

DETAIL SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, 50 OHMS, M17/111-RG303

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.

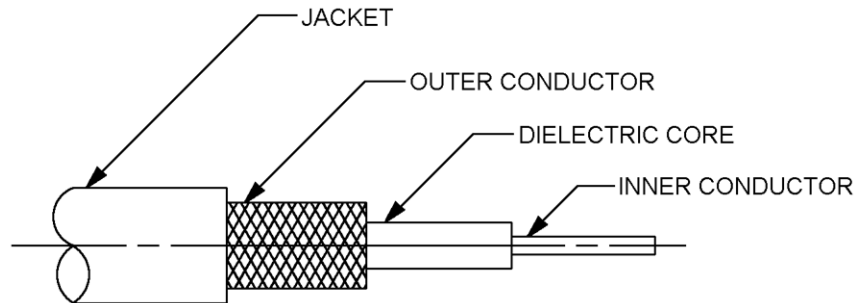


FIGURE 1. Configuration.

TABLE I. Description.

Components	Construction details
Inner conductor	Solid, silver-coated, copper-covered steel wire. Diameter: 0.037 inch $\pm$ 0.001
Dielectric core	Type F-1: Solid extruded PTFE Diameter: .116 inch $\pm$ 0.005
Outer conductor	Single braid of AWG No. 36 silver-coated, copper wire. Diameter: 0.146 inch maximum Coverage: 94.8% nominal Carriers: 16 Ends: 7 Picks/inch: 11.5 $\pm$ 10%
Jacket	Type IX: FEP Diameter: 0.170 inch $\pm$ 0.005

ENGINEERING INFORMATION

Continuous working voltage: 1,400 V rms, maximum.

Operating frequency: 3 GHz, maximum.

Velocity of propagation: 69.5 percent, nominal.

Power rating: See figure 2.

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

Inner conductor properties:

DC resistance (maximum at 20°C): 1.95 ohms per 100 feet.

Elongation: 1 percent, minimum.

Tensile strength: 110 klb_f/inch², minimum.

Engineering notes: This cable is useful in general purpose, high temperature applications. (See connector series "TNC" and "BNC" in accordance with MIL-PRF-39012. NATO preferred type NWR-30.)

REQUIREMENTS:

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

Environmental and mechanical:

Visual and mechanical examination: Applicable

Diameter: Applicable.

Out-of-roundness: Not Applicable.

Eccentricity: 10 percent, maximum.

Adhesion of conductors: Inner conductor to core: 4 pounds, minimum; 15 pounds, maximum.

Electrical and mechanical:

Continuity: Applicable.

Spark test: 2,000 V rms, +10%, -0%.

Voltage withstanding: 5,000 V rms, +10%, -0%.

Insulation resistance: Not applicable.

Corona extinction voltage: 1,900 V rms, minimum.

Characteristic impedance: 50 ± 2 ohms.

RF transmission loss (attenuation): See figure 2.

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Standing wave ratio (return loss): See figure 3. Minimum cable length 7 feet.

Capacitance: 32 pF per foot, maximum.

Capacitance stability:	Not applicable.
Capacitance unbalance:	Not applicable.
Transmission unbalance:	Not applicable.
Inductance:	Not applicable.
Mechanically induced noise:	Not applicable.
Time delay:	Not applicable.
Aging stability:	Not applicable.

Stress crack resistance: +230°C ± 5°C. Mandrel size: Seven times the jacket diameter.

Outer conductor integrity: Not applicable.

Cold bend: -55°C ± 2°C.

Dimensional stability: +200°C ± 5°C.

Inner conductor from core: 0.125 inch, maximum.

Inner conductor from jacket: 0.187 inch, maximum.

Contamination:	Not applicable.
Bendability:	Not applicable.

Flammability: Applicable.

Flame propagation:	Not applicable.
Acid gas generation:	Not applicable.
Halogen:	Not applicable.
Fluid immersion:	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:	Not applicable.

Tensile strength and elongation: Not applicable.

Weight: 0.031 pound per foot, maximum.

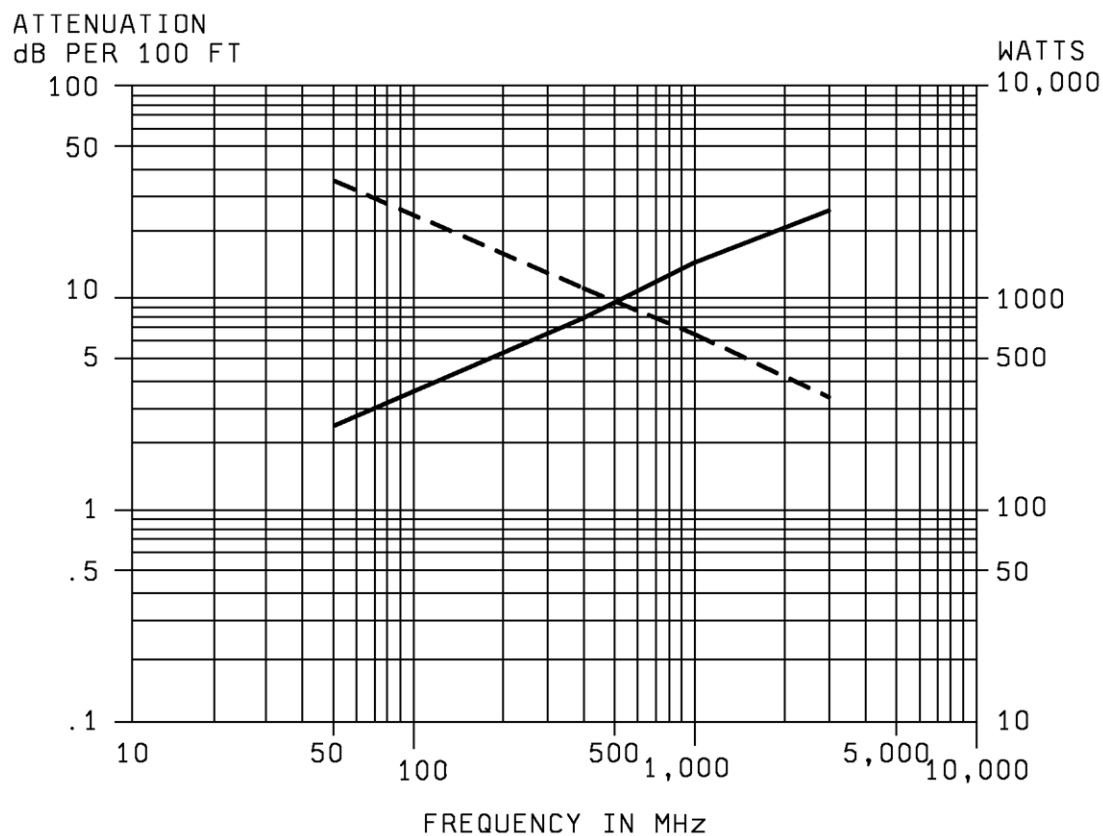
Marking: Applicable.

