MIL-STD-2162
27 July 1983

MILITARY STANDARD

AMPLIFIERS, RADIOFREQUENCY AND MICROWAVE, SOLID-STATE SELECTION OF

FSC 5985

DEPARTMENT OF DEFENSE
WASHINGTON, DC 20360

AMPLIFIERS, RADIOFREQUENCY AND MICROWAVE, SOLID-STATE, SELECTION OF

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 used in improving this document should be addressed to: Navy Electronic Systems Command, ELEX 8111, Department of the Navy, Washington, DC 20363 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

CONTENTS

TABLES

1. SCOPE

1.1 Scope. This standard provides a list of amplifiers for use in military equipment applications.

1.2 Purpose of standard. The purpose of this standard is to:

a. Provide new equipment designers with a list of amplifiers considered for use in military applications.

b. Restrict the number of amplifiers for use in military applications in order to provide effective logistic support of equipment.

c. Establish criteria pertinent to choice and application of amplifiers for use in military equipment.

2. REFERENCED DOCUMENTS

2.1 Issues of documents. The following document of the issue in effect on the date of invitation for bids form a part of this standard to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-A-28875 - Amplifiers, Radiofrequency and Microwave, Solid-State, General Specification For.

(Copies of specifications, standards, drawings, and publications 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 amplifiers engineering practice.

4. GENERAL REQUIREMENTS

4.1 Selection of amplifiers. Amplifiers to be used in military applications shall be selected from those listed in tables I through XII.

4.2 Criteria for selection. The criteria for the selection of amplifiers for inclusion in this standard are:

a. The amplifiers shall be considered, by representatives of the Military Departments, the best available type for current application.

b. Availability of the amplifiers shall be reasonably certain.

c. The amplifiers shall have an approved military specification.

4.3 Application and use. Amplifiers used in military applications shall be representative of manufactured lots possessing acceptable material, and physical and electrical characteristics. They shall in no manner degrade the operational characteristics of the equipment they are used in.

4.4 Detailed requirements for amplifiers. The detailed requirements for amplifiers listed in this standard are covered by the applicable MIL-A-28875 specification sheet.

5. DETAILED REQUIREMENTS

Not applicable

TABLE I. Amplifiers, narrowband, DIP configuration.

Part number M28875/1-	Frequency range (GHz)	DC input power		RF input power rating (dBm)	Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current Max	Max	Min	Max	Min	IN	OUT	Max	Min
-01	3 to 4	15	80 mA	+7	5	0.5	11	1.5:1	1.5:1	9.5	+21

TABLE II. Amplifiers, narrowband, coaxial configuration.

Part number M28875/2-	Frequency range	DC input power				Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point 3rd order (dBm)
		Input No. 1		Input No. 2								
		Voltage	Current Max (mA)	Voltage	Current Max	Min	Max	Min	IN	OUT	Max	Min
01	32.5-42.5 MHz	28	250	NA	NA	21	±0.5	+25	2.0:1	2.0:1	12	+35
02	220-320 MHz	15	50	NA	NA	16.5	±0.5	-13	1.5:1	2.0:1	4	---
03	300-565 MHz	15	130	NA	NA	24	±1.0	+14	2.0:1	2.0:1	6.5	NA
04	300-565 MHz	15	30	NA	NA	14	±1.0	+7	2.0:1	2.0:1	6.5	NA
05	400-500 MHz	24	225	NA	NA	35	NA	NA	2.0:1	2.0:1	6	+33
06	475-610 MHz	12	30	NA	NA	15	±0.5	+10	2.0:1	2.0:1	6	NA
07	475-610 MHz	15	30	NA	NA	15	±0.5	+10	2.0:1	2.0:1	6	NA
08	950-1250 MHz	24	65	15	55 mA	34	±0.5	+11	2.5:1	2.5:1	5	NA
09	1.35-1.62 GHz	24	65	15	40 mA	14	±1.5	+11	2.5:1	2.5:1	8.5	NA
10	2.9-3.1 GHz	15	100	NA	NA	10	±0.5	+6.5	1.5:1	1.75:1	20	NA
11	3-4 GHz	15	120	NA	NA	11	±0.5	+10	1.5:1	1.5:1	9.5	NA
12	3-4 GHz	15	400	NA	NA	10	±0.5	+20	1.5:1	1.5:1	12	NA
13	11.7-12.2 GHz	12	180	NA	NA	30	±0.5	+10	2.0:1	2.0:1	12	NA

TABLE III. Amplifiers, low noise, narrowband, coaxial configuration.

Part number M28875/3-	Frequency range (MHz)	DC input power		RF input power rating (dBm)	Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current Max	Max	Min	Max	Min	IN	OUT	Max	Min
-01	950-1250	15	150 mA	+16	23	±0.5	+20	1.5:1	1.5:1	3	---
-02	9095-9410	15	90 mA	+20	16	±0.5	+7.5	1.3:1	1.3:1	3.9	+17

TABLE IV. Amplifiers, logarithmic, coaxial configuration.

