

ALTRONIC RESEARCH INC.

Performance By Design



Manufacturers of Omegaline

RF Coaxial Load Resistors

Since 1967

altronic.com

- BROADCAST
- SEMICONDUCTOR INDUSTRY
- MEDICAL INDUSTRY
- HIGH ENERGY PHYSICS
- CUSTOM DESIGN LOADS



ALTRONIC RESEARCH INC.

P.O. Box 249 Yellville, Arkansas 72687 870-449-4093 Fax: 870-449-6000

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Altronic Research, Inc.

05/12/22



THANK YOU FOR VISITING US AT THE SEMICON 2022

WE WERE PLEASED TO HAVE YOU TAKE THE TIME TO STOP BY OUR BOOTH IN SAN FRANCISCO. ALTRONIC RESEARCH HAS BEEN IN THE HIGH-POWER RF DUMMY LOAD BUSINESS SINCE 1967 AND OUR ROOTS WERE GROUNDED IN THE BROADCAST INDUSTRY. WE SUPPLY ALL TYPES OF HIGH-POWER TERMINATIONS FOR HIGH-POWER PHYSICS, MILITARY, GOVERNMENT LABS, MEDICAL AND SEMICONDUCTOR INDUSTRIES WORLDWIDE, HAVING SOLUTIONS FROM 1KW TO LARGE MEGAWATT APPLICATIONS. WE ARE A FORWARD LOOKING RESEARCH COMPANY SOLVING PROBLEMS FOR MANY INDUSTRIES AND WE CAN SOLVE SOME OF THE PROBLEMS YOUR INDUSTRY IS EXPERIENCING FROM LONG LEAD TIMES TO THE SUPPLY OF HIGHLY ACCURATE PRECISION RF DUMMY LOADS AND LOAD SIMULATORS. THESE SIMULATORS CAN PRECISELY REPLICATE MOST ANY POINT ON THE SMITH CHART AT HIGH TO FULL POWER REALISTIC RF LEVELS, WHICH GIVES YOU THE ABILITY TO ACCURATELY CALIBRATE, QUALIFY, AND BURN-IN MATCH AND RF GENERATORS WHILE CONNECTED TO A GIVEN HIGHLY STABLE LOAD PARAMETER REPRESENTATIVE OF THE ACTUAL TOOL/CHAMBER. THESE SIMULATORS ALSO ELIMINATE PROBLEMS BEFORE CONNECTING TO THE ACTUAL TOOL WHICH DECREASES DOWN TIME AND SPEEDS UP TROUBLESHOOTING. PLEASE LOOK THROUGH THE FOLLOWING PAGES AND SEE THE DIFFERENT SOLUTIONS WE CAN HELP YOU WITH.

Altronic Capabilities

For semiconductor and other high-power needs

COMPLEX LOADS



LOAD SIMULATORS
(SIMULATES VACUUM CHAMBER)



