

DETAIL SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL,
50 OHMS, UNARMORED M17/74-RG213,
AND ARMORED M17/74-RG215

Inactive for new design after 13 August 1993. For
new design use MIL-DTL-17/189.

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.

NOTE: This cable uses PVC material and is not to be used in enclosed environments or shipboard
applications. The replacements that are to be used in enclosed areas or shipboard applications are
referenced in the following table.

The Air Force has restricted use of PVC in aerospace and ground support applications.

Cables listed on the current QPL may continue to be manufactured and supplied for existing
enclosed applications only for a period not to exceed 3 years from the date of this specification.

TABLE I. Cross-reference data.

Current Part or Identifying Number (PIN)	Replacement PIN
M17/74-RG213	M17/189-00001
M17/74-RG215	M17/189-00002

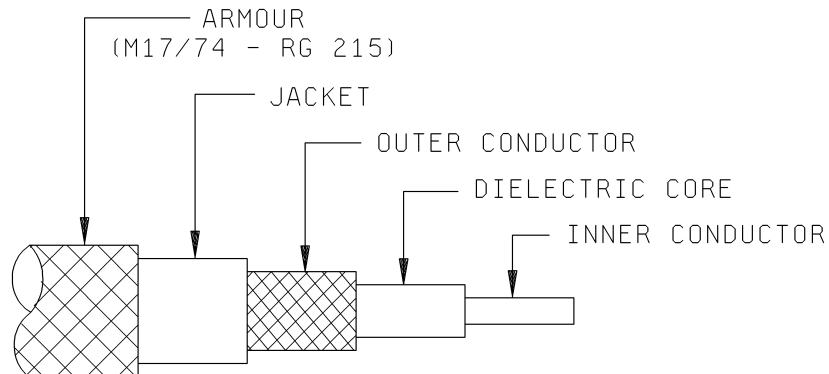


FIGURE 1. Configuration.

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TABLE II. Description.

Components	Construction details
Inner conductor	Seven strands of bare copper wire, each strand 0.0296 inch diameter. Overall diameter: 0.0888 inch $\pm$ 0.0010.
Dielectric core	Type A-1: Solid, polyethylene. Diameter: 0.285 inch $\pm$ 0.007.
Outer conductor	Double braid of AWG #33, bare copper wire. Diameter: 0.340 inch maximum. Coverage: 95.3% nominal Carriers: 24 Ends: 8 Picks/inch: 6.5 $\pm$ 10%
Jacket	Type IIa: PVC. Diameter: 0.405 inch $\pm$ 0.007.
Armored M17/74-RG215	Single braid of aluminum-alloy wire. Diameter: 0.475 inch maximum.

ENGINEERING INFORMATION

Continuous working voltage: 3,700 V rms, maximum.

Operating frequency: 1 GHz, maximum.

Velocity of propagation: 65.9 percent, nominal.

Power rating: See figure 2.

Operating temperature range: -40°C to +85°C.

Inner conductor properties:

DC resistance (maximum at +20°C): 0.176 ohm per 100 feet.

Elongation: 25 percent, minimum.

Tensile strength: Not applicable.

Engineering notes: This cable useful in general purpose medium low temperature applications. (See connector series "N", "C" and "SC" in accordance with MIL-PRF-39012. For M17/74-RG213, NATO preferred type NWR-1; for M17/74-RG215, NATO preferred type NWR-17.)

REQUIREMENTS

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

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: 9 pounds, minimum; 90 pounds, maximum.

Electrical and mechanical:

Continuity: Applicable.

Spark test: 5,000 V rms, +10%, -0%.

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

Insulation resistance: Not applicable.

Corona extinction voltage: 5,000 V rms, minimum.

Characteristic impedance: 50 ohms $\pm$ 2.

RF transmission loss (attenuation): See figure 2.

Standing wave ratio (return loss): See figure 3.

Capacitance: 32.2 pF per foot, maximum.

Capacitance stability: Not applicable.

Capacitance unbalance: Not applicable.

Transmission unbalance: Not applicable.

Inductance: Not applicable.

Mechanically induced noise voltage: Not applicable.

Time delay: Not applicable.

Aging stability: +98°C $\pm$ 2°C.

Stress crack resistance: Not applicable.

Outer conductor integrity: Not applicable.

Cold bend: -40°C $\pm$ 2°C.

Dimensional stability: +85°C $\pm$ 2°C.

Inner from conductor core: 0.062 inch, maximum.

Inner conductor from jacket: 0.125 inch, maximum.

Contamination: Applicable.

