



**Exhibit 10: Measurements**  
**Demonstrating Conformance to**  
**97.307 and 97.317**

**External Radio Frequency  
Power Amplifier ACOM 1010**

**Model 1010**

71 West street  
Medfield, MA 02052  
Tel: 508 359 5990  
fax: 508 359 5989

E-mail: [aa1nd@aol.com](mailto:aa1nd@aol.com)

## Measurements Demonstrating Conformance to 97.307 and 97.317

### 97.317(a)(1)&(3) & 97.317(b). Spurious Emissions per 97.307(d) and Gain versus Frequency.

Results reflect amplifier as shipped with 24.5 and 28MHz Bands disabled.

Amplifier under test operated at frequency f1 with CW (A1A) excitation. Spectrum analyzer with a 20dB input attenuator was used to observe all frequencies, from f1 through at least 10f1 for harmonic and spurious emissions.

| Power Gain per 97.317-(a) (1) (2) (3), (c) (6) (ii)   |                   |                    |                       | Spurious emissions per 97.307 (e) |                       |                       |   |
|---|-------------------|--------------------|-----------------------|-----------------------------------|-----------------------|-----------------------|---|
| Frequency<br>f <sub>1</sub> , MHz   | Input<br>Power, W | Output<br>Power, W | Amplifier<br>Gain, dB | 2f <sub>1</sub> , dBc             | 3f <sub>1</sub> , dBc | 4f <sub>1</sub> , dBc | 5-10f <sub>1</sub> ,<br>dBc worst<br>case |
| 1.900   | 53.1              | 700                | 11.2                  | -53.5                             | -79.5                 | -84.5                 | -72.7                                     |
| 3.750   | 61.0              | 700                | 10.6                  | -53.0                             | -98.1                 | -87.0                 | -93.6                                     |
| 7.150   | 73.3              | 700                | 9.8                   | -58.5                             | -98.9                 | -97.5                 | -94.5                                     |
| 10.125  | 62.4              | 700                | 10.5                  | -53.8                             | -95.5                 | -67.3                 | -95.0                                     |
| 14.175  | 60.9              | 700                | 10.6                  | -57.5                             | -96.7                 | -89.1                 | -84.6                                     |
| 18.100  | 65.3              | 700                | 10.3                  | -53.2                             | -77.6                 | -78.5                 | -74.8                                     |
| 21.225  | 58.2              | 700                | 10.8                  | -61.6                             | -90.2                 | -84.6                 | -77.0                                     |
| Amplifier was not capable of operation on any frequency or frequencies between 24 and 35MHz as measured at the points below per 97.317-(b) (1) (2). Data for: amplifier in Stand-by / amplifier ON. |                   |                    |                       |                                   |                       |                       |   |
| 24.000  | 50                | 49.1 / 169         | -0.1 / 5.3            |                                   |                       |                       |   |
| 26.000  | 50                | 48.3 / 47.8        | -0.15 / -0.2          |                                   |                       |                       |   |
| 27.120  | 50                | 48.3 / 34.6        | -0.15 / -1.6          |                                   |                       |                       |   |
| 28.000  | 50                | 48.3 / 28.1        | -0.15 / -2.5          |                                   |                       |                       |   |
| 35.000  | 50                | 47.9 / 1.17        | -0.2 / -16.3          |                                   |                       |                       |   |
| Amplifier was not capable of full power output and the gain is less than 11.4dB when driven with less than 50 watts per 97.317-(c)(6) (i)(iii).   |                   |                    |                       |                                   |                       |                       |   |
| 1.900   | 30                | 405                | 11.3                  |                                   |                       |                       |   |
| 3.750   | 30                | 353                | 10.7                  |                                   |                       |                       |   |
| 7.150   | 30                | 307                | 10.1                  |                                   |                       |                       |   |
| 10.125  | 30                | 344                | 10.6                  |                                   |                       |                       |   |
| 14.175  | 30                | 352                | 10.7                  |                                   |                       |                       |   |
| 18.100  | 30                | 345                | 10.6                  |                                   |                       |                       |   |
| 21.225  | 30                | 369                | 10.9                  |                                   |                       |                       |   |
| 24.930*   | 30                | 322                | 10.3                  |                                   |                       |                       |   |
| 28.500*   | 30                | 352                | 10.7                  |                                   |                       |                       |   |

