

MILITARY SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, FLEXIBLE, TRIAXIAL, 50 OHMS, M17/131-RG403

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.

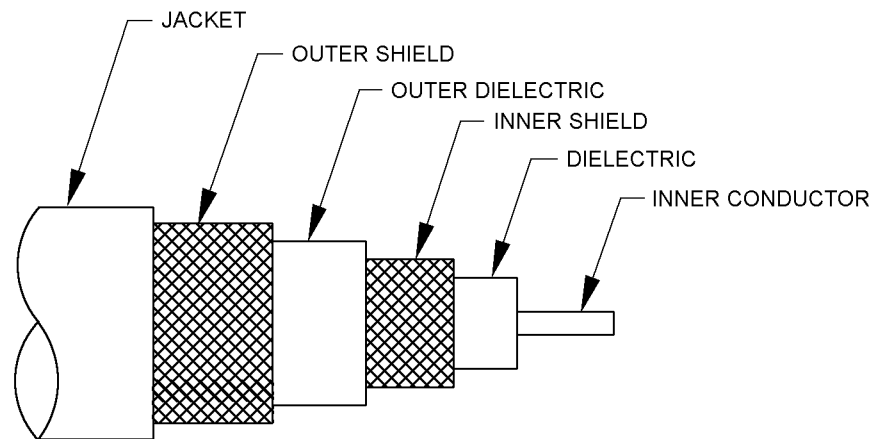


FIGURE 1. Configuration.

TABLE I. Description.

Components	Construction details
Inner conductor	Seven strands of AWG size 38 silver-coated, copper-covered steel. Overall diameter: .012 inch nominal.
Dielectric	Type F-1. Overall diameter: .033 ± .002 inch.
Inner shield	Silver-coated, AWG size 38 copper wire. Overall diameter: .048 - .054 inch. Coverage: 95.9% nominal Carriers: 16 Ends: 3 Picks/inch: 25.0 ± 10%
Outer dielectric	Type M-1. Overall diameter: .068 - .080 inch.
Outer shield	Silver-coated, AWG size 38 copper wire. Overall diameter: .084 - .098. Coverage: 95.9% nominal Carrier: 16 Ends: 6 Picks/inch: 13.4 ± 10%
Outer jacket	Type IX. Overall diameter: .104 - .128 inch. Wall thickness: .010 inch minimum.



ENGINEERING INFORMATION:

Continuous working voltage:

750 V rms, minimum, inner conductor to inner shield.

300 V rms, minimum, inner shield to outer shield.

Operating frequency: 10 GHz, maximum.

Velocity of propagation: 69.5%, nominal.

Power rating: See figure 2.

Operating temperature range: -55°C to +200°C.

Inner conductor properties:

DC resistance (maximum at 20°C): 24.45 ohms per 100 feet.

Elongation: 10 percent, minimum.

Tensile strength: 50 klbf/inch², minimum.

Engineering notes: This cable is useful in high temperature applications.

REQUIREMENTS:

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

Environmental and mechanical:

Visual and mechanical examination:

Out-of-roundness: Not applicable.

Eccentricity: Not applicable.

Adhesion of conductors:

Inner conductor to core: 1.5 pounds, minimum; 4 pounds, maximum.

Electrical and mechanical:

Operational:

Continuity: Applicable.

Spark test: 2,000 V rms +25 percent, -0 percent.

Voltage withstanding:

2,000 V rms, minimum, inner conductor to inner shield.

1,000 V rms, minimum, inner shield to outer shield.

Insulation resistance: Not applicable.

Corona extinction voltage: 1,000 V rms, minimum, inner conductor to inner shield.

Characteristic impedance: 50 ohms $\pm$ 2 ohms.

RF transmission loss (attenuation): 37 dB maximum at 400 MHz.

(This test is performed with the shield connected).

Standing wave ratio (return loss): See figure 3. (This test is performed with the shield connected).

Capacitance: 30.2 pF/ft, maximum, inner conductor to inner shield.

160 pF/ft, maximum, inner shield to outer shield.

Capacitance stability: Not applicable.

Capacitance unbalance: Not applicable.

Transmission unbalance: Not applicable.

Mechanically induced noise voltage: Not applicable.

Time delay: Not applicable.

