

MIL-STD-1328 B

22 October 1979

SUPERSEDING
MIL-STD-1328 A
10 MAY 1974

MILITARY STANDARD

COUPLERS, DIRECTIONAL
(COAXIAL LINE, WAVEGUIDE, AND PRINTED CIRCUIT),
SELECTION OF



FSC 5985

MIL-STD-1328B
22 October 1979

DEPARTMENT OF DEFENSE
Washington, D.C. 20301

Couplers, Directional (Coaxial Line, Waveguide, and Printed Circuit), Selection of

MIL-STD-1328B

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Naval Electronic Systems Command, Washington, D.C. 20360, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1. SCOPE

1.1 Scope. This standard establishes requirements for the selection of directional couplers for use in military equipments.

1.2 Purpose. The purpose of this standard is to:

- a. Provide the equipment designer with a list of directional couplers considered standard for use in military applications.
- b. Restrict the number of directional couplers for use in military applications in order to provide effective logistic support of equipment.
- c. Establish criteria pertinent to choice and application of directional couplers in military equipment.

2. REFERENCED DOCUMENTS

2.1 Issuance of documents. The following document of the issue in effect on date of invitation for bids or request for proposal, forms a part of this standard to the extent specified herein.

SPECIFICATION

MILITARY

MIL-C-15370 - Couplers, Directional (Coaxial Line, Waveguide, or Printed Circuit), General Specification For.

(Copies of specifications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. DEFINITIONS

3.1 The terms used in this standard are those commonly encountered in directional coupler engineering practice.

4. GENERAL REQUIREMENTS

4.1 Selection of directional couplers. Directional couplers to be used in military equipment and systems shall be selected from those listed in table 1.

4.2 Criteria for inclusion. The criteria for the selection of directional couplers for this list are:

- a. The coupler shall be considered by representatives of the military departments the best available type for current application.
- b. Availability of the coupler shall be reasonably certain.
- c. The coupler shall have an approved military specification.

4.3 Application and use. Directional couplers used in military equipment shall be from lots possessing acceptable material and physical and electrical characteristics and shall in no manner degrade the operational characteristics of the equipments in which used.

4.4 Detailed requirements. The detailed requirements for directional couplers listed in this standard are covered by the applicable MIL-C-15370 specification sheet.

5. DETAILED REQUIREMENTS (Not applicable)

6. NOTES (Not applicable)

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TABLE 1. Listing of directional couplers.