| After owner modification to activate 24-28 MHz bands: |      |     |      |       |       |       |       |
|---|------|-----|------|-------|-------|-------|-------|
| 24.930*   | 71.6 | 700 | 9.9  | -73.7 | -82.4 | -81.0 | -61.1 |
| 28.500*   | 60.1 | 700 | 10.7 | -67.5 | -82.8 | -82.2 | -70.5 |

\*Not usable as shipped; data applicable only after enabling of 24.5 & 28 MHz bands as follows.

When delivered to any buyer located within the FCC's jurisdiction, the equipment is operable on authorized amateur bands only from 1.8 through 21.45 MHz. To meet the requirements of 97.317(b), the equipment employs an internal mechanical lock-out system. It ensures that the top frequency band (namely 24-28 MHz) cannot be selected. This is achieved by mechanical means. A solid steel lug prevents the band switch from being fixed on the top band position. As seen on the photo below (Figure 1), moving the band switch axis clockwise is limited to the steel lug. It is pointed with an yellow arrow on this photo only but not in the construction.



**Figure 1. Block on 24-28MHz Band**

**97.307(a)(b). Inter-modulation & Linearity**

Exciter operating in SSB (A3E, J3E) mode with two equal-tone audio applied to the microphone input. Amplifier under test driven to 700W PEP output at the center of the band with typically 60W PEP input power.

| Inter-modulation in dB relative to 700W PEP per 97.307(a)(b) |     |     |     |     |                |
|--|-----|-----|-----|-----|----------------|
| Order:   | D3  | D5  | D7  | D9  | D11 and higher |
| Freq. (MHz)  | dB  | dB  | dB  | dB  | dB             |
| 1.900  | -45 | -48 | -44 | -50 | -53            |
| 3.750  | -43 | -49 | -45 | -47 | -52            |
| 7.150  | -42 | -47 | -45 | -47 | -51            |
| 10.125   | -46 | -46 | -45 | -51 | -53            |
| 14.175   | -44 | -46 | -47 | -52 | -59            |
| 18.100   | -40 | -46 | -50 | -54 | -57            |
| 21.225   | -42 | -46 | -48 | -54 | -56            |
| 24.930*  | -45 | -45 | -49 | -54 | -58            |
| 28.500*  | -38 | -40 | -44 | -52 | -56            |

\*Not usable as shipped; data applicable only after authorized owner modification.

**97.317(a)(2)&(3).** When the amplifier is in the “standby” or “off” positions, but still connected to the exciter, no measurable spectrum change from the normal output of the exciter is detectable with the spectrum analyzer (noise floor approximately -105dBc) when amplifier is driven with 0 to 150 W mean RF power.

**97.317(c).** The amplifier possesses none of the prohibited characteristics listed in this section.

**97.317(c)(6)(iii).** The amplifier gain does not exceed 11.3 dB for any level of input signal.

**97.317(c)(6)(iv).** The amplifier is capable of greater than 50% duty cycle at rated power output, namely 700W PEP or 500W continuous carrier, with A1A, A3E (J3E), or F1B, F3E, and J3F emission.

**97.317(c)(7).** Amplifier gain is established principally by RF negative feedback in the cathode circuit. The input swamping resistor is used only to present a 50-Ohm load to the grid matching circuit, not as an attenuator. Removal of this resistor or changing its value will result in a severe load mismatch to the exciter output.

**Additional data:** Information and data supplied by tube manufacturer SVETLANA concerning the GU74B/4CX800A tetrode is available by request from the manufacturer.