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Bendability: Not applicable.
Flammability: Not applicable.

Flame propagation: Not applicable.
Acid gas generation: Not applicable.
Halogen content: Not applicable.
Immersion test: 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.
Physical: Not applicable

Tensile strength and elongation: Not applicable.

Weight:

M17/74-RG213: 0.111 pound per foot, maximum.
M17/74-RG215: 0.138 pound per foot, maximum.

Marking: Applicable.

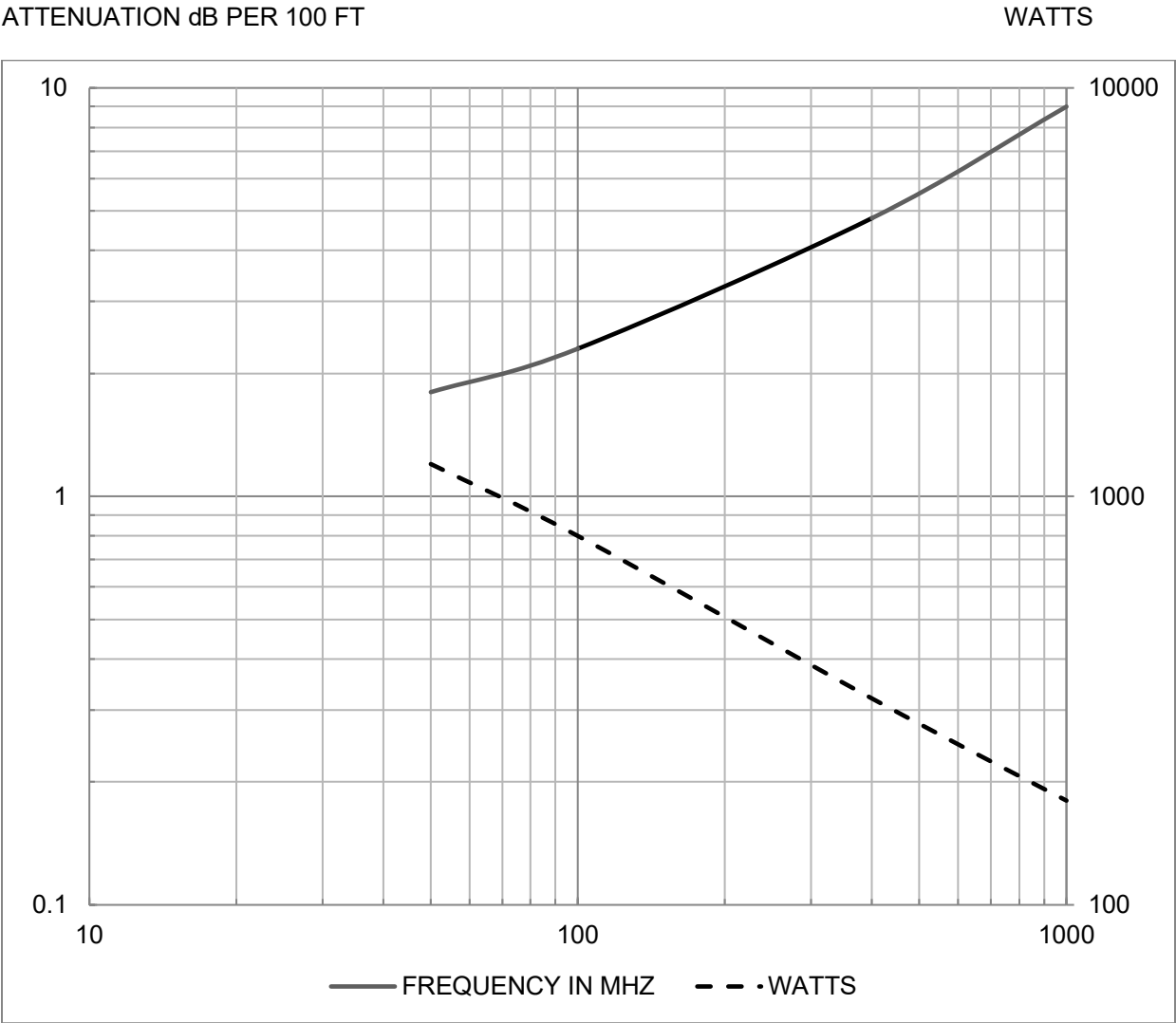
Workmanship: Applicable.

PIN: M17/74-RG213 and M17/74-RG215. See table I.

Supersession date: See table III.

TABLE III. Cross-reference of PIN.

