

MIL-STD-2162
27 July 1983

MILITARY STANDARD

AMPLIFIERS, RADIOFREQUENCY AND MICROWAVE, SOLID-STATE SELECTION OF



FSC 5985

MIL-STD-2162
27 July 1983

DEPARTMENT OF DEFENSE
WASHINGTON, DC 20360

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

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MIL-STD-2162
27 July 1983

	CONTENTS	PAGE
Paragraph	1. SCOPE - - - - -	1
	1.1 Scope- - - - -	1
	1.2 Purpose of standard- - - - -	1
	2. REFERENCED DOCUMENTS- - - - -	1
	2.1 Issues of documents- - - - -	1
	3. DEFINITIONS - - - - -	1
	4. GENERAL REQUIREMENTS- - - - -	1
	4.1 Selection of amplifiers- - - - -	1
	4.2 Criteria for selection - - - - -	1
	4.3 Application and use- - - - -	1
	4.4 Detailed requirements for amplifiers - - - - -	1
	5. DETAILED REQUIREMENTS (Not applicable)- - - - -	1

TABLES

TABLES	I. Amplifiers, Radiofrequency and Microwave, Solid-State, Narrowband, DIP Configuration - - - - -	2
	II. Amplifiers, Radiofrequency and Microwave, Solid-State, Narrowband, Coaxial Configuration - - - - -	2
	III. Amplifiers, Radiofrequency and Microwave, Solid-State, Low Noise, Narrowband, Coaxial Configuration - - - - -	3
	IV. Amplifiers, Radiofrequency and Microwave, Solid-State, Logarithmic, Coaxial Configuration - - - - -	3
	V. Amplifiers, Radiofrequency and Microwave, Solid-State, Low Noise, Wideband, TO Configuration- - - - -	3
	VI. Amplifiers, Radiofrequency and Microwave, Solid-State, Low Noise, Wideband, Coaxial Configuration - - - - -	4
	VII. Amplifiers, Radiofrequency and Microwave, Solid-State, Low Noise, Wideband, Flatpack Configuration- - - - -	4
	VIII. Amplifiers, Radiofrequency and Microwave, Solid-State, Power, Wideband, TO Configuration- - - - -	5
	IX. Amplifiers, Radiofrequency and Microwave, Solid-State, Power, Wideband, Coaxial Configuration - - - - -	5
	X. Amplifiers, Radiofrequency and Microwave, Solid-State, Wideband, TO Configuration- - - - -	6
	XI. Amplifiers, Radiofrequency and Microwave, Solid-State, Wideband, Coaxial Configuration - - - - -	6
	XII. Amplifiers, Radiofrequency and Microwave, Solid-State, Wideband, Low Profile, TO Configuration - - - - -	7

MIL-STD-2162
27 July 1983

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

MIL-STD-2162
27 July 1983

TABLE I. Amplifiers, narrowband, DIP configuration.

Part number M28875/1-	Frequency range (GHz)	DC input power		RF input power rating (dBm) Max	Gain (dB) Min	Gain flatness (dB) Max	RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Volt- age	Cur- rent					IN	OUT		
				Max	Max						
-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) Min	Gain flatness (dB) Max	RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point 3rd order (dBm) Min
		Input No. 1	Input No. 2						IN	OUT		
		Volt- age	Cur- rent Max (mA)	Volt- age	Cur- rent Max							
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

MIL-STD-2162
27 July 1983TABLE III. Amplifiers, low noise, narrowband, coaxial configuration.

Part number M28875/3-	Frequency range (MHz)	DC input power		RF input power rating (dBm) Max	Gain flatness (dB) Min Max		RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Voltage	Current Max		IN	OUT					
-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) Min	Band width (MHz) 10	Log accuracy (dB) ±2	Log sensitivity (mV/dB) 21	VSWR Max		Video output (volts) 0 to 21
		Voltage	Current Max					IN	OUT	
01	70	15	100 mA	-80 to 0	10	±2	21	2.0:1	---	0 to 21

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

Part number M28875/5-	Frequency range (MHz)	DC input power		RF input power rating (dBm) Max	Gain flatness (dB) Min Max		RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Voltage	Current (mA) Max		IN	OUT					
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

MIL-STD-2162
27 July 1983TABLE VI. Amplifiers, low noise, wideband, coaxial configuration.

Part number M28875/6-	Frequency range	DC input power		Gain (dB)		RF output power (dBm)	VSWR Max		Noise figure (dB)	Inter- cept point (dBm)
		Volt- age	Cur- rent (mA)	Min	Max		IN	OUT		
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)		RF output power (dBm)	VSWR Max		Noise figure (dB)	Inter- cept point (dBm)
		Volt- age	Cur- rent Max		Min	Max		IN	OUT		
01	10-200 MHz	15	13 mA	+20	7.7	+0.3	+7	2.0:1	2.0:1	1.4	+28

MIL-STD- 2162
27 July 1983

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

Part number M28875/8-	Frequency range (MHz)	DC input power		RF input power rating (mW) Max	Gain (dB) Min	Gain flatness (dB) Max	RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Volt- age	Cur- rent (mA) Max					IN	OUT		
		Max	Max								
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) Max	Gain (dB) Min	Gain flatness (dB) Max	RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Volt- age	Cur- rent (mA) Max					IN	OUT		
		Max	Max								
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

MIL-STD-2162
27 July 1983

TABLE X. Amplifiers, wideband, TD configuration.

Part number M28875/10-	Frequency range (MHz)	DC input power		RF input power rating (dBm) Max	Gain (dB)		RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Volt- age	Cur- rent (mA) Max		Min	Max		IN	OUT		
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)		RF output power (dBm) Min	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Volt- age	Cur- rent (mA) Max		Min	Max		IN	OUT		
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

MIL-STD-2162
27 July 1983

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

Part number	Frequency range (MHz)	DC input power		Gain (dB)		RF output power (dBm)	VSWR Max		Noise figure (dB) Max	Intercept point (dBm) Min
		Voltage	Current (mA) Max	Min	Max		IN	OUT		
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

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