Part number M28875/4-	Frequency range (MHz)	DC input power		Input dynamic range (dBm)	Bandwidth (MHz)	Log accuracy (dB)	Log sensitivity (mV/dB)	VSWR Max		Video output (volts)
		Voltage	Current Max		Min			IN	OUT	
01	70	15	100 mA	-80 to 0	10	±2	21	2.0:1	---	0 to 2

TABLE V. Amplifiers, low noise, wideband, TO configuration.

Part number M28875/5-	Frequency range (MHz)	DC input power		RF input power rating (dBm)	Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA) Max	Max	Min	Max	Min	IN	OUT	Max	Min
01	5-250	15	40	+17	31	±0.2	+9	1.3:1	1.3:1	4	+21
02	200-400	15	20	+13	12.2	±0.5	+6	1.17:1	1.17:1	2.5	+19
03	5-500	15	25	---	20	±1.0	+7	2.0:1	2.0:1	4.5	+20
04	5-500	15	10	+13	15	±1.0	-2	2.0:1	2.0:1	2.5	+8
05	5-500	15	10	+13	14	±1.0	-2	2.0:1	2.0:1	4	+11
06	5-500	15	23	+13	20	±1.0	+7	2.0:1	2.0:1	4.5	+20
07	5-500	15	23	+13	14	±1.0	+7	2.0:1	2.0:1	5.5	+21
08	2-1000	15	10	+13	14	±0.7	-5	2.0:1	2.2:1	3.5	+10
09	5-1000	15	25	+17	14	±1.0	+7	2.0:1	2.0:1	6.5	+21
10	10-1200	15	40	+17	24	±0.8	+7	2.0:1	2.0:1	4.3	+20
11	10-2000	15	12	+27	10.5	±1.0	-4.5	2.2:1	2.2:1	4.5	+10
12	100-2000	15	40	+17	15	±0.7	+6	2.0:1	2.0:1	6.5	+18

TABLE VI. Amplifiers, low noise, wideband, coaxial configuration.

Part number M28875/6-	Frequency range	DC input power		Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA) Max	Min	Max	Min	IN	OUT	Max	Min
01	5-250 MHz	15	15	25	±0.5	+5	2.0:1	2.0:1	1.5	+17
02	100-200 MHz	15	30	27	±1.0	+5	2.0:1	2.0:1	2.5	+15
03	10-400 MHz	15	40	40	±1.5	+6.5	2.5:1	2.5:1	3.5	+19
04	10-500 MHz	15	130	38	±1.5	+19	2.5:1	2.5:1	4	+34
05	5-1000 MHz	15	15	14	±1.0	-2	2.0:1	2.0:1	5	---
06	100-2000 MHz	15	23	9	±1.0	+5	2.0:1	2.0:1	6.5	+15
07	500-2000 MHz	12	200	36	±1.0	+15	2.0:1	2.0:1	3.5	+25
08	500-2000 MHz	12	160	27	±1.0	+15	2.0:1	2.0:1	3.5	+25
09	500-2000 MHz	15	110	25	±1.0	+12	2.0:1	2.0:1	4.0	+23
10	8-12 GHz	12	250	37	±2.0	+13	2.0:1	2.0:1	5.5	+23
11	8-12 GHz	12	150	22	±1.5	+13	2.0:1	2.0:1	5.5	+23
12	12-18 GHz	12	375	33	±2.0	+10	2.0:1	2.0:1	7.0	+20

TABLE VII. Amplifiers, low noise, wideband, flatpack configuration.

Part number M28875/7-	Frequency range	DC input power		RF input power rating (dBm)	Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current Max	Max	Min	Max	Min	IN	OUT	Max	Min
01	10-200 MHz	15	13 mA	+20	7.7	±0.3	+7	2.0:1	2.0:1	1.4	+28

TABLE VIII. Amplifiers, power, wideband, TO configuration.

Part number M28875/8-	Frequency range (MHz)	DC input power		RF input power rating (mW)	Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA) Max	Max	Min	Max	Min	IN	OUT	Max	Min
01	10-400	15	35	32	12	±1.0	+10	2.0:1	2.0:1	7.5	+21
02	2-500	15	65	---	12	±0.7	+14	2.0:1	2.0:1	7.0	+25
03	5-500	24	50	---	9	±1.0	+13	2.0:1	2.0:1	7.0	+27
04	5-500	15	80	---	23	±1.0	+12	2.0:1	2.0:1	7.0	+25
05	5-500	15	48	---	15	±1.0	+13	2.0:1	2.0:1	6.0	+28
06	5-500	15	50	---	16	±1.0	+17	2.5:1	2.5:1	6.0	+26
07	10-500	15	121	---	14	±1.0	+22	2.0:1	2.0:1	9.0	+35
08	10-500	15	105	---	9	±1.0	+22	2.0:1	2.0:1	9.0	+30
09	10-1000	15	114	100	5.5	±1.3	+19	2.2:1	2.2:1	12.5	+34
10	10-1500	15	45	20	9.5	±1.0	+13.5	2.0:1	2.0:1	7.5	+29
11	10-1500	15	95	80	3	±1.2	+19	2.5:1	2.5:1	13.5	+32

TABLE IX. Amplifiers, power, wideband, coaxial configuration.

