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## **Exhibit VII Test Report for HO82WUALS606**

07/29/16

This amplifier meets or exceeds all requirements of CFR 47 part 97.317 as of July 29, 2016:

### **§ 97.317 Standards for certification of external RF power amplifiers.**

(a) To receive a grant of certification, the amplifier must:

(1) Satisfy the spurious emission standards of § 97.307 (d) or (e) of this part, as applicable, when the amplifier is operated at the lesser of 1.5 kW PEP or its full output power and when the amplifier is placed in the “standby” or “off” positions while connected to the transmitter.

(2) Not be capable of amplifying the input RF power (driving signal) by more than 15 dB gain. Gain is defined as the ratio of the input RF power to the output RF power of the amplifier where both power measurements are expressed in peak envelope power or mean power.

(3) Exhibit no amplification (0 dB gain) between 26 MHz and 28 MHz.

(b) Certification shall be denied when:

(1) The Commission determines the amplifier can be used in services other than the Amateur Radio Service, or

(2) The amplifier can be easily modified to operate on frequencies between 26 MHz and 28 MHz.

[71 FR 66465, Nov. 15, 2006]

This amplifier meets all sections of 97.307 Emission Standards applicable to external RF power amplifiers, as of April 15, 2013:

### **§ 97.307 Emission standards.**

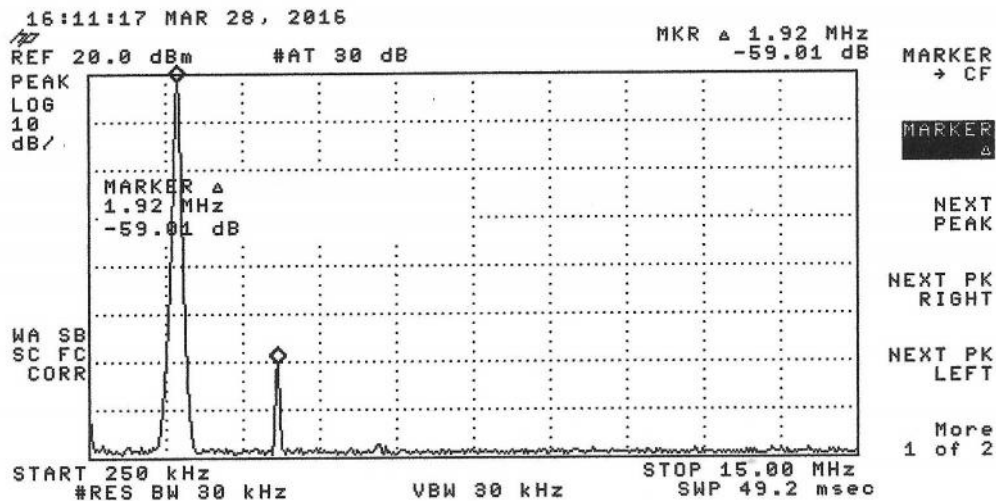
(d) For transmitters installed after January 1, 2003, the mean power of any spurious emission from a station transmitter or *external RF power amplifier* transmitting on a frequency below 30 MHz must be at least 43 dB below the mean power of the fundamental emission. For transmitters installed on or before January 1, 2003, the mean power of any spurious emission from a station transmitter or *external RF power amplifier transmitting on a frequency below 30 MHz* must not exceed 50 mW and must be at least 40 dB below the mean power of the fundamental emission. For a transmitter of mean power less than 5 W installed on or before January 1, 2003, the attenuation must be at least 30 dB. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.