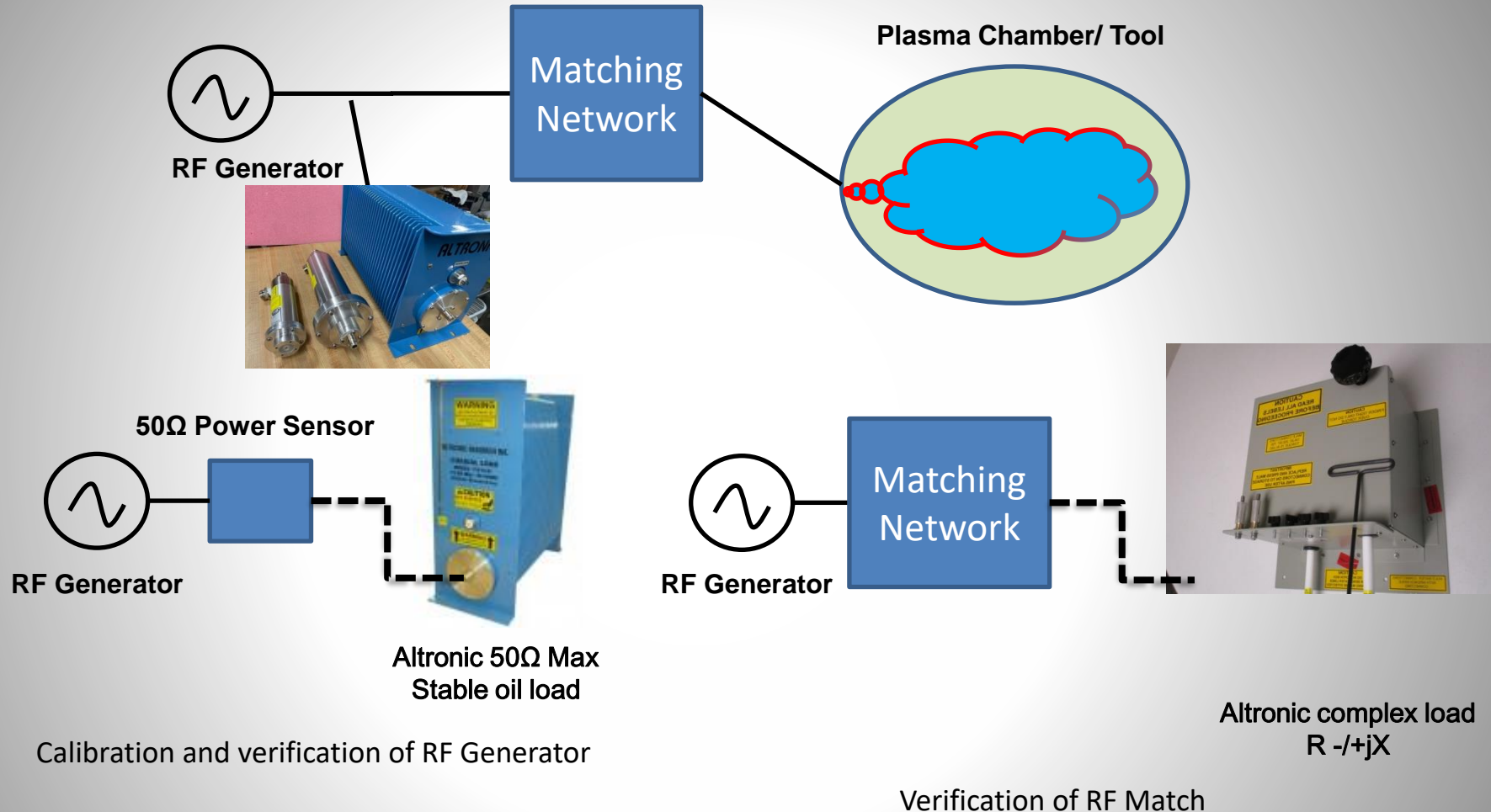
PRECISION
WATER, OIL, AND AIR DUMMY
LOADS



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Altronic Research Strictly Confidential,
Patent Pending

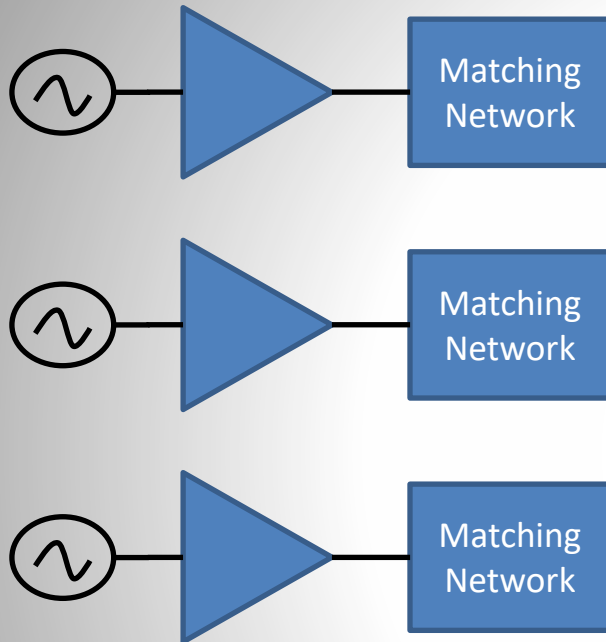
Verifying RF power delivery for Semiconductor Equipment



Independent verification of RF components → Tighter control & faster troubleshooting