| 1/ Part number | Frequency range | | Equivalent transmission line | Coupling factor (nominal) |
|----------------|-----------------|--------|------------------------------|---------------------------|
| | (GHz) | | | (dB) |
| M15370/1-001 | .120 thru | .240 | RG-92/U | 20 |
| 1-002 | .240 | .480 | 92 | 20 |
| 1-003 | .480 | .960 | 92 | 20 |
| 1-004 | .960 | 1.990 | 92 | 20 |
| 1-005 | 1.990 | 4.000 | 92 | 20 |
| 2-001 | 2.650 | 5.350 | 48 | 20 |
| 2-002 | 3.350 | 4.000 | 48 | 20 |
| 2-003 | 3.950 | 5.000 | 49 | 20 |
| 2-004 | 5.000 | 6.000 | 49 | 20 |
| 2-005 | 5.500 | 7.000 | 50 | 20 |
| 2-006 | 7.000 | 8.200 | 50 | 20 |
| 2-007 | 7.000 | 8.500 | 51 | 20 |
| 2-008 | 8.500 | 10.000 | 51 | 20 |
| 2-009 | 12.400 | 15.200 | 91 | 20 |
| 2-010 | 18.000 | 22.200 | 53 | 20 |
| 2-011 | 22.000 | 26.500 | 53 | 20 |
| 2-012 | 26.500 | 31.500 | 96 | 20 |
| 2-013 | 31.500 | 36.000 | 96 | 20 |
| 3-001 | .225 | .460 | Series N coaxial | 10 |
| 3-002 | .950 | 2.000 | Series N coaxial | 10 |
| 3-003 | 2 | 4 | Series N coaxial | 10 |
| 3-004 | 4 | 10 | Series N coaxial | 10 |
| 3-005 | .216 | .450 | Series N coaxial | 20 |
| 3-006 | .225 | .460 | Series N coaxial | 20 |
| 3-007 | .940 | 1.975 | Series N coaxial | 20 |
| 3-008 | .950 | 2.000 | Series N coaxial | 20 |
| 3-009 | 1.9 | 4.0 | Series N coaxial | 20 |
| 3-010 | 4 | 10 | Series N coaxial | 20 |
| 3-011 | .225 | .460 | Series N coaxial | 30 |
| 3-012 | .950 | 2.000 | Series N coaxial | 30 |
| 3-013 | 2 | 4 | Series N coaxial | 30 |
| 3-014 | 4 | 10 | Series N coaxial | 30 |
| 3-015 | .030 | .960 | Series N coaxial | 6 dB/octave |
| 3-016 | .1 | 1.2 | Series N coaxial | 6 dB/octave |
| 4-001 | 5.85 | 8.20 | RG-50/U | 3 |
| 4-002 | 5.85 | 8.20 | 50 | 10 |
| 4-003 | 5.85 | 8.20 | 50 | 20 |
| 4-004 | 7.05 | 10.00 | 51 | 3 |
| 4-005 | 7.05 | 10.00 | 51 | 10 |
| 4-006 | 7.05 | 10.00 | 51 | 20 |
| 4-007 | 8.20 | 12.40 | 52 | 3 |
| 4-008 | 8.20 | 12.40 | 52 | 10 |
| 4-009 | 8.20 | 12.40 | 52 | 20 |
| 4-010 | 12.40 | 18.00 | 91 | 20 |
| 4-011 | 18.00 | 26.50 | 66 | 3 |
| 4-012 | 18.00 | 26.50 | 66 | 10 |
| 4-013 | 18.00 | 26.50 | 66 | 20 |
| 5-001 | 5.85 | 5.85 | 49 | 20 |
| 5-002 | 8.20 | 12.40 | 52 | 20 |
| 6-001 | 5.50 | 9.60 | 67 | 20 |
| 6-002 | 8.20 | 12.40 | 67 | 40 |
| 6-003 | 9.00 | 9.20 | 67 | 40 |

See footnote at end of table.

TABLE I. Listing of directional couplers - Continued

| <u>1/</u> Part number | Frequency range | | Equivalent transmission line | Coupling factor (nominal) |
|-----------------------|-----------------|--------------|------------------------------|---------------------------|
| | | | | (dB) |
| M15370/9-004 | 1.0 | thru 2.0 GHz | SMA coaxial | 30 |
| 9-006 | 2.0 | 4.0 | | 10 |
| 9-007 | 2.0 | 4.0 | | 20 |
| 9-008 | 2.0 | 4.0 | | 30 |
| 9-010 | 4.0 | 8.0 | | 10 |
| 9-011 | 4.0 | 8.0 | | 20 |
| 9-012 | 7.0 | 12.4 | | 6 |
| 9-013 | 7.0 | 12.4 | | 10 |
| 9-014 | 7.0 | 12.4 | | 20 |
| 9-016 | 12.4 | 18.0 | | 10 |
| 9-017 | 12.4 | 18.0 | | 20 |
| 9-018 | 7.0 | 12.4 | | 30 |
| 9-019 | 11.0 | 17.0 | | 10 |
| 9-020 | 11.0 | 17.0 | | 20 |
| 9-021 | 11.0 | 17.0 | | 30 |
| 9-022 | 7.5 | 16.0 | | 6 |
| 9-023 | 7.5 | 16.0 | | 10 |
| 9-024 | 7.5 | 16.0 | | 20 |
| 9-025 | 7.5 | 16.0 | | 30 |
| 9-026 | 1.0 | 18.0 | | 16 |
| 10-001 | .50 | 1.0 | | 6 |
| 10-002 | .50 | 1.0 | | 10 |
| 10-003 | .50 | 1.0 | | 20 |
| 10-004 | 1.0 | 2.0 | | 6 |
| 10-005 | 1.0 | 2.0 | | 10 |
| 10-006 | 1.0 | 2.0 | | 20 |
| 10-007 | 2.0 | 4.0 | | 6 |
| 10-008 | 4.0 | 8.0 | | 6 |
| 10-009 | 8.0 | 12.4 | | 10 |
| 10-010 | 8.0 | 12.4 | | 20 |
| 10-011 | 12.4 | 18.0 | | 6 |
| 11-001 | 0.1 | 2.0 | N coaxial | 20 |
| 11-002 | 4.0 | 8.0 | N coaxial | 20 |
| 14-001 | .025 | 8.0 | N and C | 40 |
| 15-001 | 7.0 | 11.0 | RG-320/U | 50 and 30 |
| 15-002 | 10.8 | 18.0 | RG-349/U | 50 and 30 |
| 16-001 | 25 | 35 MHz | SMA coaxial | 25 |
| 16-002 | 125 | 250 | | 30 |
| 16-003 | 190 | 210 | | 10 |
| 16-004 | 250 | 500 | | 6 |
| 16-005 | 250 | 500 | | 10 |
| 16-006 | 250 | 500 | | 20 |
| 16-007 | 250 | 500 | | 30 |
| 16-008 | 285 | 315 | | 25 |
| 17-001 | 60 | 80 | | 10 |

