

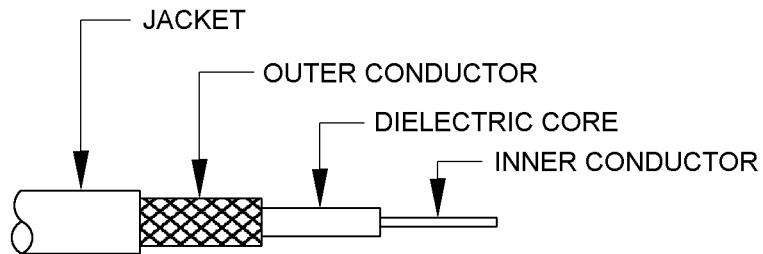
MIL-DTL-17/138B
w/AMENDMENT 1
15 October 2025
SUPERSEDING
MIL-DTL-17/138B
19 June 2015

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.



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/inch², 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:

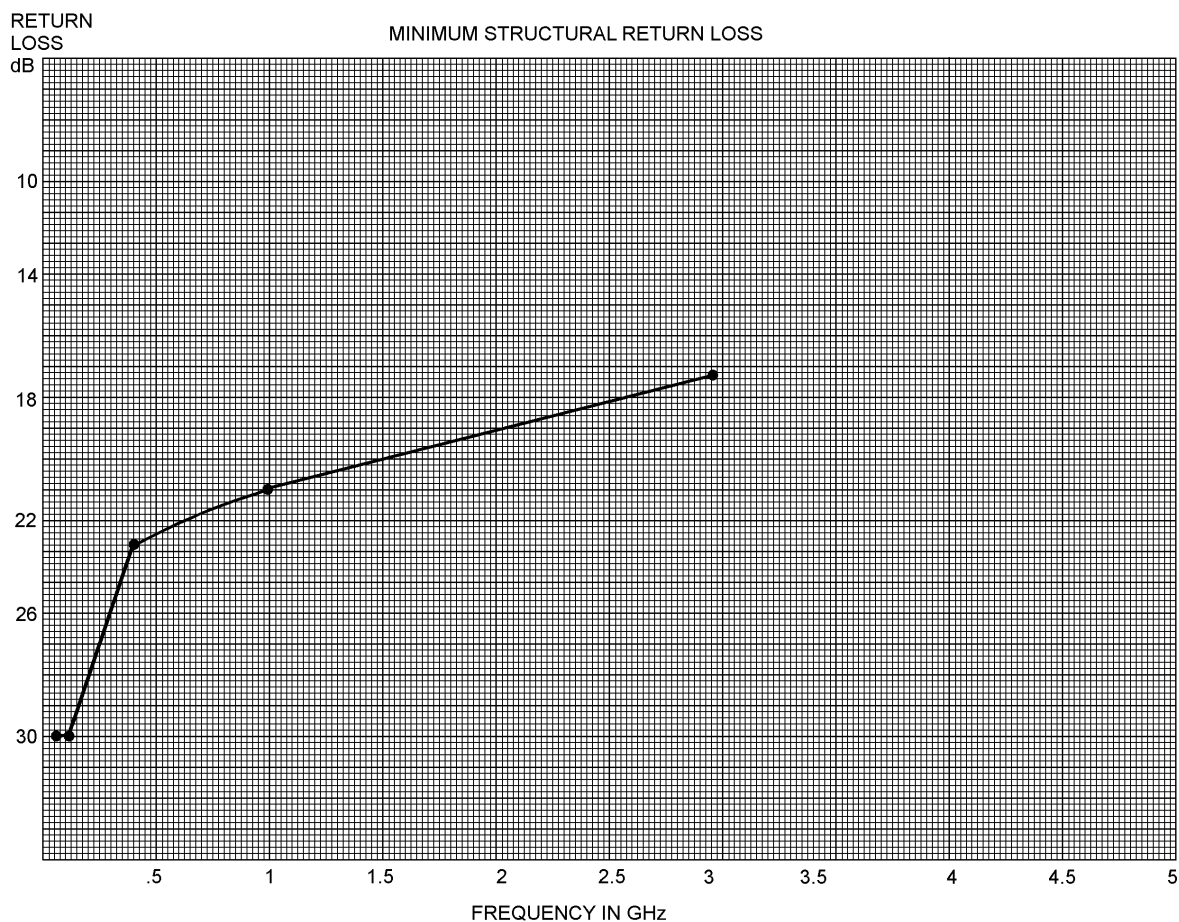
Eccentricity: 10 percent, minimum.
Adhesion of conductors:
 Inner conductor to core: 2 pounds, minimum; 8 pounds, maximum.
Aging stability: Not applicable.
Stress crack resistance: +230° ± 5°C; mandrel size seven times the jacket diameter.
Cold bend: -55° ± 2°C.
Outer conductor integrity: Not applicable.
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.