Application use of complex loads

RF Generators

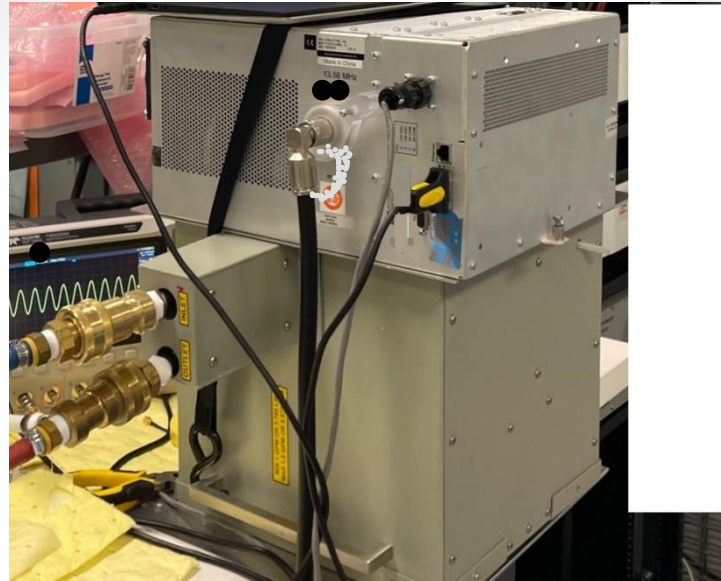


Altronic complex
water load
 $R \pm jX$

Consistency of performance is testable

- As a troubleshooting tool to verify performance of RF generators or match boxes performing into realistic loads that simulate the actual process conditions
- As test standards in the field to simulate the impedance of the load presented by the plasma chamber or other process specific variables to the RF generator source or match box in the hardware setup
- Complex load is a transferable impedance standard

Complex Loads for RF Tool Verification IN USE



WITH A CUSTOM DESIGNED INTERFACE SIMPLY ATTACH YOUR MATCH,
GENERATOR AND WATER. ONCE POWERED UP SIMPLY TUNE TO DESIRED
POINTS AND WITHIN MINUTES YOU CAN IDENTIFY ISSUES WITH THE RF
DELIVERY SYSTEM BEFORE CONNECTING TO THE ACTUAL TOOL/VACUUM
CHAMBER, OR USE FOR CALIBRATION, BURN-IN OF SOURCE/MATCH FOR
EXTENDED TIMES

Altronic Research, Inc.

MATCH RX

Reference standard for Verifying RF Equipment



5

Altronic Research currently manufactures the Match RX, a customizable high power complex impedance RF Load. Our proprietary (patent pending) design allows fast, stable and accurate testing at high power.

Match RX Key Features:

Repeatability $\pm 1\%^*$

Customizable -

- **Customer defined desired load point/s**
 - **Power: 100Watts TO 15kw**
 - **Frequency: 250KHz – 350MHz**
 - **Customer specific mechanical interface**
 - **Water cooled or oil cooled**
- **Portable option available (with self-contained cooling cart)**
 - **Voltages up to > 15 kV peak**
 - **Currents up to 100+ amps RMS with limiting resistor**



