

INCH-POUND

MIL-DTL-17/138B  
19 June 2015  
SUPERSEDING  
MIL-C-17/138A  
27 April 1981

MILITARY SPECIFICATION SHEET

CABLE, RADIO FREQUENCY, FLEXIBLE, COAXIAL, 50 OHMS, M17/138-00001

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 MIL-DTL-17.

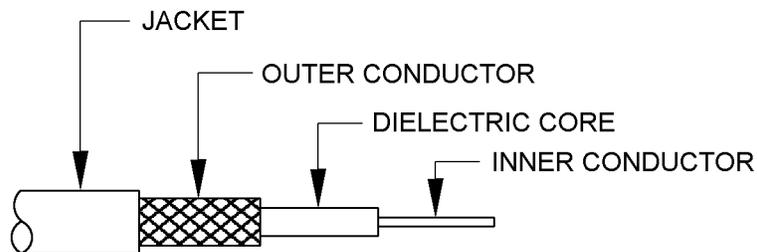


FIGURE 1. Configuration.

TABLE I. Description.

Components	Construction details
Inner conductor	Seven strands of silver-coated, annealed-copper-covered, steel wire, .0067 inch each. Overall diameter: .0201 inch $\pm$ .0010.
Dielectric core	Type F-1: Solid extruded PTFE. Diameter: .060 inch $\pm$ .003.
Outer conductor	Single braid of AWG size 38 silver-coated copper wire. Diameter: .081 inch maximum. Coverage: 95.2% nominal Carriers: 16 Ends: 5 Picks/inch: 12 $\pm$ 10%
Jacket	Type XIII. Diameter: .098 inch $\pm$ .004.

AMSC N/A

FSC 6145



ENGINEERING INFORMATION:

Continuous working voltage: 900 Vrms, maximum.  
Operating frequency: 3 GHz, maximum.  
Velocity of propagation: 69.5 percent, nominal.  
Power rating: See figure 2.  
Operating temperature range: -55°C to +230°C.  
Inner conductor properties:  
    DC resistance (maximum at 20°C): 8.41 ohms per 100 feet.  
    Elongation: 10 percent, minimum.  
    Tensile strength: 50 klb<sub>f</sub>/inch<sup>2</sup>, minimum.

Engineering notes: This cable is useful in general purpose, high temperature applications (see connector series "SMA", "SMB", and "SMC" per MIL-PRF-39012).

REQUIREMENTS:

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

Environmental and mechanical:

