Minimum Specifications for the Traveling Wave Tube (TWT) Amplifier

1. The amplifier must operate in the frequency range of 34.5 to 35.5 GHz providing 800 Watts, minimum (1000 Watts typical) peak power at 6% duty cycle.

2. Power amplification must be a wide band, periodic permanent magnet (PPM) focused, conduction cooled TWT.

3. The high voltage power supply (HVPS) must utilize modular architecture and low noise power supply topology utilizing high efficiency, solid state power conversion circuits.

4. An embedded micro-controller must provide the interface, control and protection functions and status indication for the TWT amplifier. Must have at least IEEE-488 interface protocol for remote operation.

5. Must be rack mountable with a commercially available 19” equipment rack.

6. Electrical

RF Output Frequency	34.5 to 35.5GHz
RF Output Power, Peak	800 Watts, min, 1000 Watts Typical
Gain at Rated Power	59dB min. @ 0dBm input
Input Voltage	208 VAC $\pm$ 10% 1 Phase 60 Hz
Input Power	1000 Watts Nominal
Duty Cycle	6% maximum
PRF	100 kHz, maximum
Pulse Width	0.3 to 5 Microseconds
RF Pulse Droop	$\leq$ 0.5 dB
Phase Droop	20 degrees nom. for 5μs pulse
Pulse to Pulse Amp. Var.	$\leq$0.1dB, max
RF Rise and Fall Times	$\leq$15 nsec
RF Drive for Rated Power	0 dBm (1 milliwatt)
Modulation Input	Differential
Spurious	-50dBc, min
Input VSWR	2:1 (50 Ohms Impedance)
Load VSWR	1.3:1 for Full Compliance

TWTA Protection	Helix Over-Current Cathode Over-Current/Arc Over/under Voltage TWT/Power Supply Over-Temp PRF, Pulse Width or Duty Limit Connector Interlock Reflected Power
Front Panel Controls	Operate On Local/Remote Prime Power On/Off Summed Fault
Front Panel Indicators	Standby, Operate On, Summed Fault
Remote Control (RCU)	Z-World Controller/RS-232
Remote Indicators	Standby, Operate On, Sum Fault

7. Mechanical

Size	No larger than 14” (W) X 14” (H) X 26” (L)
Weight	No more than 95 pounds
Cooling (Operational)	Must be forced air with integral fan
Air Inlet	Located at bottom panel
Air Exhaust	Located at front panel

Front Panel Connectors (RFU)

AC Power	Must be military applicable such as MS24265R14B7P style connector
Pin Designation:	Must have the following pin designations: Input — Pin Phase A — 1 Neutral — 3 Ground — 5
Control	Must be military applicable such as MS24265R16B24PN style.
RF Input	WR-28 or similar RF connector
RF Output	WR-28 or similar RF connector
RF Sample	WR-28 or similar RF connector
RF Video Sample	BNC twist cable connector

Rear Panel Connectors (RCU)

AC Power	Must be military applicable such as C48-13R8-3P style.
Pin Designations:	Must have the following pin designations:

Input	Pin
Phase A	1
Neutral	2
Ground	3

Control	Must be military applicable such as MS24265R16B24PN style
RS-232	DEM-9P type
Pulse Input	BNC twist cable connector

8. Environmental

Altitude	Must be able to perform between 0 - 10,000 feet altitude
Ambient Temperature Operation	Must be able to perform between 10 F to 100 F
Humidity	Must be able to perform up to 100% condensing