(e) The mean power of any spurious emission from a station transmitter or *external RF power amplifier transmitting on a frequency between 30-225 MHz* must be at least 60 dB below the mean power of the fundamental. For a transmitter having a mean power of 25 W or less, the mean power of any spurious emission supplied to the antenna

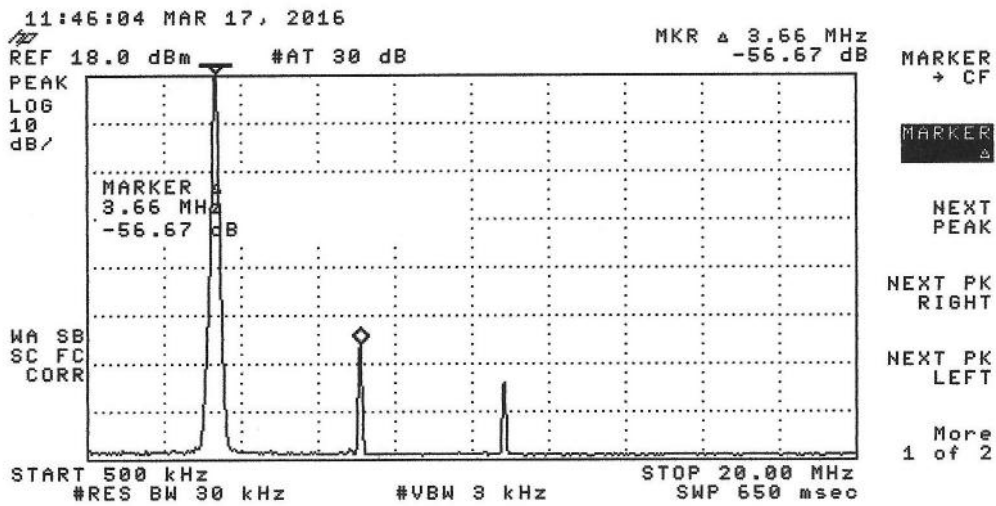
transmission line must not exceed 25  $\mu$ W and must be at least 40 dB below the mean power of the fundamental emission, but need not be reduced below the power of 10  $\mu$ W. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.

97.307d specifies harmonic and spurious levels at least 43 dB below fundamental, and not to exceed 50 mW, for operation below 30 MHz. With 600 watts, the harmonic and spurious limit is -43dB below fundamental.

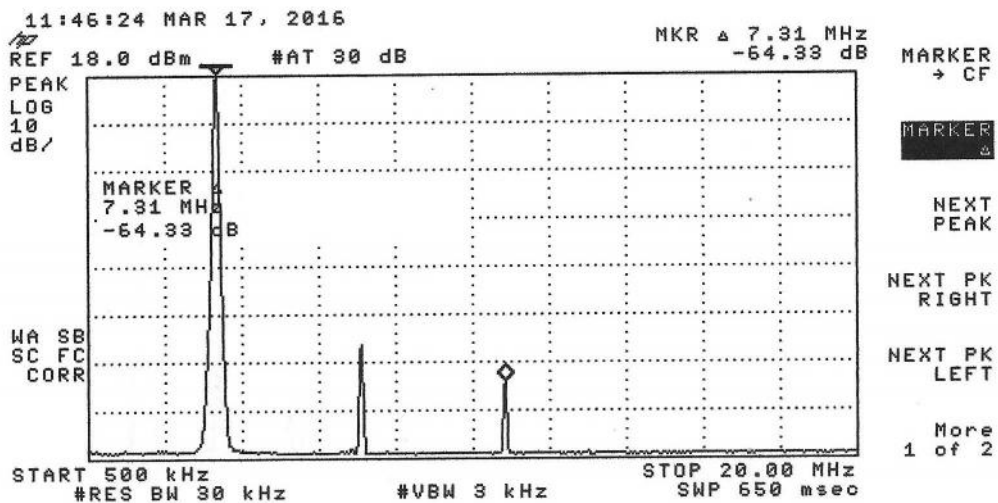
97.307e specifies harmonic and spurious levels at least 60 dB below fundamental for operation between 30 MHz and 225 MHz.