Part number M28875/9-	Frequency range	DC input power		RF input power rating (mW)	Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA) Max	Max	Min	Max	Min	IN	OUT	Max	Min
01	60-80 MHz	15	166	---	50	±1.5	+20	2.0:1	2.0:1	4.5	+33
02	5-100 MHz	28	350	100	30	±1.0	+30	2.0:1	2.0:1	10	+40
03	5-500 MHz	15	88	100	9.5	±1.0	+20	2.0:1	2.0:1	7	+38
04	500-1000 MHz	15	200	100	33	±1.0	+20	2.0:1	2.0:1	5	+60
05	1-2 GHz	20	170	100	22	±1.0	+20	2.0:1	2.0:1	8	+31

TABLE X. Amplifiers, wideband, TO configuration.

Part number M28875/10-	Frequency range (MHz)	DC input power		RF input power rating (dBm)	Gain (dB)		Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA)									
			Max	Max	Min		Max	Min	IN	OUT	Max	Min
01	2-250	15	55	+60	29		±1.0	+7	2.0:1	2.0:1	5.5	+17
02	2-250	15	98	+13	13		±1.0	+20	2.0:1	2.0:1	7	+30
03	5-250	15	40	+17	29		±1.0	+7.0	2.0:1	2.0:1	5.5	+21
04	5-1000	15	29	+17	13		±1.0	+6.0	2.0:1	2.0:1	7	+21
05	100-1000	15	34	+17	14		±1.0	+5.0	2.0:1	2.0:1	7	+18

TABLE XI. Amplifiers, wideband, coaxial configuration.

Part number M28875/11-	Frequency range	DC input power		RF input power rating	Gain (dB)		Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA)									
			Max	Max	Min		Max	Min	IN	OUT	Max	Min
01	10-500 MHz	15	125	---	9		±1.0	+18	2.0:1	2.0:1	8.5	---
02	5-500 MHz	15	60	---	27		±1.0	+6	2.0:1	2.0:1	5.5	---
03	5-1000 MHz	15	70	---	28		±1.0	+7	2.0:1	2.0:1	7.0	---
04	10-2000 MHz	15	45	100 mW	7		±1.0	+13.5	2.2:1	2.2:1	8.5	+28
05	10-2000 MHz	15	97	---	26		±1.0	+14	2.5:1	2.5:1	6.5	+24
06	4-8 GHz	12	240	---	30		±1.5	+10	2.0:1	2.0:1	6	---
07	7-11 GHz	12	360	---	42		±2.0	+10	2.0:1	2.0:1	6	+20

TABLE XII. Amplifiers, wideband, low profile TO configuration.

Part number M28875/12-	Frequency range (MHz)	DC input power		Gain (dB)	Gain flatness (dB)	RF output power (dBm)	VSWR Max		Noise figure (dB)	Intercept point (dBm)
		Voltage	Current (mA) Max	Min	Max	Min	IN	OUT	Max	Min
01	5-500	15	131	25	±0.7	+20.5	2.0:1	2.0:1	4.5	+30
02	5-500	15	131	29	±0.7	+20	2.0:1	2.0:1	4.5	+30
03	10-1000	15	131	24.5	±0.7	+21	2.0:1	2.0:1	5.0	+29
04	200-2000	15	129	14.5	±1.0	+15.5	2.0:1	2.0:1	7.5	+20
05	200-3000	15	129	11.0	±1.0	+15.5	2.0:1	2.0:1	8.5	+20
06	200-2000	15	175	8.0	±1.0	+23.5	2.0:1	2.0:1	4.5	+32

Custodians:
Army - ER
Navy - EC
Air Force - 85

Review activities:
Army - MI
Navy - OS, SH
Air Force - 11, 17, 99
DLA - ES

User activities:
Army - AV
Navy - AS, MC
Air Force - 19

Agent:
DLA - ES

Preparing activity:
Navy - EC

(Project 5985-0980)

☆U.S. GOVERNMENT PRINTING OFFICE: 1983-605-034/4025

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge *(DO NOT STAPLE)*, and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE. This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY

Naval Electronic Systems Command
Washington, DC 20363

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO 12503 WASHINGTON D C

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

COMMANDER
NAVAL ELECTRONIC SYSTEMS COMMAND
DEFENSE STANDARDIZATION PROGRAM BRANCH
DEPARTMENT OF THE NAVY
WASHINGTON, DC 20363
ATTN: ELEX 8111

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-STD-2162	Amplifiers, Radiofrequency and Microwave, Solid-State,

3a. NAME OF SUBMITTING ORGANIZATION Selection Of	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)* _____
b. ADDRESS *(Street, City, State, ZIP Code)*	

5 PROBLEM AREAS

a. Paragraph Number and Wording

b. Recommended Wording

c. Reason/Rationale for Recommendation

6 REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE