

INCH-POUND

MIL-DTL-17/75F
w/AMENDMENT 3
20 April 2016
SUPERSEDING
MIL-DTL-17/75F
w/AMENDMENT 2
23 February 2010

DETAIL SPECIFICATION SHEET

CABLE, RADIO FREQUENCY, FLEXIBLE, COAXIAL,
50 OHMS, M17/75-RG214 AND M17/75-RG365

Inactive for new design after 27 March 2015.

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

NOTE: The cable that uses PVC material 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.

Cable using PVC material 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.

The requirements for acquiring the product described herein shall consist
of this specification sheet and MIL-DTL-17.

TABLE I. Cross-reference data.

Current Part or Identifying Number (PIN)	Replacement PIN
M17/75-RG214	M17/190-00001

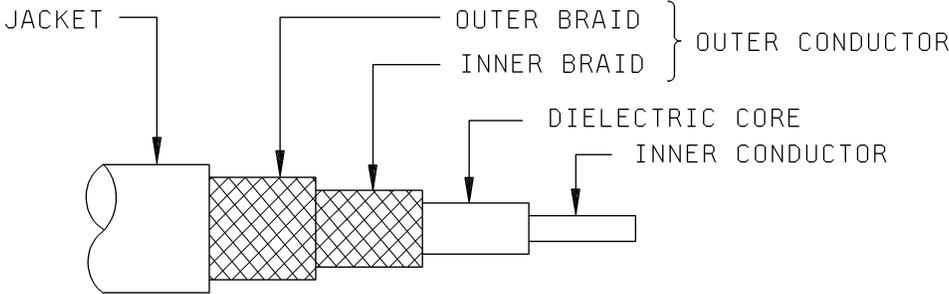


FIGURE 1. Configuration.



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TABLE II. Description.

Components	Construction details
Inner conductor	Seven strands of silver-coated copper wire, each strand .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 #34 silver-coated copper wire. Diameter: 0.360 inch maximum.
Inner braid	Coverage: 95.7% nominal Carriers: 24 Ends: 6 Picks/inch: 16.6 \pm 10%
Outer braid	Coverage: 98.0% nominal Carriers: 24 Ends: 7 Picks/inch: 15.4 \pm 10%
Jacket	For M17/75-RG214 - Type IIa: PVC Diameter: 0.425 inch \pm 0.007. For M17/75-RG365 – Low temperature, light weight, Styrene Black copolymer, or equivalent, thermal plastic elastomer (TPE). Diameter: .425 inch \pm 0.007.

ENGINEERING INFORMATION

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

Operating frequency: 11 GHz, maximum.

Velocity of propagation: 65.9 percent, nominal.

Power rating: See figure 2.

Operating temperature range:

M17/75-RG214: -40°C to +85°C.

M17/75-RG365: -55°C to +85°C.

Inner conductor properties:

DC resistance (maximum at 20°C): 0.173 ohm per 100 feet.

Elongation: 25 percent, minimum.

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.) NATO preferred type NWR-35.

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REQUIREMENTS

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

Environmental and mechanical:

Visual and mechanical examination:

Out-of-roundness: Applicable.

Eccentricity: 10 percent, maximum.

Adhesion of conductors:

Inner conductor to core: 10 pounds, minimum; 50 pounds, maximum.

Aging stability: $+98^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

Stress crack resistance: Not applicable.

Outer conductor integrity: Not applicable.

Cold bend:

M17/75-RG214: -40°C to $\pm 2^{\circ}\text{C}$.

M17/75-RG365: -55°C to $\pm 2^{\circ}\text{C}$.

Dimensional stability: $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

Inner conductor from core: 0.062 inch, maximum.

Inner conductor from jacket: 0.125 inch, maximum.

Contamination: Applicable.

Bendability: Not applicable.

Flammability: Not applicable.

Weight: 13.8 pounds per 100 feet, maximum.

Cold stiffness (M17/75-RG365 only): Shall drop .5 inch minimum with 1.5 ounces maximum applied. To be performed prior to the cold bend test (see qualification and group C inspection tables).

Procedure: Place two straight specimens, approximately 1.5 feet long each (cut from the sample cable) on a horizontal surface. One edge of the surface shall form a semi-cylindrical surface (to act as a bend mandrel) of radius equal to 10 times the nominal outside diameter of the cable specimen. The longitudinal axis of each specimen shall be at a right angle to the horizontal mandrel edge. The test specimens and apparatus shall be placed in a cold chamber and shall be conditioned at -55°C for at least 20 hours. After the conditioning period, and at -55°C , each specimen shall be positioned so that a 12 inch length extends beyond the horizontal mandrel edge. The specimens shall then be clamped to the horizontal surface so that there is a distance of 15 inches from the clamp edge to the end of the specimen extending beyond the horizontal surface.