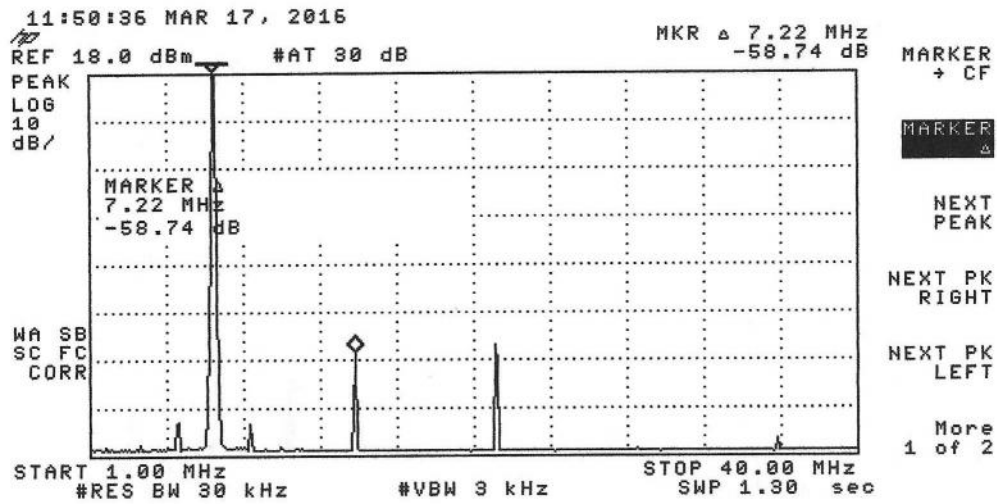
1.92 MHz 2<sup>nd</sup> harmonic -59 dB @600W  
No other harmonics and spurious visible.



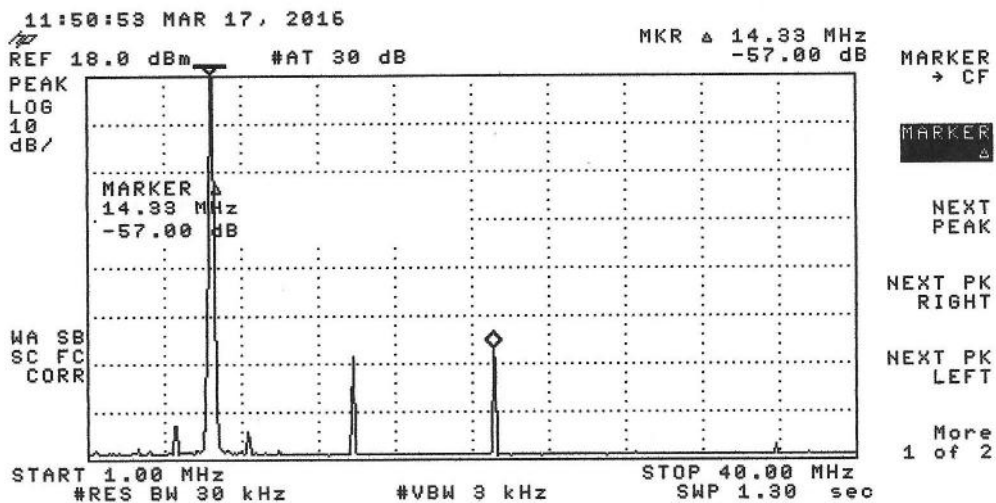
3.66 MHz 2<sup>nd</sup> harmonic -56 dB @600W



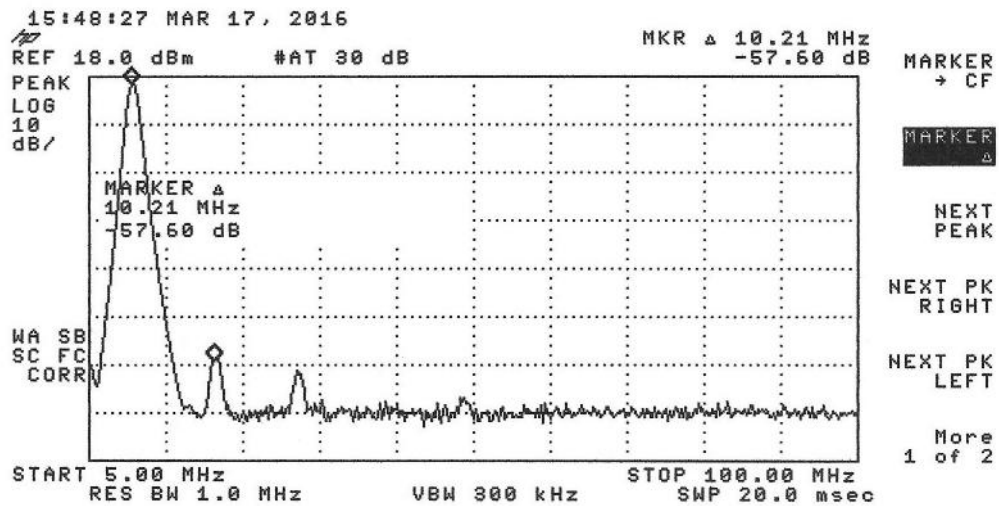
3.84 MHz 3<sup>rd</sup> harmonic -64 dB @600W



