

The provisions of the latest issue of MIL-PRF-1 apply to this specification.

DESCRIPTION: 8500 to 9600 MHz, tunable frequency, integral magnet, air cooled, 220 kw nominal peak power output, unipotential cathode.

ABSOLUTE MAXIMUM AND MINIMUM RATINGS: Note 1

INDEPENDENT

PARAMETER	If Surge	tk	VSWR	Tuner Torque	Body Temp	Input Bushing Temp	Pressurization Input Output	
UNITS	a	sec	----	in-oz	°C	°C	psia	psia
MAXIMUM	12	----	1.5:1	60	+150	+165	45	45
MINIMUM	----	150	----	----	-55	-55	15	15
NOTES				3	2	2	4	

DEPENDENT Note 28

PARAMETER	Ef	If	ib	Pi	pi	Du	tpc	prp	rrv
UNITS	V	A	a	W	kw	----	μsec	pps	kV/μsec
MAXIMUM	15	3.6	30	680	680	.0011	2.8	5500	160
MINIMUM	----	----	15	----	----	----	0.2	----	90
NOTES	5						6		7

MECHANICAL

Mounting Position----- Any

Support----- Mounting Flange

Cooling----- Forced Air (Note 10)

Outline----- Figure 1

Magnet----- Note 8

Coupling----- WR 112, Figure 1

Net Weight----- 13.0 pounds nominal

MIL-STD-1311	TEST	CONDITION	SYMBOL	LIMITS		UNITS
				MIN	MAX	
	<u>General</u>					
3.6	Marking	Figure 1, Note 32	----	----	----	----
4.8.5	Holding Period	t = 48 hours	----	----	----	----
	<u>Qualification</u> <u>Approval Tests</u>					
3.2	Qualification	Required for JAN marking				
1143A	Air Cooling	Osc. (2); Notes 2, 10, 11	ΔT	----	90	°C
4027	Temperature Coefficient	Osc. (2); TA = 70° to 150°C; F = F2; Notes 2, 12	$\Delta F/\Delta T$	----	0.25	MHz/°C
4223	Tuner Torque	TA = -55°C approx. non-operating; 150°C max operating Osc. (2)	----	----	60	in-oz
1042B	Shock	30G; 11 ± 1 msec duration; no voltages; Note 13	----	----	----	----
1032	Variable Frequency Vibration I (operating)	Osc. (2); F = F3; Note 14	----	----	----	----
	Frequency Modulation	Note 31	FM	----	1.0	MHz
4315	Stability	Note 15	MP	----	0.5	%
1032	Variable Frequency Vibration II (Operating)	Osc. (2); F = F3; Notes 33, 42	----	----	----	----
----	Fixed Frequency Vibration III (Operating)	Osc. (2); F = F3, f = 50, G = 10, t = 60 sec.; Three Planes; Note 33	----	----	----	----
4266	Input Capacitance	Cathode terminal to mounting plate	C	9	14	pf

MIL-STD-1311	TEST	CONDITION	SYMBOL	LIMITS		UNITS
				MIN	MAX	
4223	Mechanical Tuning Fatigue	No voltages; Note 16	----	500	----	Cycles
4311A	Pushing Factor	Osc. (2); ib = 15a to 27a; Notes 20, 40	$\Delta F/\Delta i_b$	----	0.1	MHz/a
4310A	Pulling Factor	Osc. (2); Notes 20, 41	ΔF	----	5	MHz
4308A	Spectrum Measurements	Osc. (1); ib = 15a to 27.5a; Notes 20, 21				
	RF Bandwidth		BW	----	2.0/tpc	MHz
	Minor Lobes		SL	-10	----	dB
4250	Power Output	Osc. (2); Note 29	Po	200	----	watts
4308A	Spectrum Measurements	Osc. (2); ib = 15a to 27.5a; Notes 20, 21				
	RF Bandwidth		BW	----	2.0/tpc	MHz
	Minor Lobes		SL	-8	----	dB
1047	Low Temperature Operation	Osc. (2); F = F2; Notes 17, 18	MP	----	0.5	%
4302A	Frequency Change (Warm-up)	Osc. (2); F = F3; t = 20 minutes; Note 19	ΔF	----	18	MHz
	<u>Quality Conformance Inspection, Part 1</u>	Notes 27, 28				
4003	Pressurization	45 psia min input and output assemblies; Notes 22, 23	----	----	----	----
1301	Heater Current	Ef = 13.75V; tk = 150 sec. max.; Note 24	If	2.9	3.3	A

