluminum face toward the outer conductor. Diameter: .340 inch maximum.
Jacket	Cross-linked polyolefin Diameter: .405 inch $\pm$ .007.
Armor (M17/181-00002 only)	Single braid of aluminum-alloy wire Diameter: .475 inch maximum.

## ENGINEERING INFORMATION:

Continuous working voltage: 3,700 V rms, maximum.

Operating frequency: 1 GHz, maximum.

Velocity of propagation: 65.9 percent, nominal.

Power ratings: See figure 2.

Operating temperature range:  $-30^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , maximum.

Inner conductor properties:

DC resistance (maximum at  $+20^{\circ}\text{C}$ ): .66 ohms per 100 feet.

Elongation: 15 percent, minimum.

Engineering notes: This cable is useful in low temperature applications. (See connector series "N", "C", and "SC" in accordance with MIL-C-39012.) These cables were redesigned to meet the vertical flame test.

## REQUIREMENTS:

Dimensions, configuration, and descriptions: See figure 1 and table 1.

Environmental and mechanical:

Visual and mechanical examination: Applicable.

Out-of-roundness: Not applicable.

Eccentricity: 10 percent, maximum.

Adhesion of conductors:

Inner conductor to core: 4 pounds, minimum; 20 pounds, maximum.

Aging stability:  $+98^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .

Cold bend:  $-30^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .

Dimensional stability: +85°C ±2°C.

Inner conductor from core: .062 inch, maximum.

Inner conductor from jacket: .125 inch, maximum.

Contamination: Not applicable.

Flame propagation: Applicable.

Acid gas generation: 2.0 percent, maximum.

Halogen content: 0.2 percent, maximum.

Immersion test:

Tensile strength, percent of unaged minimum: 50

Elongation, percent of unaged minimum: 50

Smoke index: 25 maximum.

Toxicity index: 5 maximum.

Durometer hardness: (Type A) 80 minimum.

Weathering: Applicable.

Abrasion resistance: 75 cycles minimum (jacket only).

Tear strength: 35 pounds per inch minimum.

Heat distortion: 30 percent maximum distortion.

Physical tests on unaged jacket:

Tensile strength: 1,300 psi, minimum.

Elongation, 160 percent, minimum.

Physical tests on aged jacket:

Air oven:

Tensile strength, percent minimum: 60

Elongation, percent minimum: 60

Hot oil immersion:

Tensile strength, percent minimum: 50

Elongation, percent minimum: 50

Tensile strength and elongation: 1,300 psi, 160 percent minimum.

Weight:

10.8 pounds per 100 feet maximum (M17/181-00001).

13.2 pounds per 100 feet maximum (M17/181-00002).

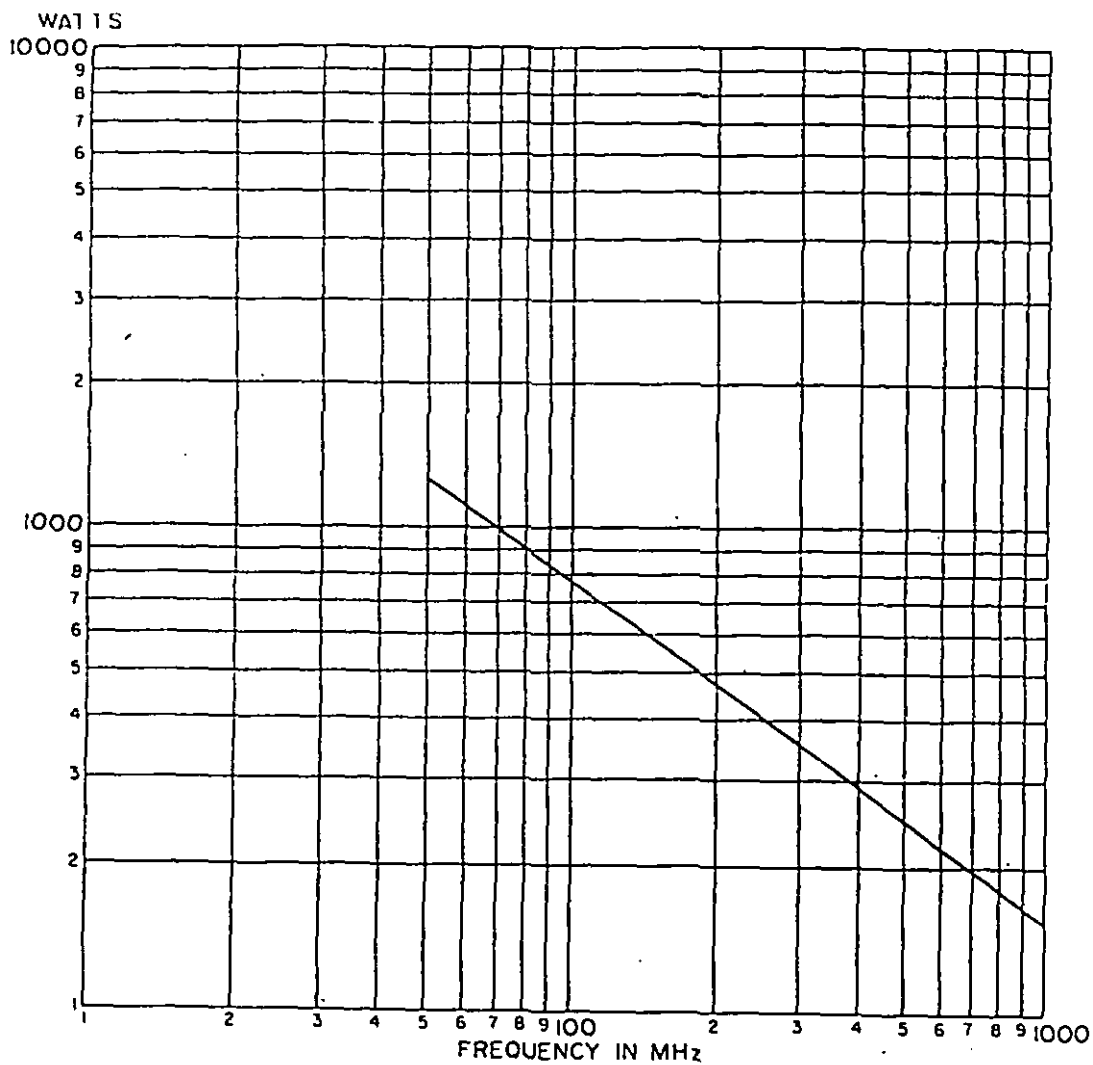


FIGURE 2. Power rating at 25°C sea level.

Electrical:

Spark test: 5,000 V rms, minimum.

Voltage withstanding: 10,000 V rms, minimum.

Corona extinction voltage: 5,000 V rms minimum.

Characteristic impedance: 75 ±3 ohms.

Attenuation:

5.2 dB per 100 feet maximum at .4 GHz.

9.4 dB per 100 feet, maximum at 1 GHz.

Structural return loss: Not applicable.

Capacitance: 22 pF per foot, maximum.

Part or Identifying Number (PIN):

M17/181-00001 unarmored.

M17/181-00002 armored.

NOTE: Revision letters are not used to denote changes due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:

Army - CR  
Navy - EC  
Air Force - 85

Review activities:

Army - AR, MI  
Navy - SH  
Air Force - 11, 80, 99  
DLA - ES, IS

User activities:

Army - AT, ME  
Navy - AS, MC, OS  
Air Force - 19

Preparing activity:

Navy - EC

Agent:

DLA - ES

(Project 6145-1176-02)