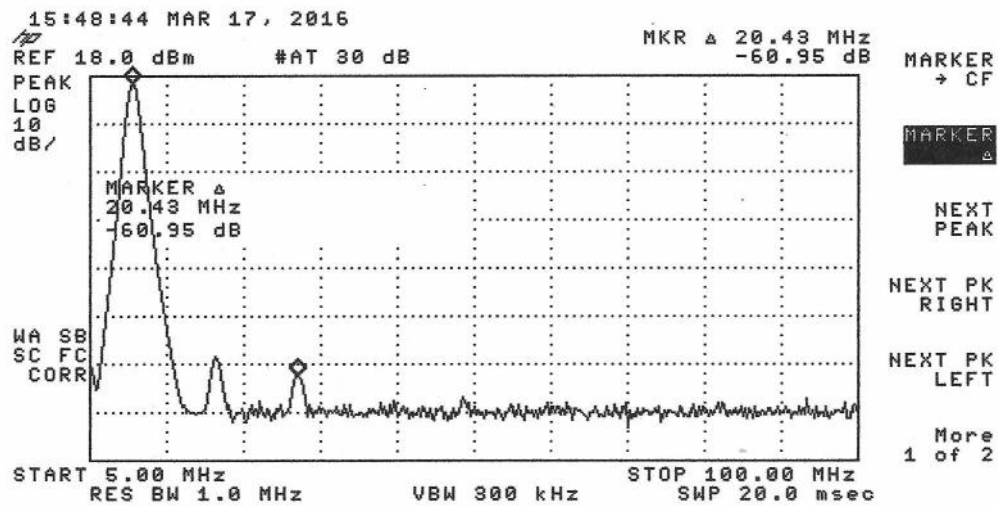
7.22 MHz 2<sup>nd</sup> harmonic -62 dB @600W



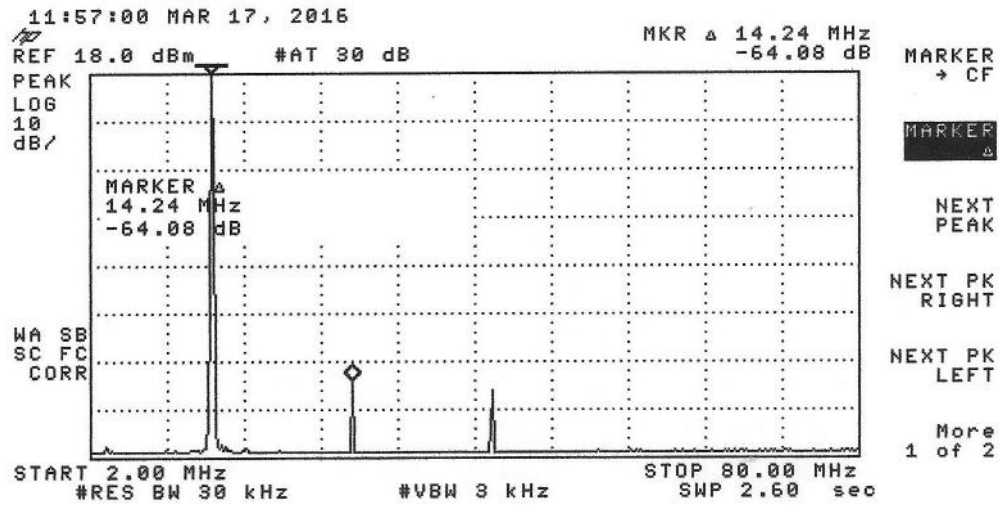
7.08 MHz 3<sup>rd</sup> harmonic -57 dB @600W