Aging stability: Not applicable.

Stress-crack resistance: +230° $\pm$ 5°C for 96 hours.

Outer conductor integrity: Not applicable.

Cold bend: -55° $\pm$ 2°C.

Dimensional stability: $+200^{\circ} \pm 5^{\circ}\text{C}$.

Inner conductor from core: .062 inch, maximum.

Inner conductor from jacket: .125 inch, maximum.

Contamination: Not applicable.

Bendability: Not applicable.

Flammability: Not applicable.

Flame propagation: Not applicable.

Acid gas generation: Not applicable.

Halogen: Not applicable.

Immersion tests: Not applicable.

Smoke index: Not applicable.

Toxicity index: Not applicable.

Durometer hardness: Not applicable.

Weathering: Not applicable.

Abrasion resistance: Not applicable.

Tear strength: Not applicable.

Heat distortion: Not applicable.

Physicals (aged): Not applicable.

Tensile strength and elongation: Not applicable.

Marking: See table II.

Weight: 1.65 pounds per 100 feet, maximum.

Workmanship: Not applicable.

Part or Identifying Number (PIN): M17/131-RG403.

Marking: Applicable.

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

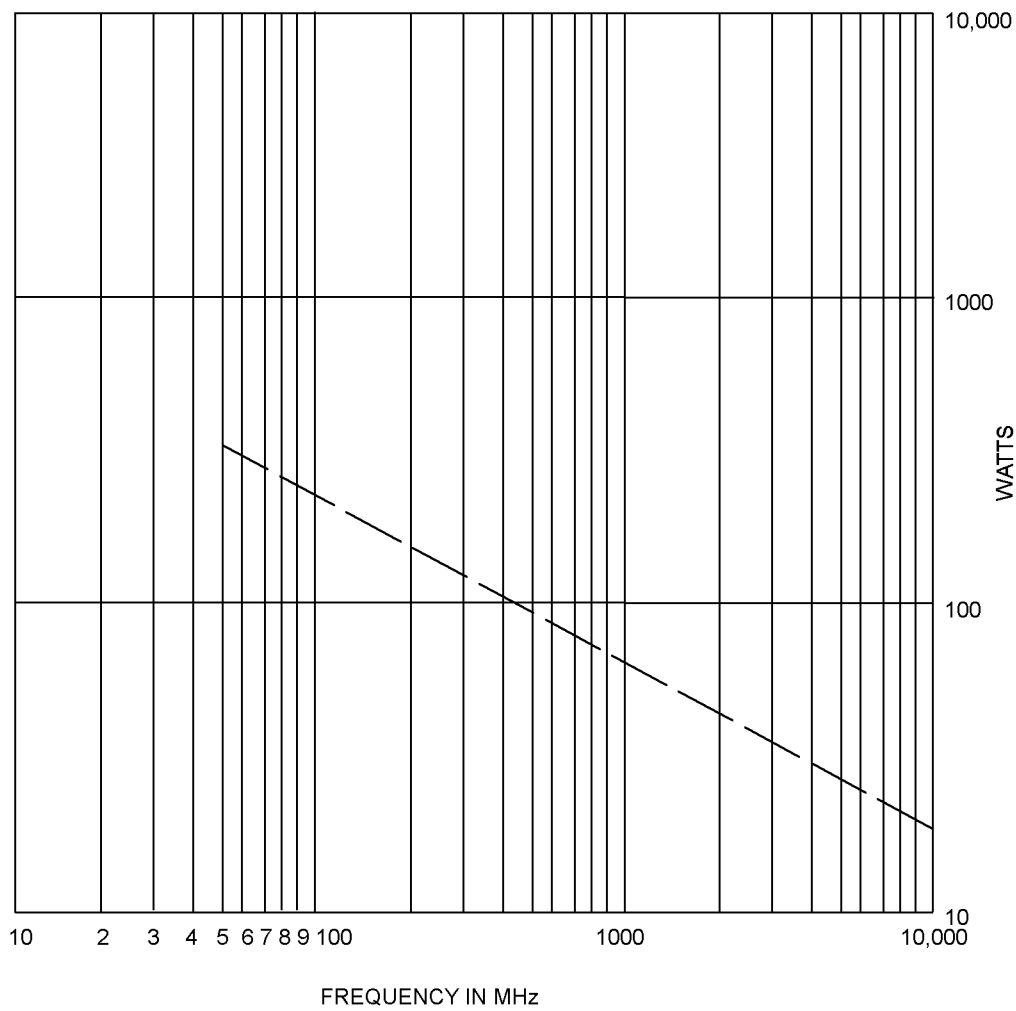
Workmanship: Applicable.

