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 complete requirements for procuring the cable described herein shall consist of this document and the latest issue of Specification MIL-C-17.

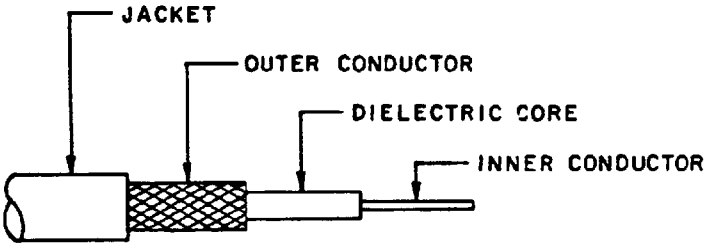


FIGURE 1. Configuration.

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 ±.0010.
Dielectric core	Type F-1: Solid extruded PTFE. Diameter: .060 inch ±.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 ±10%
Jacket	Type XIII. Diameter: .098 inch ±.004.

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° 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 $klb_f/inch^2$, minimum.

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

REQUIREMENTS:

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

Environmental and mechanical:

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.

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, +25 percent, -0 percent.

Voltage withstanding: 2,000 Vrms, minimum.

Insulation resistance: Not applicable.

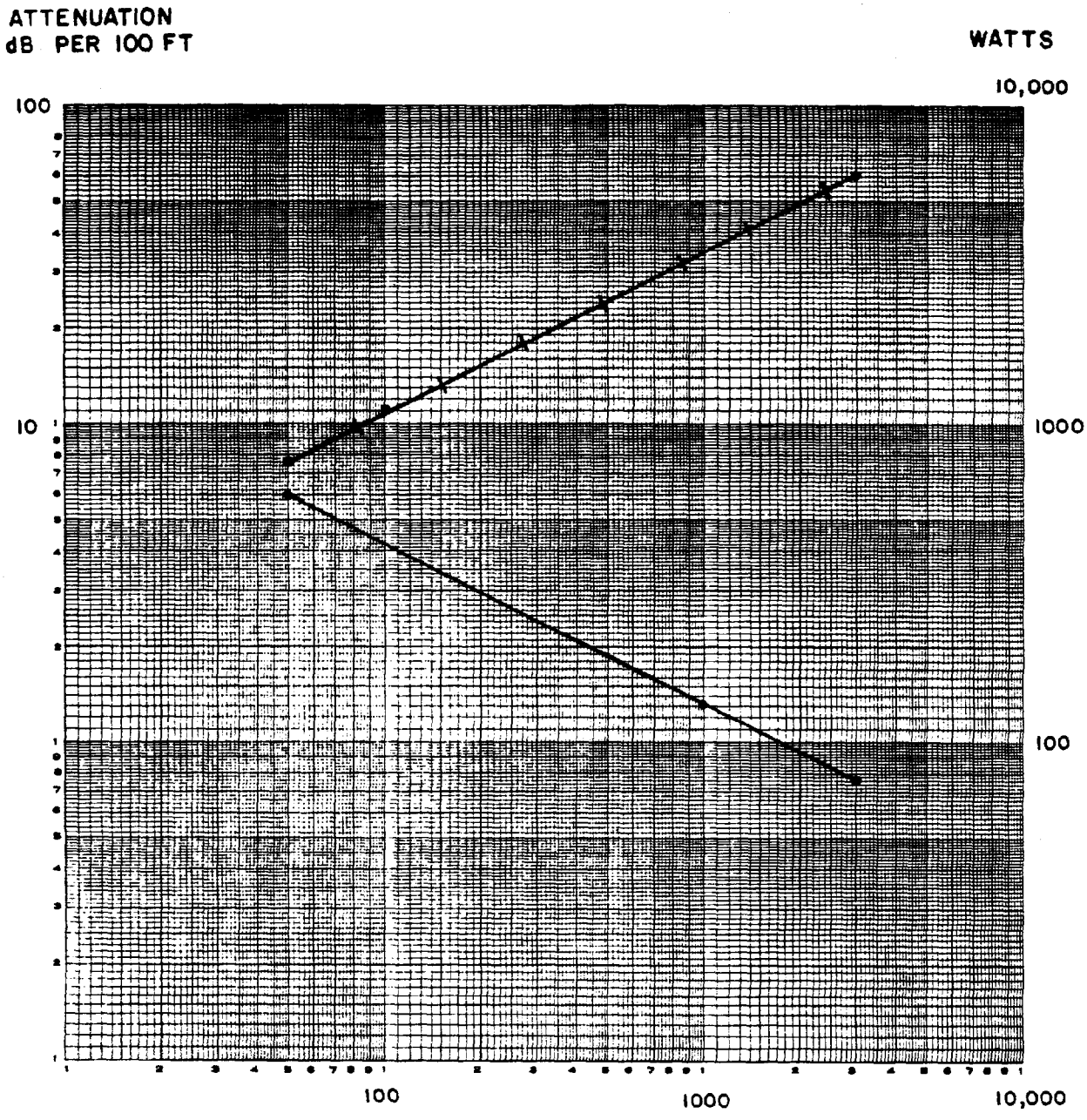
Corona extinction voltage: 1,200 Vrms, minimum.

Characteristic impedance: 50 ±2 ohms.

Attenuation: See figure 2.

Structural return loss: See figure 3.

Capacitance: 32 pF per foot, maximum.