Weights: 1.5 ounces maximum (vertical load) shall be applied to the extended end of the specimen. The weight which causes the end of the specimen to drop more than .5 inch from the horizontal plane shall be recorded.

Electrical:

Test frequency: 50 MHz to 11 GHz.

Spark test: 5,000 V rms, +25%, -0%.

Voltage withstanding: 10,000 V rms, minimum.

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

Characteristic impedance: 50 ohms ± 2 .

Attenuation: See figure 2.

Structural return loss: See figure 3.

Capacitance: 32.2 pF per foot, maximum.

Capacitance unbalance: Not applicable.

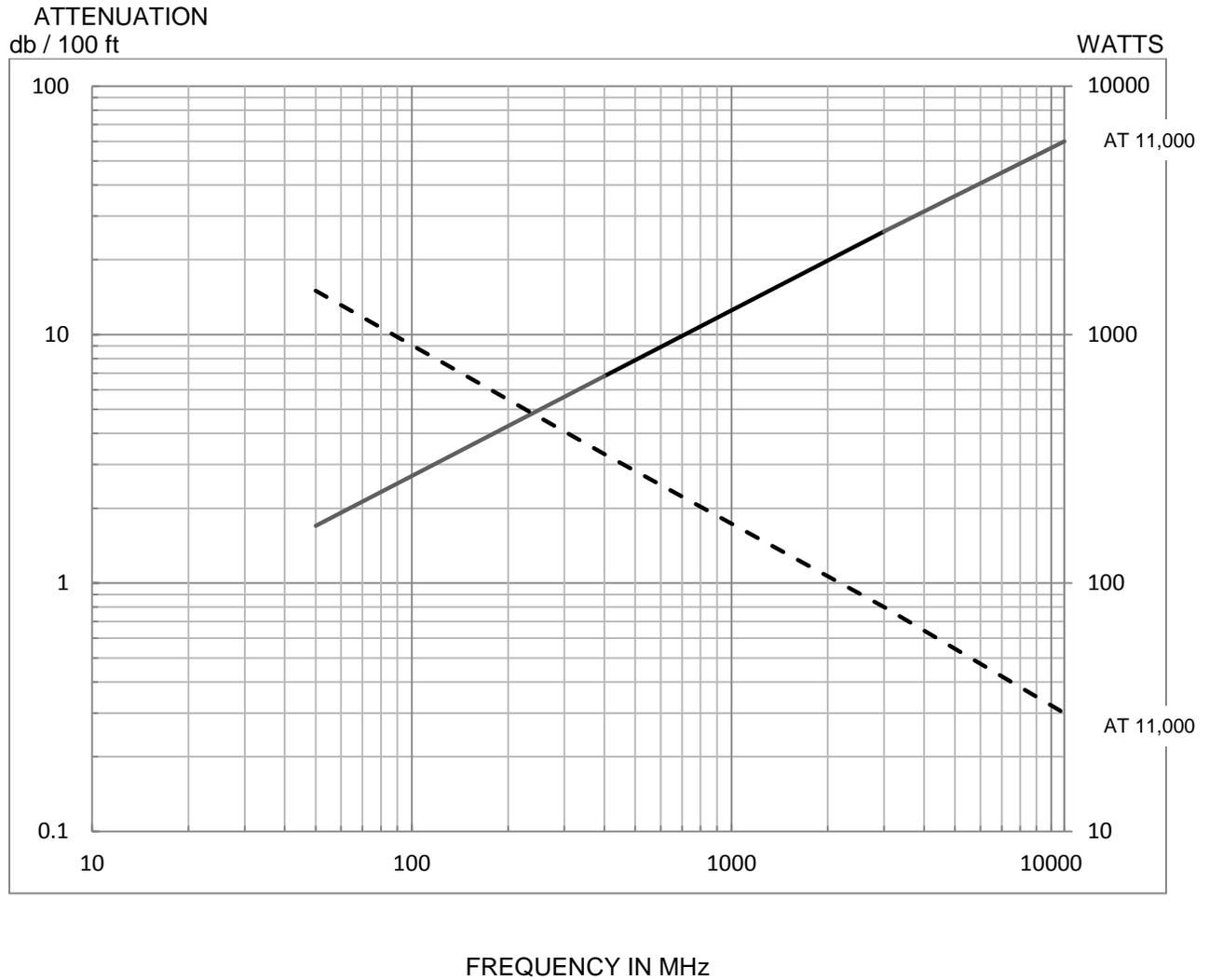
Transmission unbalance: Not applicable.