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

Workmanship: Applicable.

Part or Identifying Number (PIN): M17/111-RG303.

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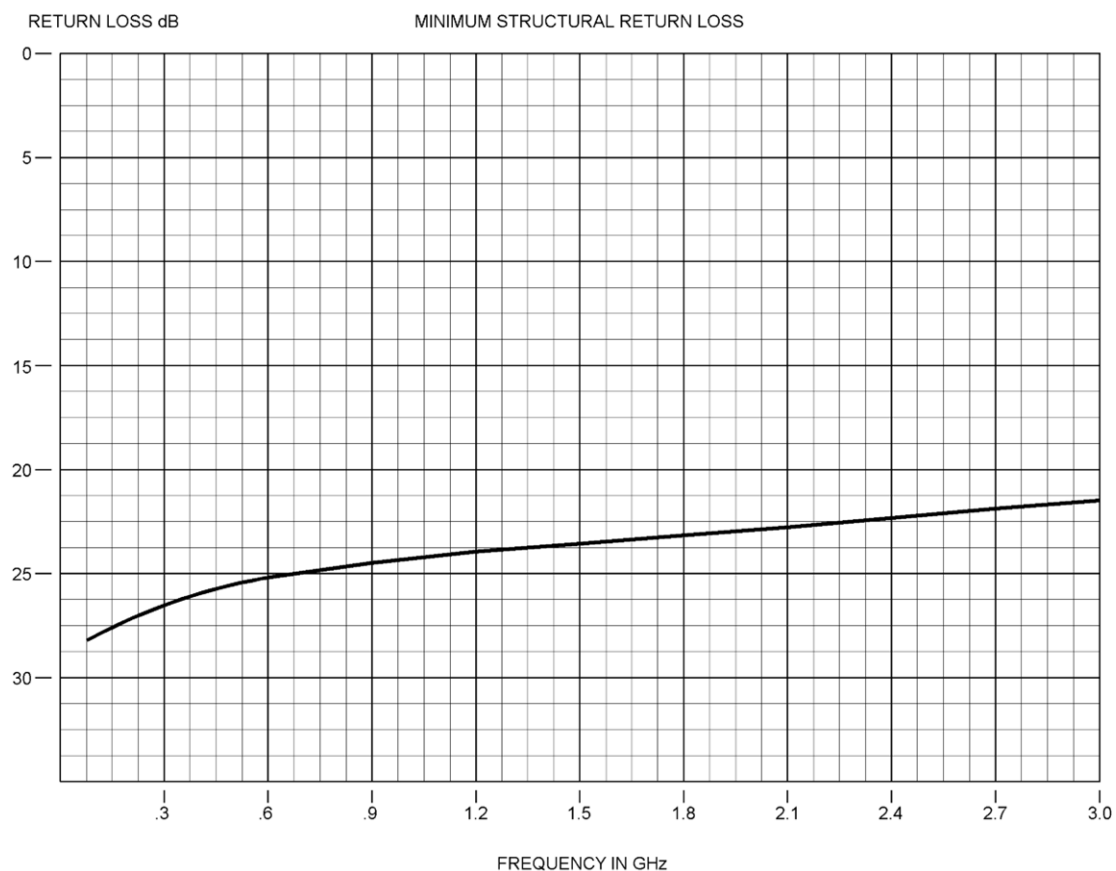


Tabulated values are for references only.
The values on the chart represent the requirements.
Maximum attenuation at 25°C, sea level _____
Maximum power at 25°C, sea level - - - - -

Frequency MHz	Attenuation dB	Power watts
50	2.7	3800
400	8.6	1100
1000	15	630
3000	28	370

FIGURE 2. Power rating and attenuation.

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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

FIGURE 3. Structural return loss.

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

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				

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TABLE II. Qualification and Group A, B, and C Table - 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	3.7.22	4.8.23	1	Per Table VIII	C
	Flame propagation	N/A				
	Acid gas generation	N/A				
	Halogen content	N/A				
	Immersion tests	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 (aged)	N/A				
	Tensile strength and elongation	N/A				
	Weight	3.9	4.8.24	1	Per Table VIII	B

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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 6145-2024-002)

Review activities:

Army – AR, AT, CR4
Navy – AS, MC, OS
Air Force – 19
DLA – CQ

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>.