Marking: Applicable.
Marking Durability: 125 cycles (250 strokes), 1 pound.
Workmanship: Applicable.

Verification: See table II.



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.

TABLE II. Qualification and Group A, B, and C.

Group	Qualification inspection	Requirement paragraph	Test paragraph	Qual- # of Specimens	Conf - # of Specimens	Conformance inspection
I	In-process inspection:		4.5	Entire sample		
	Continuity	3.7.1	4.8.2	Entire sample		
	Spark test	3.7.2	4.8.3	Entire sample		
	Voltage withstanding	3.7.3	4.8.4	Entire sample		
	Insulation resistance	N/A				
	Visual and mechanical inspection	3.6	4.8.1	Entire sample	Per Table VIII	A
	Diameter measurements.	3.6.1	4.8.1.1	Entire sample	Per Table VIII	A
	Out-of-roundness	N/A				
	Eccentricity of inner conductor	3.6.3	4.8.1.3	2	Per Table VIII	A
	Adhesion of conductors	3.6.4	4.8.1.4	4	Per Table VIII	A
	Marking	3.8	4.8.1	Entire sample	Per Table VIII	A
	Marking Durability	3.8.2	4.8.39	3	Per Table VIII	A
	Workmanship	3.10	4.8.1	Entire sample	Per Table VIII	A
II	Corona extinction voltage	3.7.5	4.8.6	1	Per Table VIII	B
	Characteristic impedance	3.7.6	4.8.7	1	Per Table VIII	A
	RF transmission loss (attenuation)	3.7.7	4.8.8	2	Per Table VIII	A
	Standing wave ratio (return loss)	3.7.8	4.8.9	2	Per Table VIII	A
	Capacitance	3.7.9	4.8.10	1	Per Table VIII	B
	Capacitance stability	N/A				
	Capacitance unbalance	N/A				
	Transmission unbalance	N/A				
	Inductance	N/A				
	Mechanically induced noise voltage	N/A				
	Time delay	N/A				
	Aging stability	N/A				

TABLE II. Qualification and Group A, B, and C – Continued.

Group	Qualification inspection	Requirement paragraph	Test paragraph	Qual- # of Specimens	Conf - # of Specimens	Conformance inspection
II	Stress crack resistance	3.7.16	4.8.17	4	Per Table VIII	C
	Outer conductor integrity	N/A				
	Cold bend	3.7.18	4.8.19	3	Per Table VIII	B
	Dimensional stability	3.7.19	4.8.20	1	Per Table VIII	C
	Contamination	N/A				
	Bendability	N/A				
	Flammability	N/A				
	Flame propagation	N/A				
	Acid gas generation	N/A				
	Halogen content	N/A				
	Immersion	N/A				
	Smoke index	N/A				
	Toxicity index	N/A				
	Durometer hardness	N/A				
	Weathering	N/A				
	Abrasion resistance	N/A				
	Tear strength	N/A				
	Heat distortion	N/A				
	Physicals	N/A				
	Tensile strength and elongation	N/A				
	Weight	3.9	4.8.24	1	Per Table VIII	B

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

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

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 6145-2025-024)

Review activities:

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

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>.