Pion Capture RF Systems: 70 MHz RF amplifiers at LBNL

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Request for Quote for RF coaxial line hardware

The coaxial lines are to be standard 9 3/16", characteristic impedance 50 Ω.
The high-power RF connectors are to be compatible with Myat, Inc. standard 9 3/16" flanges and center conductors.
Female connectors should be compatible with Myat Inc. standard wide finger bullet assembly, part number 901-010SRF. This bullet is compatible with a cut-back dimension from the flange mating surface to the center conductor end of 1.280".

1. Dummy Load

- Performance Specifications:

Impedance	50 Ohms
Operating Frequency	30 – 200 MHz
VSWR, full operating band	1.15:1 max
Peak Power Rating	2.5×10^6 watts
Average Power Rating, continuous	7.5×10^3 watts
RF Leakage	1.0 mw/cm^2 max. Measured at 1' during full power operation

  - Load to be fully portable.
  - Water cooled.
  - Load to be interlocked in the form of contact closures, to indicate excessive dissipation and thermal overload.
  - Ambient operating conditions, 75 +/- 5 degrees Fahrenheit at sea level.
  - Input high-power RF connector to be female compatible with Myat, Inc. standard 9 3/16" flanges and center conductors.

2. Directional Coupler

- Performance Specifications:

Impedance	50 Ohms
Operating Frequency	30 – 90 MHz
Peak Power Rating	2.5×10^6 watts
Average Power Rating, continuous	7.5×10^3 watts
Directional Coupler Attenuation	60 dB, incident and reflected
Coupling tolerance	± 4.5 dB over full operating band ± 0.1 dB at 70 MHz
Directional Coupler Directivity	25 dB min. incident and reflected
RF Leakage	1.0 mw/cm^2 max. Measured at 1’ during full power operation

  - ◊ High-power RF connectors to be female compatible with Myat, Inc. standard 9 3/16" flanges and center conductors.

3. Stub Tuner

- Performance Specifications:

Impedance	50 Ohms
Peak Power Rating	2.5×10^6 watts
Average Power Rating, continuous	7.5×10^3 watts
RF Leakage	1.0 mw/cm^2 max. Measured at 1’ during full power operation

  - ◊ High-power RF connectors to be male with removable male bullets, compatible with Myat, Inc. standard 9 3/16" flanges and center conductors.
  - ◊ Adapter connector to be included to mate the load input to the non-standard LBL designed coaxial line amplifier output. All required drawings to design stated adapter would be supplied..

Vendor list:

Dielectric Communications.
Cablewave Systems.
Mega Industries.
Myat Inc.
RFT RF Technologies Corp.
Bird Electronic Corp.
Altronics
CML Engineering Sales Inc.
Connecticut Microwave Corp.

Quotes

Dummy load:

CML Engineering Sales Inc.

$ 21,575

Delivery *150 days*

Omegaline

Need more time to investigate design - "..truly monstrous device…"

Directional coupler:

Mega Industries

$ 1,886

Connecticut Microwave Corp.

$ 2,483

RFTechnologies Corp.

$ 2,995

Stub tuner (Myat only - build to drawing, two "T"'s, two sliding shorts, connectors)

Myat Inc.

$ 15,035

TOTAL cost $40,000

only $ 19,000 budgeted for load, other components not budgeted

Outlook

Long delivery on load
Expensive

Other source of dummy loads?
Home built may prove to take as long and cost as much as CML load
Loan from somewhere?

May use HILAC tank #2, no need for any of these components

- Vacuum integrity probably OK (recently roughed)
- Needs: RF conditioning
  - Additional pumping
  - Magnets in drift-tubes may need to be energized
  - Calibration / modification of RF monitoring loops
  - RF crowbar circuitry
  - Frequency stabilization
- Radiation hazard (X-rays)
  - ES&H issues
  - Close-off access to basement area (no shielding under tanks)