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

External Radio Frequency
Linear Amplifier
Model Expert 1K-FA







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## Measurement 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 MHz and 28 MHz Bands disabled.

Amplifier under test operated at frequency  $f_1$  with CW (A1A) excitation. Spectrum analyzer with a 50dB input attenuator was used to observe all frequencies, from  $f_1$  through at least  $10f_1$  for harmonic and spurious emissions.

| Power Gain per 97.317-(a) (1) (2) (3), (c) (6) (ii) |                   |                    | Spurious emission per 97.307 (e) |                       |                 |               |   |
|---|-------------------|--------------------|----------------------------------|-----------------------|-----------------|---------------|---|
| Frequency f <sub>1</sub> , Mhz                      | Input<br>Power, W | Output<br>Power, W | Amplifier<br>Gain, dB            | 2f <sub>1</sub> , dBc | 3f₁, dBc        | 4f₁, dBc      | 5-10f <sub>1</sub> ,<br>dBc worst<br>case |
| 1.900   | 55.5              | 900                | 12.1                             | - 73.3                | - 55.7          | - 76.2        | - 77.4                                    |
| 3.750   | 54.2              | 900                | 12.2                             | - 58.1                | - 49.8          | - 74.9        | - 66.0                                    |
| 7.150   | 58.1              | 900                | 11.9                             | - 63.0                | - 51.1          | - 73.9        | - 67.5                                    |
| 10.125  | 60.8              | 900                | 11.7                             | - 62.9                | - 49.1          | - 75.7        | - 75.0                                    |
| 14.175  | 54.2              | 900                | 12.2                             | - 70.1                | - 56.4          | - 74.1        | - 72.5                                    |
| 18.100  | 55.5              | 900                | 12.1                             | - 55.8                | - 58.3          | - 72.3        | - 70.4                                    |
| 21.225  | 59.5              | 900                | 11.8                             | - 52.3                | - 54.2          | - 73.9        | - 65.2                                    |
| 24.930*   | 63.7              | 900                | 11.5                             | - 53.5                | - 58.1          | - 74.0        | - 65.7                                    |
| 28.500*   | 59.5              | 900                | 11.8                             | - 74.5                | - 72.1          | - 75.1        | - 73.5                                    |
| 50.250  | 62.3              | 700                | 10.5                             | - 68.1                | - 71.3          | - 67.3        | - 72.5                                    |
| Amplifier was                                       | not capable       | of operation o     | n any frequen                    | cy or frequen         | cies outside tl | he radio amat | eur bands for                             |

Amplifier was not capable of operation on any frequency or frequencies outside the radio amateur bands for the look-up table in his software per 97.317-(b) (1) (2).

Amplifier was not capable of full power output and the gain is less than 12.3dB when driven with less than 50 watts per 97.317- (c)(6) (i) (iii).

| 1.900   | 30 | 509 | 12.3 |  |  |
|---------|----|-----|------|--|--|
| 3.750   | 30 | 509 | 12.3 |  |  |
| 7.150   | 30 | 475 | 12.0 |  |  |
| 10.125  | 30 | 464 | 11.9 |  |  |
| 14.175  | 30 | 497 | 12.2 |  |  |
| 18.100  | 30 | 486 | 12.1 |  |  |
| 21.225  | 30 | 464 | 11.9 |  |  |
| 24.930* | 30 | 443 | 11.7 |  |  |
| 28.500* | 30 | 454 | 11.8 |  |  |
| 50.250  | 30 | 336 | 10.5 |  |  |

<sup>\*</sup>Not usable as shipped; data applicable only after authorized owner modification.







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When delivered to any buyer located within the FCC's jurisdiction, the equipment is operable on authorized amateur bands only from 1.8 MHz through 21.45 MHz and from 50 MHz to 54 MHz. To meet the requirements of 97.317(b) the equipment employes an internal sotware lock-up table, it ensures that the only frequencies permitted are in the radio amateur bands with the exclusion of the 24 MHz (12 m.) and 28 MHz (10 m.) bands.

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

| Inter-modulation in dB per 97.307(a) (b) |                          |      |          |      |      |                |  |
|--|--------------------------|------|----------|------|------|----------------|--|
| Order:                                   |                          | D3   | D3 D5 D7 |      | D9   | D11 and higher |  |
| Freq.<br>(MHz)                           | Output<br>Power<br>W Pep | Db   | Db       | Db   | Db   | Db             |  |
| 1.900                                    | 900                      | - 43 | - 44     | - 58 | - 61 | - 62           |  |
| 3.750                                    | 900                      | - 41 | - 43     | - 56 | - 59 | - 62           |  |
| 7.150                                    | 900                      | - 39 | - 43     | - 54 | - 57 | - 61           |  |
| 10.125                                   | 900                      | - 39 | - 41     | - 55 | - 61 | - 63           |  |
| 14.175                                   | 900                      | - 41 | - 45     | - 55 | - 59 | - 62           |  |
| 18.100                                   | 900                      | - 37 | - 41     | - 53 | - 61 | - 61           |  |
| 21.225                                   | 900                      | - 39 | - 41     | - 56 | - 62 | - 63           |  |
| 24.930*                                  | 900                      | - 39 | - 42     | - 56 | - 63 | - 63           |  |
| 28.500*                                  | 900                      | - 41 | - 44     | - 57 | - 65 | - 65           |  |
| 50.250                                   | 700                      | - 45 | - 47     | - 60 | - 67 | - 67           |  |

<sup>\*</sup>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 –105 dBc) when amplifier is driven with 0 to 100 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 12.3 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 900W 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 and by suitable frequency compensation.