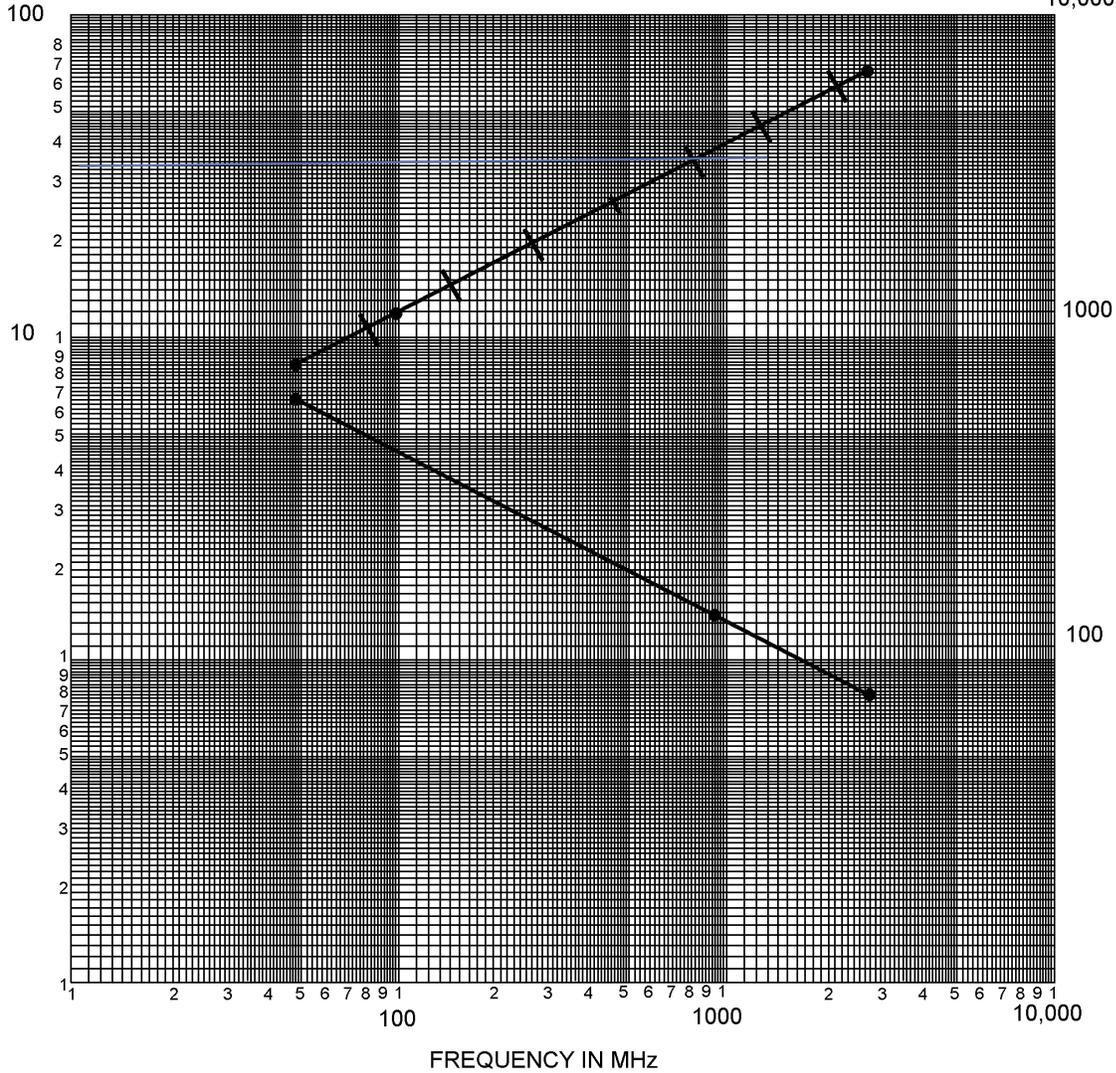
Eccentricity: 10 percent, minimum.  
Adhesion of conductors:  
    Inner conductor to core: 2 pounds, minimum; 8 pounds, maximum.  
Aging stability: Not applicable.  
Stress crack resistance: +230° ± 5°C; mandrel size seven times the jacket diameter.  
Cold bend: -55° ± 2°C.  
Outer conductor integrity: Not applicable.  
Dimensional stability: +200° ± 5°C.  
    Inner conductor from core: .187 inch, maximum.  
    Inner conductor from jacket: .250 inch, maximum.  
Bendability: Not applicable.  
Weight: 1.22 pounds per 100 feet, maximum.

Electrical:

Test frequency: 50 MHz to 3 GHz.  
Spark test: 2,000 Vrms, +10 percent, -0 percent.  
Voltage withstanding: 2,000 Vrms, +10 percent, -0 percent.  
Insulation resistance: Not applicable.  
Corona extinction voltage: 1,200 Vrms, minimum.  
Characteristic impedance: 50 ± 2 ohms.  
Attenuation: See figure 2.  
Structural return loss: See figure 3.  
Capacitance: 32 pF per foot, maximum.  
Capacitance unbalance: Not applicable.  
Transmission unbalance: Not applicable.  
Mechanically induced noise voltage: Not applicable.  
Time delay: Not applicable.  
Contamination: Not applicable.

