

METRIC

MIL—STD—1328C

22 September 1989

SUPERSEDING

MIL—STD—1328B

22 OCTOBER 1979

# MILITARY STANDARD

## COUPLERS, DIRECTIONAL SELECTION OF



FSC 5985

## MIL-STD-1328C

### FOREWORD

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: Defense Electronics Supply Center, ATTN: DESC-ES, 1507 Wilmington Pike, Dayton, OH 45444-5276, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

## MIL-STD-1328C

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## 1. SCOPE

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

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 DOCUMENT

2.1 Government document.

2.1.1 Specification. The following specification forms a part of this document to the extent specified herein. Unless otherwise specified, the issue of this document is that listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

## SPECIFICATION

## MILITARY

MIL-C-15370 - Couplers, Directional, General Specification For.

(Copies of the specification required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the reference cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 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 I.

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.

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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 equipment 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

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

### 6.1 Subject term (key word) listing.

Coaxial  
Switches, waveguide

6.2 Changes from previous issue. Asterisks are not used in this revision to denote changes with respect to the previous issue due to the extensiveness of the changes.

TABLE I. Listing of directional couplers.

Part <u>1</u> / number	Frequency range	Equivalent transmission line	Coupling (nominal)
	(GHz)		(dB)
M15370/3-001	.225 through .460	Series N coaxial	10
3-002	.950 through 2.000	Series N coaxial	10
3-003	2 through 4	Series N coaxial	10
3-004	4 through 10	Series N coaxial	10
3-005	.216 through .450	Series N coaxial	20
3-006	.225 through .460	Series N coaxial	20
3-007	.940 through 1.975	Series N coaxial	20
3-008	.950 through 2.000	Series N coaxial	20
3-009	1.9 through 4	Series N coaxial	20
3-010	4 through 10	Series N coaxial	20
3-011	.225 through .460	Series N coaxial	30
3-012	.950 through 2.000	Series N coaxial	30
3-013	2 through 4	Series N coaxial	30
3-014	4 through 10	Series N coaxial	30
3-015	.030 through .960	Series N coaxial	6 dB/octave
3-016	.1 through 1.2	Series N coaxial	6 dB/octave
3-017	.46 through .95	Series N coaxial	10
3-018	.46 through .95	Series N coaxial	20
3-019	.24 through .50	Series N coaxial	10
3-020	.24 through .50	Series N coaxial	20
3-021	.24 through .50	Series N coaxial	30
3-022	.50 through 1.0	Series N coaxial	10
3-023	.50 through 1.0	Series N coaxial	20
3-024	.50 through 1.0	Series N coaxial	30
3-025	.92 through 2.2	Series N coaxial	10

See footnote at end of table.

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TABLE I. Listing of directional couplers - Continued.

Part number	Frequency range	Equivalent transmission line	Coupling (nominal)
	(GHz)		(dB)
M15370/3-026	.92 through 2.2	Series N coaxial	20
3-027	.92 through 2.2	Series N coaxial	30
3-028	1.7 through 4.2	Series N coaxial	10
3-029	1.7 through 4.2	Series N coaxial	20
3-030	1.7 through 4.2	Series N coaxial	30
3-031	3.7 through 8.3	Series N coaxial	10
3-032	3.7 through 8.3	Series N coaxial	20
3-033	3.7 through 8.3	Series N coaxial	30
3-034	7.0 through 12.4	Series N coaxial	10
3-035	7.0 through 12.4	Series N coaxial	20
3-036	7.0 through 12.4	Series N coaxial	30
3-037	.125 through .250	Series N coaxial	20
3-038	1.0 through 12.4	Series N coaxial	10
3-039	1.0 through 12.4	Series N coaxial	20
3-040	3.7 through 8.3	Series N coaxial	10
3-041	.46 through .95	Series N coaxial	30
3-042	.46 through .95	Series N coaxial	40
3-043	.95 through 2.0	Series N coaxial	6
3-044	1.5 through 3.0	Series N coaxial	10
3-045	1.5 through 3.0	Series N coaxial	20
3-046	1.0 through 18.0	Series N coaxial	13
3-047	1.0 through 18.0	Series N coaxial	13
3-048	1.0 through 18.0	Series N coaxial	16
M15370/4-001	5.85 through 8.20	RG-50/U	3
4-002	5.85 through 8.20	50	10
4-003	5.85 through 8.20	50	20
4-004	7.05 through 10.00	51	3
4-005	7.05 through 10.00	51	10
4-006	7.05 through 10.00	51	20
4-007	8.20 through 12.40	52	3
4-008	8.20 through 12.40	52	10
4-009	8.20 through 12.40	52	20
4-010	12.40 through 18.00	91	20
4-011	18.00 through 26.50	66	3
4-012	18.00 through 26.50	66	10
4-013	18.00 through 26.50	66	20
4-014	11.0 through 17.0	349	10
4-015	11.0 through 17.0	349	15
4-016	11.0 through 17.0	349	20
4-017	11.0 through 17.0	349	30
4-018	26.5 through 40.0	271	20
4-019	26.5 through 40.0	96	30
4-020	8.2 through 12.4	---	20
4-021	8.2 through 12.4	67	20
4-022	8.2 through 12.4	67	40
4-023	12.4 through 18.0	91	3
4-024	12.4 through 18.0	91	6
4-025	12.4 through 18.0	107	10
4-026	12.4 through 18.0	91	10
4-027	12.4 through 18.0	91	40

See footnote at end of table.