Mechanically induced noise voltage: Not applicable.

Time delay: Not applicable.

PIN: M17/75-RG214 (See table I and II) and M17/75-RG365 (see table II).

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FREQUENCY MHz	ATTENUATION dB
50	1.7
400	6.8
3,000	26
11,000	60

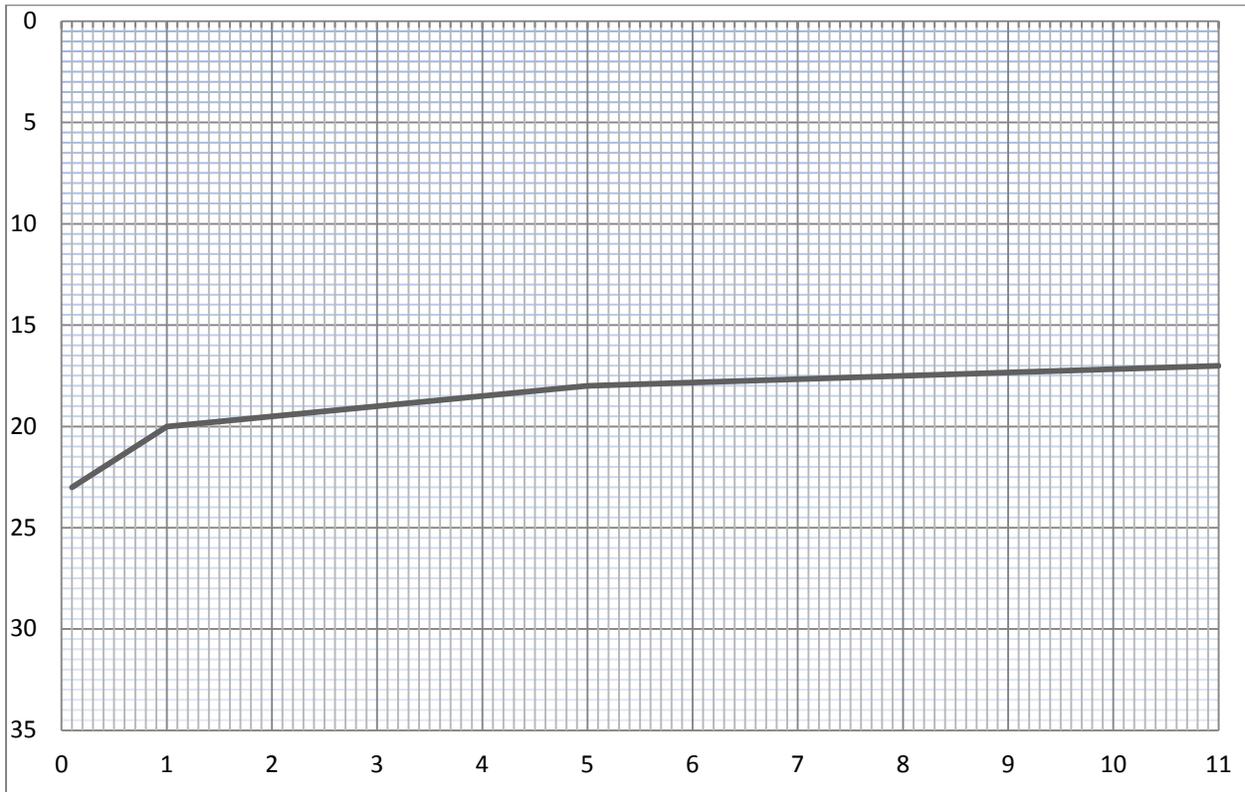
MAXIMUM ATTENUATION —————
 MAXIMUM POWER - - - - -
 AT 25°C SEA LEVEL

FIGURE 2. Power rating and attenuation.

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Return Loss db

MINIMUM STRUCTURAL RETURN LOSS



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
2.0998	.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 MHz	Return loss dB
.1	23
1	20
3	19
5	18
11	17

Tabulated values are for reference only. The values on the graph represent the requirement.

FIGURE 3. Structural return loss.

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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 6145-2016-001)

Review activities:

Army – AT, CR4, MI
Navy – AS, MC, OS, SH
Air Force – 19, 99
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>.