ATTENUATION  
dB PER 100 FT

WATTS  
10,000



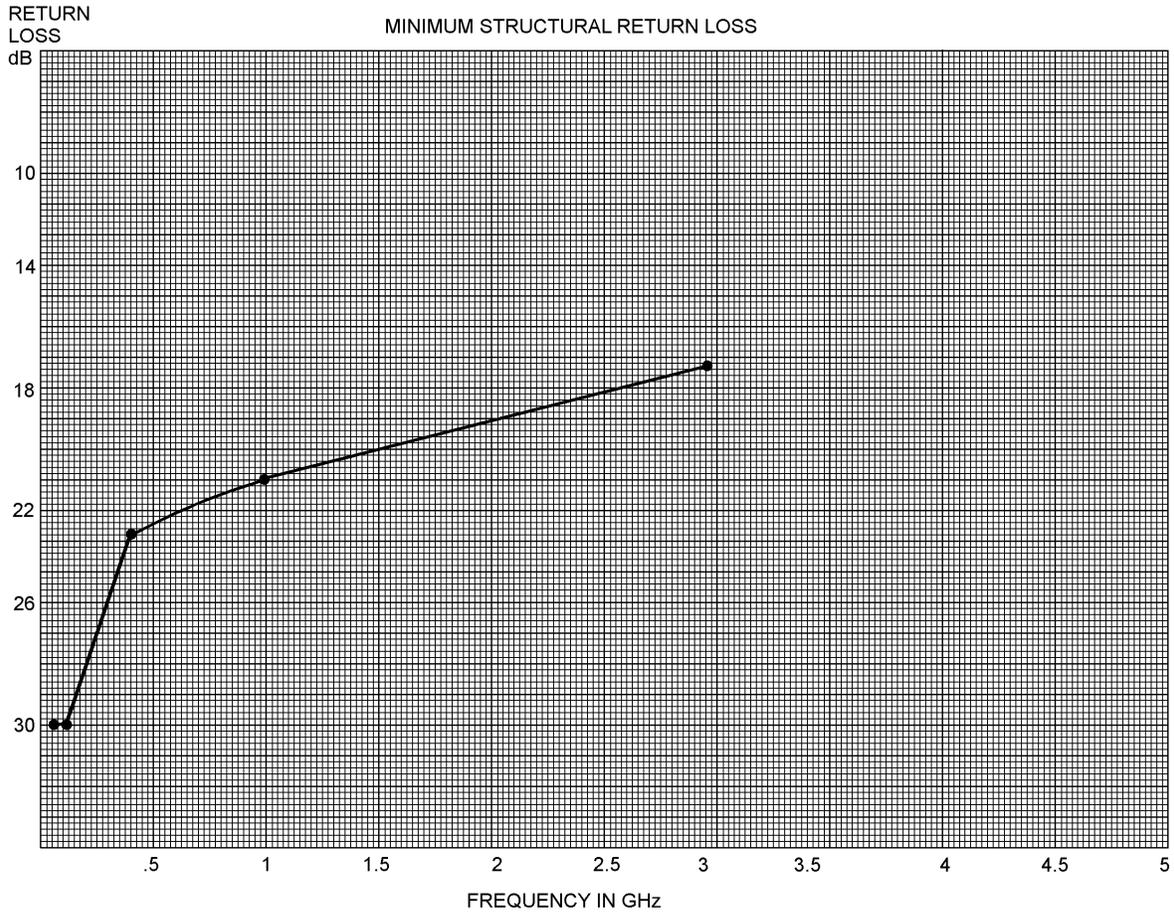
Maximum attenuation at 25°C, sea level ————|———|———|———|

Maximum power at 25°C, sea level —————

Frequency MHz	Attenuation dB	Power Watts
50	7.5	600
100	11	415
400	21	220
1000	35	130
3000	58	78

Tabulated values are for reference only. The values on the chart represent the requirements.

FIGURE 2. Power rating and attenuation.



SWR	REFLECTION COEFFICIENT	RETURN LOSS dB	SWR	REFLECTION COEFFICIENT	RETURN LOSS dB
17.3910	.8913	1	1.3767	.1585	16
8.7242	.7943	2	1.3290	.1413	17
5.8480	.7079	3	1.2880	.1259	18
4.4194	.6310	4	1.2528	.1122	19
3.5698	.5623	5	1.2222	.1000	20
3.0095	.5012	6	1.1957	.0891	21
2.6146	.4467	7	1.1726	.0794	22
2.3229	.3981	8	1.1524	.0708	23
2.0999	.3548	9	1.1347	.0631	24
1.9250	.3162	10	1.1192	.0562	25
1.7849	.2818	11	1.1055	.0501	26
1.6709	.2512	12	1.0935	.0447	27
1.5769	.2239	13	1.0829	.0398	28
1.4985	.1995	14	1.0736	.0355	29
1.4326	.1778	15	1.0653	.0316	30

Structural return loss	
MHz	dB
50	30
100	30
400	23
1000	21
3000	17

Tabulated values are for reference only. The values on the chart represent the requirements.

FIGURE 3. Structural return loss.

Part or Identifying Number (PIN): M17/138-00001.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Referenced documents. In addition to MIL-DTL-17, this document references the following:

MIL-PRF-39012

#### CONCLUDING MATERIAL

Custodians:

Army – CR  
Navy – EC  
Air Force – 85  
DLA - CC

Preparing activity:  
DLA - CC

(Project 6145-2015-025)

Review activities:

Army – AT, CR4, MI  
Navy – AS, MC, OS, SH  
Air Force – 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.