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**Magnetron, Water Cooled 2M121A
 (NL10254-4 with Type K Thermocouple)**

APPROVALS			REVISIONS			
	INITIALS	DATE	REV	DESCRIPTION	DATE	APPR
Drawn	JFG	02MAR04	A	Production Release	02MAR04	JFG
Engineering						
Manufacturing						
Marketing						

1.0 General Description

This document describes a water cooled version of the Hitachi 2M121A magnetron that is designed for use in certain microwave plasma generators originally manufactured by GaSronics International and Applied Materials. This magnetron is a functionally and mechanically equivalent to the Richardson Electronics p/n NL10254-4 magnetron and provides the same performance and life.

A unique feature of the GAE version of this magnetron is the addition of a Type K thermocouple sensor. This sensor provides monitors magnetron anode temperature and may be used as an indicator while adjusting the plasma source impedance matching ("tuning") stub. This functionality is an enhancement to the original manufacturer's procedures for matching stub adjustment.

2.0 Reference Documents

911550 Assembly Drawing

3.0 Specifications

3.1 Absolute Maximum Ratings:

ITEM	SYM	MIN	MAX	UNITS
Filament voltage, Stand-by	Ef	4.2	5.0	Vac
Filament voltage, Ib = 450 mAdc	Ef	3.6	4.0	Vac
Filament warm-up	Tk	0	-	Sec
Anode voltage, peak	Ebm	-	4.7	kV
Anode current, peak	Ibm	-	1.8	A
Anode current, average	Ib	-	525	mAdc
Anode input power	Pi	-	2.1	kW
Load VSWR	φL	-	4	-
Anode core temperature	Tp	-	180	°C
Storage temperature	-	-30	60	°C

3.2 Test Conditions for Electrical Characteristics:

Power Supply Type	Single-phase, full-wave bridge rectifier without filter
Filament voltage	Ef = 4.6 Vac (stand-by), 3.8 Vac (Ib = 450 mAdc)
Average anode current	Ib = 450 mAdc
Load VSWR	φL < 1.1

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ITEM	CONDITION	SYM	BOGIE	MIN	MAX	UNITS
Filament current	Tk = 30sec min.	If	14	13	15	Aac
Anode voltage, peak		Ebm	4.5	4.2	4.7	kV
Output power, average		Po	1450	1300	-	W
Frequency		fe	2455	2440	2470	MHz
Stability	$\phi L < 3$	ST	-	550	-	mAdc
Breakdown voltage		Et	-	10	-	kVdc

3.4 Mechanical:

Filament connections	#8 ring terminals on 6" flying leads
Anode temp sensor	Type K thermocouple with connector (Omega p/n MPJ-K-F)
Cooling water connections	3/8 NPT male fittings
Cooling water flow	0.5 gpm min. @ 35 °C max. input temperature
Cooling interlock	Thermal cut-out switch with 1/4" fast-on tabs

4.0 Final Test Data**4.1 Test Conditions:**

Power Supply	Gerling Labs p/n C12932-2-A (full wave bridge, unfiltered)
Waveguide	National p/n WR340LAUNB
Input Line Voltage	208 VAC nominal
HV Transformer Tap	240
Output Mw Power	1250 Watts

4.2 Test Data Parameters:

Input line voltage
Magnetron current DC average voltage (TP7)
Magnetron current DC peak voltage (TP7)
Duty cycle

5.0 Ordering Information

<u>Part Number</u>	<u>Description</u>
911550	Magnetron Assembly, NL10254-4 with Type K Thermocouple

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6.0 Outline Drawing