MIL-STD-1311	TEST	CONDITION	SYMBOL	LIMITS		UNITS
				MIN	MAX	
	<u>Oscillation (1)</u>					
	Coupling	VSWR = 1.1 max except as noted; Notes 25, 26	----	----	----	----
4303A	Heater Cathode Warm-up Time	Ef = 13.75V; tk = 150 sec. max.; Note 5	----	----	----	----
4304	Pulse Characteristics	tpc = $0.25 \pm 0.05 \mu\text{s}$; Du = 0.001; rrv = 160 kV/ μs ; Notes 6, 7	----	----	----	----
----	Average Anode Current	Ib = 27.5 mAdc				
4308A	Spectrum Measurements	Notes 20, 21				
	RF Bandwidth		BW	----	2.0/tpc	MHz
	Minor Lobes		SL	-10	----	dB
4315A	Stability	Notes 18, 20	MP	----	0.25	%
4223	Tunable Frequency	Upper Limit Lower Limit Note 43	F F	9600 ----	---- 8500	MHz MHz
	<u>Oscillation (2)</u>					
----	Coupling	VSWR = 1.1 max. except as noted; Notes 25, 26	----	----	----	----
4303A	Heater Cathode Warm-up Time	Ef = 13.75V; tk = 150 sec. max.; Note 5	----	----	----	----
4304	Pulse Characteristics	tpc = $2.35 \pm 0.25 \mu\text{s}$; Du = 0.001; rrv = 160 kV/ μs ; Notes 6, 7	----	----	----	----
----	Average Anode Current	Ib = 27.5 mAdc				

MIL-STD-1311	TEST	CONDITION	SYMBOL	LIMITS		UNITS
				MIN	MAX	
4306	Pulse Voltage	Note 20	epy	20.0	23.0	kV
4308A	Spectrum Measurements	Notes 20, 21				
	RF Bandwidth		BW	----	2.0/tpc	MHz
	Minor Lobes		SL	-8	----	dB
4315A	Stability	Notes 18, 20	MP	----	0.25	%
4315A	Starting Stability	F = F1, Note 30	MP	----	0.25	%
4250	Power Output	Note 20	Po	200	270	Watts
	Frequency Modulation	Notes 20, 31	FM	----	0.1	MHz
	<u>Quality Conformance Inspection, Part 2</u>					
30(b)	Dimensions	Per Figure 1	----	----	----	----
4223	Resettability	Osc. (2); F = F1 + 50 ± 5 MHz; F = F2 ± 5 MHz; F = F3 - 50 ± 5 MHz	ΔF	----	10	MHz
4223	Tuner Torque	Room Temp (25°C)	Torque	----	45	in-oz
	<u>Special Testing</u>					
4.6	Life Tests					
	Cycled Life Test	VSWR 1.5 min. cycles through λg every 15 mins. approx., Note 37	----	1500	----	Cycles
			----	1250	----	Hours
4.6.2	Life Test End Points	Note 38				
	Power Output	Osc. (2); Note 20	Po	160	----	watts
	Tunable Frequency	Osc. (2); Upper Limit Osc. (2); Lower Limit	F F	9600 ----	---- 8500	MHz MHz

MIL-STD-1311	TEST	CONDITION	SYMBOL	LIMITS		UNITS
				MIN	MAX	
4308A	Spectrum Measurements	Osc. (1) and Osc. (2)				
	RF Bandwidth	Notes 20, 21	BW	----	2.5/tpc	MHz
	Minor Lobes		SL	-6	----	dB
4315A	Stability	Osc. (1); Notes 18, 20	MP	----	0.5	%
4315A	Stability	Osc. (2); Notes 18, 20	MP	----	0.5	%
4223	Tuning Characteristics	Note 39	F	----	15	MHz

NOTES: