

**AUGUST 23, 2000**

**ACCEPTANCE TEST PROCEDURE**

**FOR**

**TRANSMITTER DESIGNED TO MEET THE REQUIREMENTS  
OF BARON SERVICES, INC.'S  
"C" BAND 250 KW TRANSMITTER**

**PREPARED FOR**

**BARON SERVICES, INC.  
4930 RESEARCH DR.  
HUNTSVILLE, AL 35805**

**BY**

**JAYCOR, HPM OPERATION  
2186 EASTMAN AVENUE – SUITE 107  
VENTURA, CALIFORNIA 93003**

### 3.2 OPERATIONAL PROCEDURE

The Front Panel has the following meters:

Filament Voltmeter – 15 Volts, Full Scale  
HV Power Supply Current Meter – 1.0 amps, Full Scale  
HV Power Supply Voltage Meter – 2000 Volts, Full Scale  
Magnetron Current Meter – 50 ma Full Scale  
AC Input Volts – 220 VAC – System Power  
AC Input Volts – 220 VAC – Transmitter Power

#### A. Paying attention to the Transmitter Control Panel.

1. Set switches in the following positions:
  - a. System Power – Set to “OFF” position.
  - b. Local/Remote – Set to “Local” position.
  - c. A.C. Switch, On/Standby – Set to “Off”
  - d. H.V. Switch, On/Radiate – Set to “Off” position.
2. Connect JAYCOR Control Box to 37-pin connector (P1) on Transmitter with JAYCOR adaptor cable.
  - a. Set A.C. power switch on control box to “OFF.”

#### B. Make sure ALL Input power switches are in the “OFF” position. Connect the Transmitter to 220/240 VAC circuit with the capability to supply up to 2000 watts.

#### C. Place the AC “ON” switch on the EXTERNAL CONTROL BOX to “ON.” Verify “Magnetron Airflow Light” illuminates (fan not “ON”).

1. Turn “System Power” switch “ON” (Front Panel).
2. Set AC Switch “On/Standby” to “Standby.”
3. Verify Magnetron Airflow Light goes “OUT,” All Fans “ON.”
4. Set Pulse Generator for 2  $\mu$ sec, amplitude of 10 to 15 volts peak, and 200 PPS.
5. Set H.V. switch to “ON” position.

Record	1.	H.V. Light illuminates.
	2.	TIME – (START STOP WATCH)
	3.	AC INPUT VOLTS-SYSTEM POWER
	4.	FILAMENT VOLTAGE METER READING, 9.5 Vrms +/- .5 VOLTS

D. Monitor the 'FILAMENT/READY" light and RECORD the time the light goes on. The elapsed time from Standby to Ready > 5 minutes.

RECORD: 1. READY LIGHT, ON.  
2. TIME READY LIGHT ILLUMINATES.  
3. ELAPSED TIME, 300 SECONDS, MINIMUM

E. Connect the PRF Monitor to the Oscilloscope. Set the oscilloscope to measure frequency. Connect Spectrum Analyzer to waveguide and, with transmitter operating, adjust center frequency of magnetron to 5.6 GHz.

RECORD: 1. THE OPERATING FREQUENCY  
2. SIDE LOBES > 12 dB DOWN (PLOT)  
3. SPURIOUS RESPONSE > 40 dBC  
4. HV POWER SUPPLY VOLTAGE: \_\_\_\_\_ VOLTS  
5. HV CURRENT METER: \_\_\_\_\_ AMPS  
6. FILAMENT VOLTS: \_\_\_\_\_ VOLTS  
MAGNETRON CURRENT: \_\_\_\_\_ mA

F. Connect Peak Power Meter to Waveguide.

RECORD: 1. PEAK POWER 84.0 (Min).  
2. POWER OUTPUT STABILITY, .1 dB Pulse-to-Pulse  
3. PULSE DROOP < .5 dB.

G. Connect Oscilloscope to Crystal Detector. Adjust generator for 2  $\mu$ sec and 250 PPS.

RECORD: 1. PULSE WIDTH, (-) 3dB POWER POINTS  
2. PULSE-TO-PULSE JITTER < 10 NSEC Pk. to Pk.  
Measured (.707) of detector,  
3. PULSE WIDTH JITTER < 10 NSEC Pk. to Pk.  
Measured (.707) of detector.  
4. TIME DELAY, INPUT TO RF OUTPUT < 1 USEC.  
5. RISE TIME < 100 nsec, 10% to 90%.  
6. FALL TIME < 160 nsec, 90% to 10%.  
7. INPUT TO OUTPUT PULSE WIDTH TRACKING  
+/- 5%.

H. Connect Spectrum Analyzer to Waveguide.

RECORD: 1. CENTER FREQUENCY SHOULD NOT DEVIATE FROM ORIGINAL SETTING BY MORE THAN +/- 112 MHz.

I. Set Pulse Width for .4  $\mu$ sec and adjust frequency for 2500 PPS.

- RECORD: 1. UNIT OPERATES AT .001 DUTY.  
2. Run Rep Rate until over-duty light is illuminated or dropping pulses are observed on the oscilloscope.

J. With unit operating as above, short output of magnetron at the cathode stem to ground. If an extended ARC is applied, the magnetron current light, A7 board, should illuminate and unit shut down. Press RESET button. Unit should recover and emit RF at the original power output. For minor ARCs, the transmitter should recover on its own and ramp up without touching the RESET button.

Major Arc, Shutdown \_\_\_\_\_ O.K.

Minor Arc, Ram Up \_\_\_\_\_ O.K.

Burn In: The transmitter should be set at .4  $\mu$ sec and 1800 pps, and allowed to run for a minimum of 8 hours.

RECORD: O.K.

**TRANSMITTER TEST DATA SHEET  
BARON SERVICES, INC.**

Part Number: \_\_\_\_\_

Sheet 1 of 3

Serial Number: \_\_\_\_\_ Date: \_\_\_\_\_ Tester: \_\_\_\_\_

**3.2 OPERATIONAL PROCEDURE**

**3.2.A Transmitter Control Panel**

**3.2.A.1 SET SWITCHES IN THE FOLLOWING POSITIONS:**

- a. System Power – Set to “OFF” position. O.K. \_\_\_\_\_
- b. Local/Remote – Set to “Local” position. O.K. \_\_\_\_\_
- c. A.C. Switch, On/Standby – Set to “OFF” O.K. \_\_\_\_\_
- d. H.V. Switch, On/Radiate – Set to “OFF” position. O.K. \_\_\_\_\_

**3.2.A.2 CONNECT JAYCOR CONTROL BOX TO 37-PIN CONNECTOR (P1)  
ON TRANSMITTER WITH JAYCOR ADAPTER CABLE.**

- a. Set A.C. Power Switch on Control Box to “OFF.” O.K. \_\_\_\_\_

**3.2.B With all AC switch “OFF,” connect Transmitter to 220 VAC, single phase power.** O.K. \_\_\_\_\_

**3.2.C Place AC switch on Control Box to “ON”** O.K. \_\_\_\_\_

**Place Magnetron Airflow Switch to “OFF”** O.K. \_\_\_\_\_

**3.2.C.1 Turn “System Power” switch “ON” (Front Panel)** O.K. \_\_\_\_\_

**3.2.C.2 Set AC Switch, “On/Standby” to “Standby”** O.K. \_\_\_\_\_

**3.2.C.3 Verify Magnetron airflow light goes “OUT”** O.K. \_\_\_\_\_

**All fans “ON”** O.K. \_\_\_\_\_

**3.2.C.4 Set pulse generator for 2  $\mu$ sec, amplitude of 10 to 15 volts peak and 300 PPS.** O.K. \_\_\_\_\_

**3.2.C.5 Set H.V. switch to “ON” position.** O.K. \_\_\_\_\_

**3.2.C SYSTEM INPUT VOLTAGE (AC)** \_\_\_\_\_

**3.2.C TRANSMITTER INPUT VOLTS (AC)** \_\_\_\_\_

**3.2.C FILAMENT VOLTS – 9.5 Vrms +/- .5 VOLTS** \_\_\_\_\_

**3.2.C READY LIGHT ON:** \_\_\_\_\_

**3.2.D TIME:** \_\_\_\_\_

**3.2.D FILAMENT DELAY – 3 MIN. Minimum** \_\_\_\_\_

TRANSMITTER TEST DATA SHEET  
BARON SERVICES, INC.

Part Number: \_\_\_\_\_

Sheet 2 of 3

Serial Number: \_\_\_\_\_ Date: \_\_\_\_\_ Tester: \_\_\_\_\_

3.2.E MAGNETRON FREQUENCY - \_\_\_\_\_

3.2.E SPECTRUM SIDE LOBES > 12 dB  
HI SIDE \_\_\_\_\_  
LOW SIDE \_\_\_\_\_

3.2.E SPURIOUS RESPONSE > (-) 40 dBC \_\_\_\_\_ O.K. \_\_\_\_\_

3.2.E HV POWER SUPPLY VOLTAGE \_\_\_\_\_ VOLTS DC

3.2.E HV CURRENT METER \_\_\_\_\_ AMPS

3.2.E FILAMENT VOLTS \_\_\_\_\_ VOLTS RMS STANDBY

3.2.E MAGNETRON CURRENT \_\_\_\_\_ MA

3.2.F PEAK POWER, 85.4 dBM [350kw - (min.)] \_\_\_\_\_ dBM \_\_\_\_\_ Kw

3.2.F PULSE DROOP < .5 dB \_\_\_\_\_ O.K. \_\_\_\_\_

3.2.G PULSE WIDTH \_\_\_\_\_ O.K. \_\_\_\_\_

3.2.G PULSE-TO-PULSE JITTER < .1 dB, Pulse-to-Pulse \_\_\_\_\_ NSEC

3.2.G PULSE WIDTH JITTER < 10 NSEC (Pk to Pk) \_\_\_\_\_ NSEC

3.2.G TIME DELAY < 1 USEC \_\_\_\_\_ USEC

3.2.G RISE TIME < 100 NSEC, 10% TO 90% \_\_\_\_\_ NSEC

3.2.G FALL TIME < 160 NSEC, 90% TO 10% \_\_\_\_\_ NSEC

3.2.G INPUT TO OUTPUT (Pulse Width Tracking) < 100 NSEC \_\_\_\_\_ NSEC

TRANSMITTER TEST DATA SHEET  
BARON SERVICES, INC.

Part Number: \_\_\_\_\_

Sheet 3 of 3

Serial Number: \_\_\_\_\_ Date: \_\_\_\_\_ Tester: \_\_\_\_\_

3.2.H FREQUENCY DRIFT < 112 Mhz \_\_\_\_\_ Mhz \_\_\_\_\_ O.K.

3.2.I OPERATION AT .011 DUTY \_\_\_\_\_ O.K.

3.2.K MAGNETRON ARC TEST \_\_\_\_\_ O.K.

3.2.L BURN IN:          START TIME \_\_\_\_\_  
  END TIME \_\_\_\_\_

TESTER: \_\_\_\_\_

DATE: \_\_\_\_\_

WITNESS: \_\_\_\_\_

DATE: \_\_\_\_\_