See footnote at end of table.

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TABLE I. Listing of directional couplers - Continued.

| <u>1/</u> Part number | Frequency range | Equivalent transmission line | Coupling factor (nominal) |
|-----------------------|------------------|------------------------------|---------------------------|
| | | | (dB) |
| M15370/18-001 | 0.2 thru 250 MHz | Printed circuit ↓ | 19.5 |
| 18-002 | 0.5 500 | | 11.5 |
| 18-003 | 1.0 1000 | | 11.0 |
| 18-004 | 10.0 400 | | 10.0 |
| 18-005 | 50.0 400 | | 10.0 |
| 18-006 | 50.0 400 | | 15.0 |
| 18-007 | 50.0 400 | | 20.0 |
| 18-008 | 250 1000 | | 10.0 |

1/ Applicable AN nomenclature is listed in table II.

TABLE II. Cross-reference of AN nomenclature to part number.

| AN nomenclature | Part number | AN nomenclature | Part number |
|-----------------|--------------|-----------------|--------------|
| CG-176/AP | M15370/6-001 | CU-1511/U | M15370/4-002 |
| CU-187/U | 1-001 | CU-1512/U | 4-003 |
| CU-188/U | 1-002 | CU-1513/U | 4-007 |
| CU-189/U | 1-003 | CU-1514/U | 4-008 |
| CU-190/U | 1-004 | CU-1515/U | 4-009 |
| CU-191/U | 1-005 | CU-1516/U | 3-005 |
| CU-198/U | 2-001 | CU-1517/U | 3-007 |
| CU-199/U | 2-002 | CU-1518/U | 3-009 |
| CU-200/U | 2-003 | CU-1519/U | 4-010 |
| CU-201/U | 2-004 | CU-1520/U | 3-016 |
| CU-202/U | 2-005 | CU-1521/U | 3-015 |
| CU-203/U | 2-006 | CU-1522/U | 4-011 |
| CU-204/U | 2-007 | CU-1523/U | 4-012 |
| CU-205/U | 2-008 | CU-1524/U | 4-013 |
| CU-208/U | 2-009 | CU-1525/U | 3-001 |
| CU-210/U | 2-010 | CU-1526/U | 3-006 |
| CU-211/U | 2-011 | CU-1527/U | 3-011 |
| CU-212/U | 2-012 | CU-1528/U | 3-002 |
| CU-213/U | 2-013 | CU-1529/U | 3-008 |
| CU-988/U | 5-002 | CU-1530/U | 3-012 |
| CU-1506/U | 5-001 | CU-1531/U | 3-003 |
| CU-1507/U | 4-004 | CU-1532/U | 3-013 |
| CU-1508/U | 4-005 | CU-1533/U | 3-004 |
| CU-1509/U | 4-006 | CU-1534/U | 3-010 |
| CU-1510/U | 4-001 | CU-1535/U | 3-014 |

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Custodians:

Army - ER
Navy - EC
Air Force - 11

Review activities:

Army - AR, MI
Navy - SH, AS
Air Force - 17, 85, 99
DLA - ES

User activities:

Army - AV
Navy - OS, MC, CG
Air Force - 19

Preparing activity:

Navy - EC

Agent:

DLA - ES

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