Supersession data: See table II.

Verification: See table III.

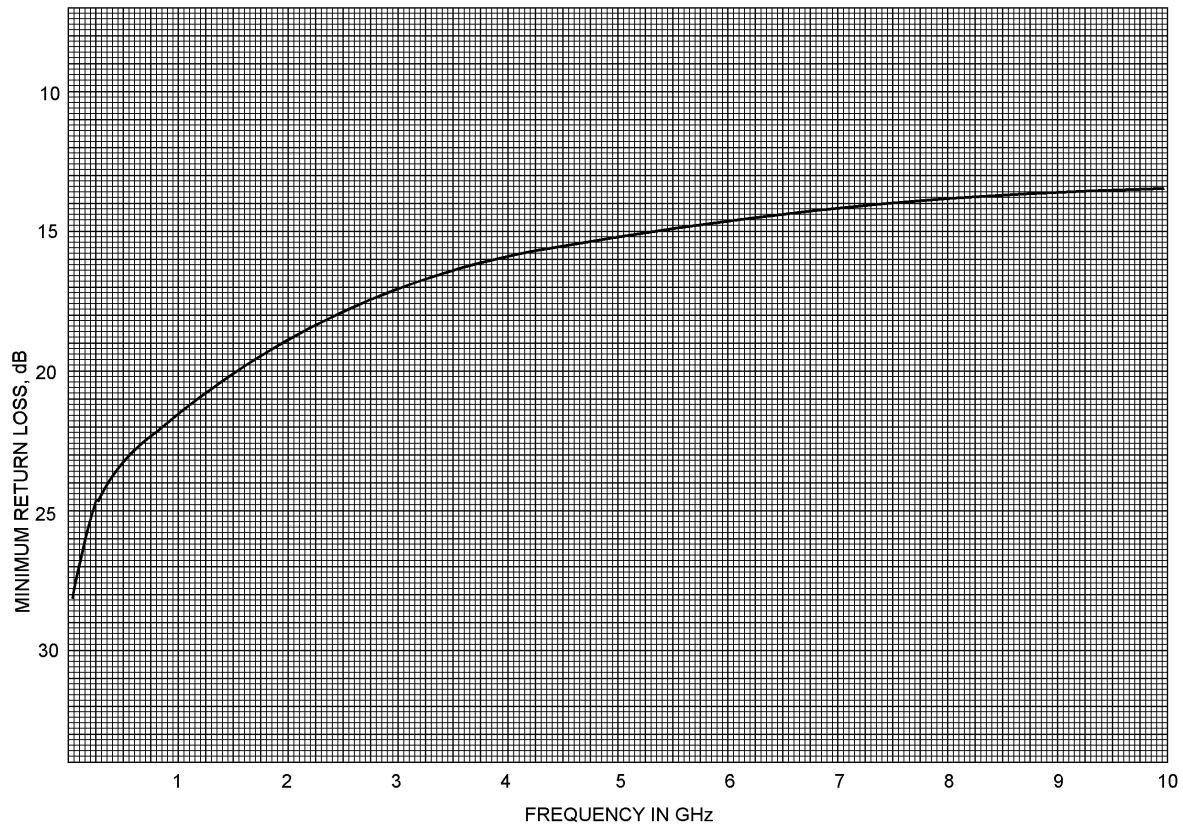
TABLE II. Cross reference of PIN.

PIN	Superseded PIN or type designation
M17/131-RG403	RG-403/U



POWER
WATTS
290
200
95
60
34
18

FIGURE 2. Power rating.



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	28
100	27
400	24
1000	22
3000	17
10000	14

FIGURE 3. Structural return loss.

TABLE III. 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 III. 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

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. This document references MIL-DTL-17.

CONCLUDING MATERIAL

Custodians:

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

Preparing activity:
DLA - CC

(Project 6145-2025-021)

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>.