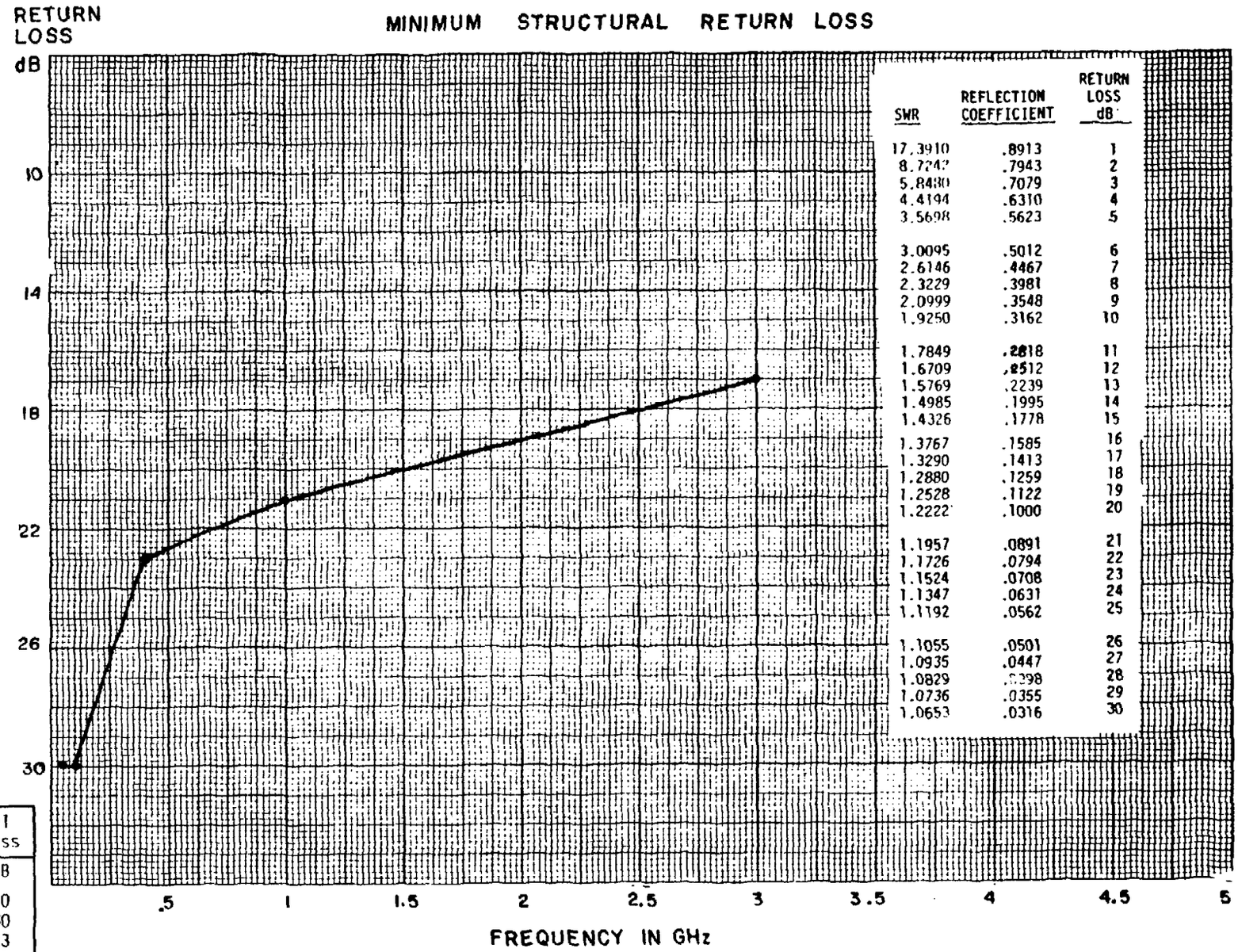
Maximum attenuation at 25°C, sea level

Maximum power at 25°C, sea level

Frequency MHz	Attenuation dB	Power Watts
50	7.5	600
100	11	415
400	21	220
1000	38	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
17.3910	.8913	1
8.7242	.7943	2
5.8480	.7079	3
4.4194	.6310	4
3.5698	.5623	5
3.0095	.5012	6
2.6146	.4467	7
2.3229	.3981	8
2.0999	.3548	9
1.9250	.3162	10
1.7849	.2818	11
1.6709	.2512	12
1.5769	.2239	13
1.4985	.1995	14
1.4326	.1778	15
1.3767	.1585	16
1.3290	.1413	17
1.2880	.1259	18
1.2528	.1122	19
1.2222	.1000	20
1.1957	.0891	21
1.1726	.0794	22
1.1524	.0708	23
1.1347	.0631	24
1.1192	.0562	25
1.1055	.0501	26
1.0935	.0447	27
1.0829	.0398	28
1.0736	.0355	29
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.

Capacitance unbalance: Not applicable.

Transmission unbalance: Not applicable.

Mechanically induced noise voltage: Not applicable.

Time delay: Not applicable.

Contamination: Not applicable.

Part number: M17/138-00001.

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

Custodians:
Army - CR
Navy - EC
Air Force - 85

Review activities:
Army - AR, MI
Navy - SH, EC
Air Force - 11, 17, 99
DLA - ES, IS

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

Preparing activity:
Army - CR

Agent:
DLA - ES

(Project 6145-0760)