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TABLE I. Listing of directional couplers - Continued.

Part number	Frequency range	Equivalent transmission line	Coupling (nominal)
	(GHz)		(dB)
M15370/5-001	3.95 through 5.85	49	20
5-002	8.20 through 12.40	52	20
5-003	12.4 through 18.0	349	20
5-004	12.4 through 18.0	349	30
5-005	12.4 through 18.0	349	20
5-006	12.4 through 18.0	349	20
5-007	1.70 through 2.60	105	60
5-008	8.2 through 12.4	52	30
5-009	8.2 through 12.4	52	40
5-010	8.2 through 12.4	52	50
5-011	12.4 through 17.5	349	30
5-012	12.4 through 17.5	349	40
5-013	12.4 through 17.5	349	50
5-014	12.4 through 17.5	349	15
M15370/6-001	8.50 through 9.60	67	20
6-002	8.20 through 12.40	67	40
6-003	9.00 through 9.20	67	40
M15370/9-001	1 through 2	SMA coaxial	6
9-002	1 through 2	SMA coaxial	10
9-003	1 through 2	SMA coaxial	20
9-004	1 through 2	SMA coaxial	30
9-005	2 through 4	SMA coaxial	6
9-006	2 through 4	SMA coaxial	10
9-007	2 through 4	SMA coaxial	20
9-008	2 through 4	SMA coaxial	30
9-009	4 through 8	SMA coaxial	6
9-010	4 through 8	SMA coaxial	10
9-011	4 through 8	SMA coaxial	20
9-012	7 through 12.4	SMA coaxial	6
9-013	7 through 12.4	SMA coaxial	10
9-014	7 through 12.4	SMA coaxial	20
9-015	12.4 through 18	SMA coaxial	6
9-016	12.4 through 18	SMA coaxial	10
9-017	12.4 through 18	SMA coaxial	20
9-018	7 through 12.4	---	30
9-019	11 through 17	SMA coaxial	10
9-020	11 through 17	SMA coaxial	20
9-021	11 through 17	SMA coaxial	30
9-022	7.5 through 16	SMA coaxial	6
9-023	7.5 through 16	SMA coaxial	10
9-024	7.5 through 16	SMA coaxial	20
9-025	7.5 through 16	SMA coaxial	30
9-026	1 through 18	SMA coaxial	16

See footnote at end of table.

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TABLE I. Listing of directional couplers - Continued.

Part number	Frequency range	Equivalent transmission line	Coupling (nominal)
	(GHz)		(dB)
M15370/9-035	2 through 6	SMA coaxial	10
9-036	2 through 8	SMA coaxial	6
9-037	2 through 8	SMA coaxial	10
9-038	3.7 through 8.3	SMA coaxial	10
9-039	4 through 12.4	SMA coaxial	10
9-040	7 through 12.4	SMA coaxial	6
9-041	7 through 12.4	SMA coaxial	10
9-042	1 through 12.4	SMA coaxial	10
9-043	1 through 12.4	SMA coaxial	20
9-047	6 through 18.0	SMA coaxial	10
9-048	6 through 18.0	SMA coaxial	10
9-049	2 through 18.5	SMA coaxial	10
9-050	2 through 18.0	SMA coaxial	10
9-051	.4 through 18.0	SMA coaxial	10
9-052	18 through 26.5	SMA coaxial	10
M15370/10-001	0.5 through 1.0	SMA coaxial	6
10-002	0.5 through 1.0	SMA coaxial	10
10-003	0.5 through 1.0	SMA coaxial	20
10-004	1.0 through 2.0	SMA coaxial	6
10-005	1.0 through 2.0	SMA coaxial	10
10-006	1.0 through 2.0	SMA coaxial	20
10-007	2.0 through 4.0	SMA coaxial	6
10-008	4.0 through 8.0	SMA coaxial	6
10-009	8.0 through 12.4	SMA coaxial	10
10-010	8.0 through 12.4	SMA coaxial	20
10-011	12.4 through 18.0	SMA coaxial	6
10-012	7.0 through 11.0	SMA coaxial	10
10-013	7.0 through 11.0	SMA coaxial	20
10-015	0.5 through 1.0	SMA coaxial	30
10-016	0.5 through 1.0	SMA coaxial	10
10-017	0.5 through 1.0	SMA coaxial	20
10-018	0.5 through 1.0	SMA coaxial	30
10-019	1.5 through 1.9	SMA coaxial	15
10-021	2.6 through 5.2	SMA coaxial	20
10-023	4.4 through 5.0	SMA coaxial	10
10-024	7.0 through 11.0	SMA coaxial	6
10-025	8.75 through 9.65	SMA coaxial	6
10-026	8.75 through 9.65	SMA coaxial	30
10-027	9.0 through 9.2	SMA coaxial	20
10-029	8.0 through 12.4	SMA coaxial	25
10-030	8.0 through 12.4	SMA coaxial	30
M15370/11-001	0.1 through 2.0	Series N coaxial	20
11-002	4.0 through 8.0	Series N coaxial	20
M15370/14-001	.025 through 8.0	Series N and C coaxial	40
M15370/15-001	7.0 through 11.0	RG-320/U	50 and 30
15-002	10.8 through 18.0	RG-349/U	50 and 30

See footnote at end of table.