PIN	Superseded PIN
M17/74/RG213	-----
M17/74-RG215	RG-215/U; RF-10A/U per MIL-C-17/5 (canceled)



FREQUENCY IN MHz

Maximum attenuation —————

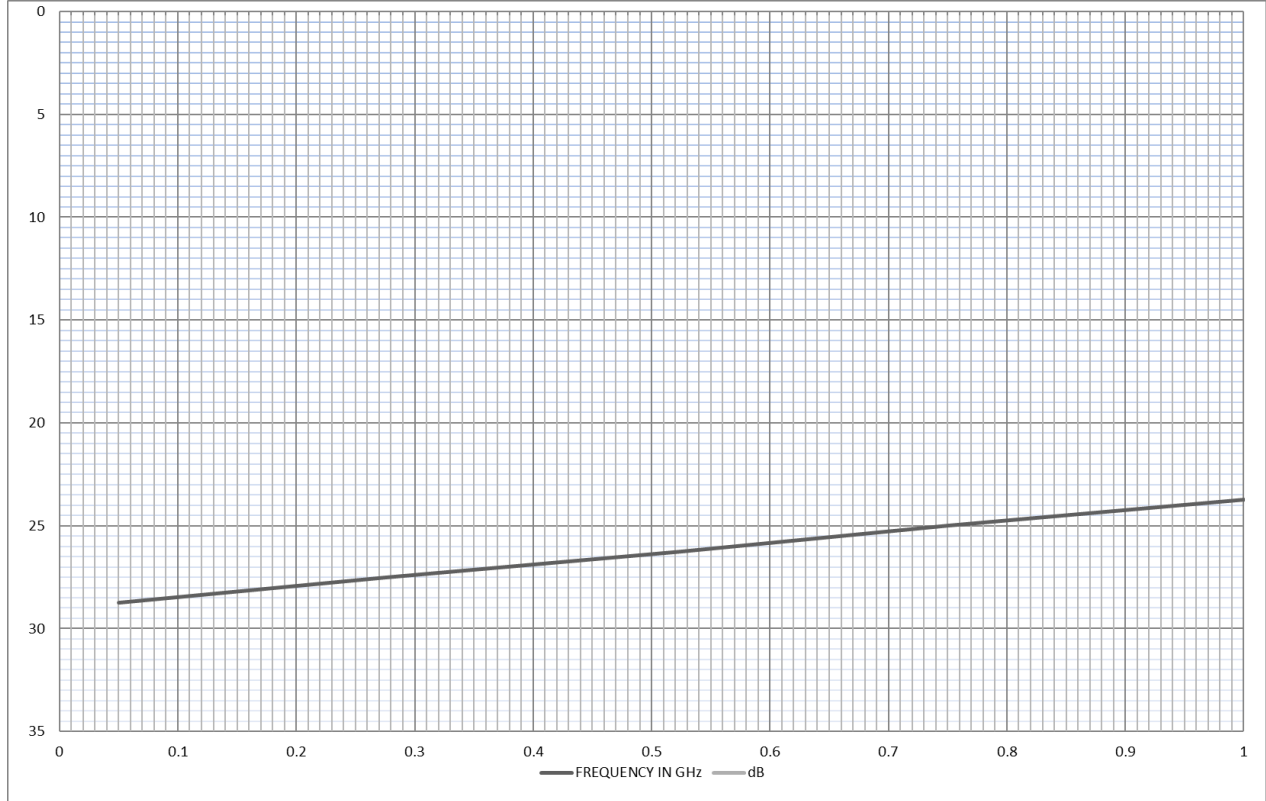
Maximum power at 25°C, sea level - - - - -

MHz	Attenuation	
	dB	POWER WATTS
50	1.8	1200
100	2.3	800
400	4.8	320
1000	9	180

FIGURE 2. Power rating and attenuation.

MINIMUM STRUCTURAL RETURN LOSS

RETURN LOSS dB



FREQUENCY IN GHz

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
	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				

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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	Time delay	N/A				
	Aging stability	3.7.15	4.8.16	4	Per Table VIII	C
	Stress crack resistance	N/A				
	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	3.7.20	4.8.21	1	Per Table VIII	C
	Bendability	N/A				
	Flammability	N/A				
	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
MIL-DTL-17/189

CONCLUDING MATERIAL

Custodians:

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

Preparing activity:
DLA - CC

(Project 6145-2021-009)

Review activities:

Army – AT, CR4
Navy – AS, MC, OS
Air Force – 19
DLA - IS

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>.