*with real values > 1 ohms

MATCH RX HIGH POWER COMPLEX RF LOAD SIMULATOR

Scalable Designs

Bias match

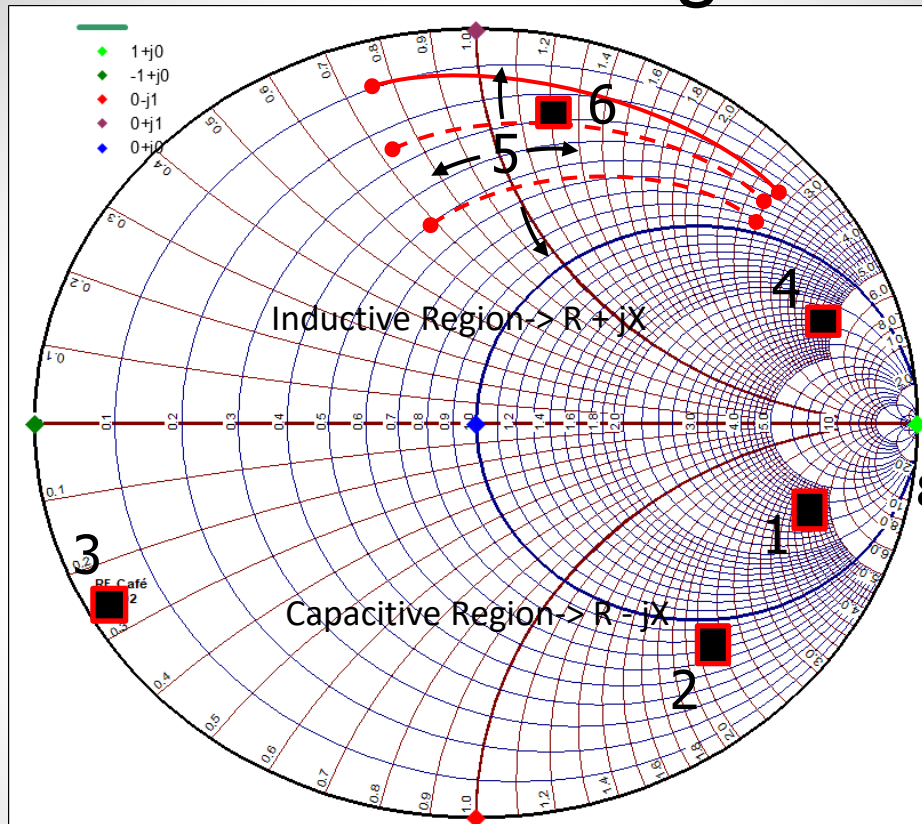
1



2



3



Inductive source

4



Tunable

5



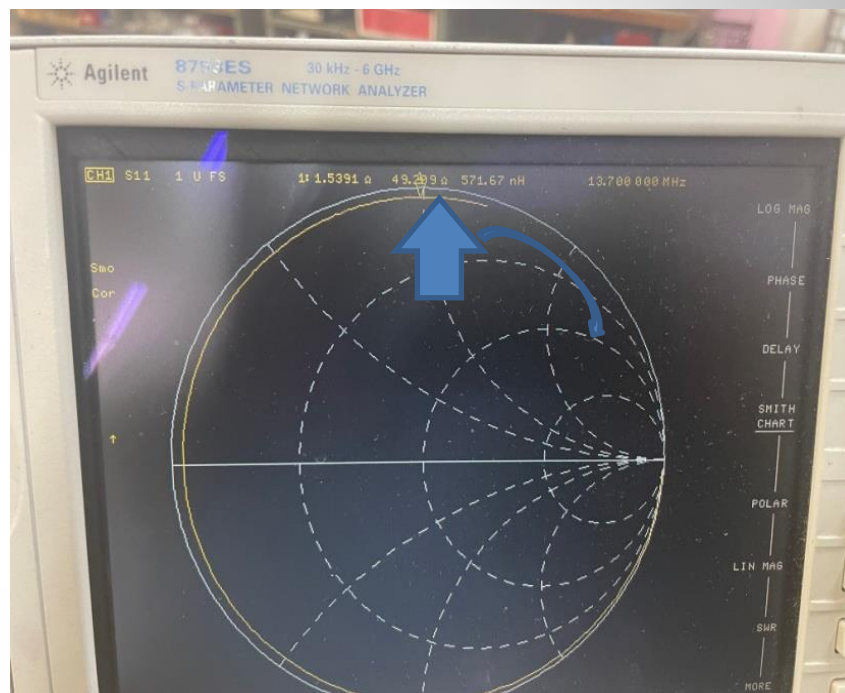
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Examples of previously built complex loads

Can access almost any part of Smith chart with hi-power design topologies

LOAD SIMULATOR VARIABLE



Variable allows for quick Placement of different Values.

Optional accessories



- Mobile cart containing complex load, heat exchanger, pump, and fluid reservoir can be assembled into one complete unit in order to further minimize external variables that could possibly detract from an impedance standard
- Additional power measurement can be added to load to determine true power if desired:
 - Calorimetry or Opti-Cal options could be added to determine true power in a non-50 ohm-based impedance system

WATER LOADS AVAILABLE NOW

5KW
15KW
25KW
50KW
up to
200KW



Short LEAD TIMES

for standard models



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1-800-482-LOAD