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TABLE I. Listing of directional couplers - Continued.

Part 1/ number	Frequency range	Equivalent transmission line	Coupling (nominal)
	(GHz)		(dB)
M15370/16-001	25 through 35	SMA coaxial	25
16-002	125 through 250	SMA coaxial	30
16-003	125 through 250	SMA coaxial	10
16-004	250 through 500	SMA coaxial	6
16-005	250 through 500	SMA coaxial	10
16-006	250 through 500	SMA coaxial	20
16-007	250 through 500	SMA coaxial	30
16-008	285 through 315	SMA coaxial	25
16-009	20 through 60	SMA coaxial	15
16-010	68 through 82	SMA coaxial	30
16-011	102 through 138	SMA coaxial	30
16-012	2 through 100	SMA coaxial	10
16-013	2 through 100	SMA coaxial	15
16-014	2 through 100	SMA coaxial	20
16-015	270 through 330	SMA coaxial	20
16-016	420 through 450	SMA coaxial	16
16-017	50 through 500	SMA coaxial	10
16-018	10 through 500	SMA coaxial	15
16-019	10 through 500	SMA coaxial	15
16-020	50 through 400	SMA coaxial	10
16-021	100 through 500	SMA coaxial	20
16-022	10 through 1000	SMA coaxial	20
16-023	75 through 1000	SMA coaxial	10
M15370/17-001	60 through 80	SMA coaxial	10
M15370/18-001	0.2 through 250	Printed circuit	19.5
18-002	0.5 through 500	Printed circuit	11.5
18-003	1 through 1000	Printed circuit	11.0
18-004	10 through 400	Printed circuit	10.0
18-005	50 through 400	Printed circuit	10.0
18-006	50 through 400	Printed circuit	15.0
18-007	50 through 400	Printed circuit	20
18-008	250 through 1000	Printed circuit	10
18-009	0.01 through 35	Printed circuit	15
18-010	1 through 60	Printed circuit	20
18-011	200 through 280	Printed circuit	20
18-012	10 through 400	Printed circuit	20
18-013	30 through 500	Printed circuit	10
M15370/19-001	1 through 100	Flat pack	20.25
19-002	10 through 500	Flat pack	10
19-003	10 through 500	Flat pack	20
19-004	10 through 100	Flat pack	10
19-005	10 through 500	Flat pack	10
19-006	10 through 500	Flat pack	20.25
19-007	293 through 343	Flat pack	20
19-008	600 through 800	Flat pack	20
19-009	10 through 1000	Flat pack	14
19-010	10 through 1000	Flat pack	15
19-011	10 through 1000	Flat pack	20.25

See footnote at end of table.

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TABLE I. Listing of directional couplers - Continued.

Part 1/ number	Frequency range	Equivalent transmission line	Coupling (nominal)
	(GHz)		(dB)
M15370/20-001	1 through 100	T0	6
20-002	100 through 200	T0	6
20-003	5 through 500	T0	10
20-004	5 through 500	T0	20
20-005	750 through 1250	T0	6
20-006	750 through 1250	T0	20
20-007	10 through 500	T0	20
20-008	10 through 600	T0	20

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-1520/U	M15370/3-016
CU-988/U	5-002	CU-1521/U	3-015
CU-1506/U	5-001	CU-1522/U	4-011
CU-1507/U	4-004	CU-1523/U	4-012
CU-1508/U	4-005	CU-1524/U	4-013
CU-1509/U	4-006	CU-1525/U	3-001
CU-1510/U	4-001	CU-1526/U	3-006
CU-1511/U	4-002	CU-1527/U	3-011
CU-1512/U	4-003	CU-1528/U	3-002
CU-1513/U	4-007	CU-1529/U	3-008
CU-1514/U	4-008	CU-1530/U	3-012
CU-1515/U	4-009	CU-1531/U	3-003
CU-1516/U	3-005	CU-1532/U	3-013
CU-1517/U	3-007	CU-1533/U	3-004
CU-1518/U	3-009	CU-1534/U	3-010
CU-1519/U	4-010	CU-1535/U	3-014

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CONCLUDING MATERIAL

Custodians:

Army - ER  
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Review activities:

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Air Force - 17, 85  
DLA - ES

User activities:

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Preparing activity:  
Navy - EC

Agent:  
DLA - ES

(Project 5985-1013)

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1. DOCUMENT NUMBER

MIL-STD-1328C

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