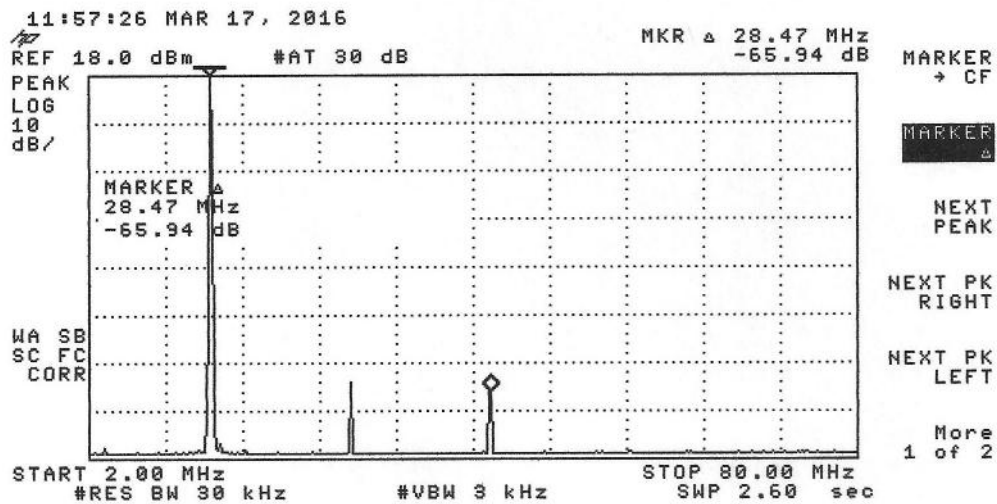
10.2 MHz 2<sup>nd</sup> harmonic -57 dB @600W



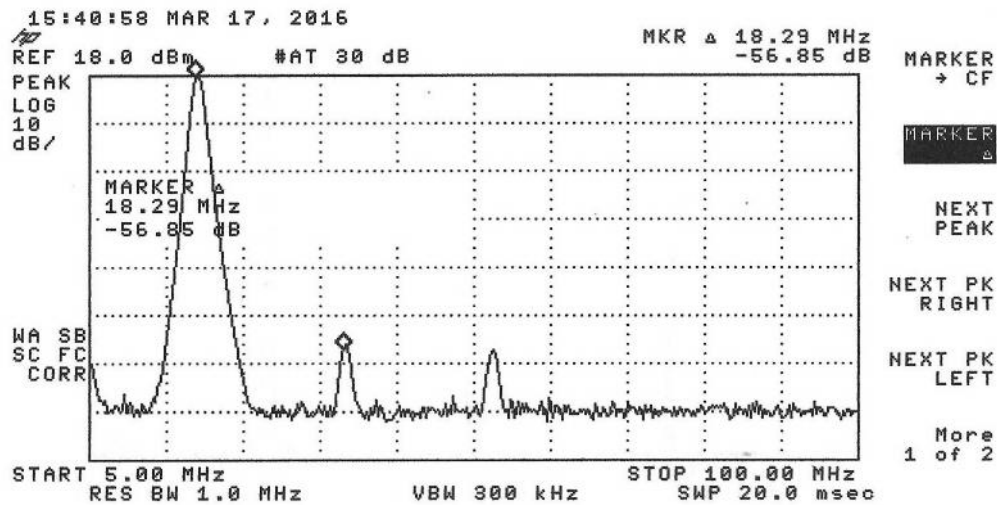
10.2 MHz 3<sup>rd</sup> harmonic -61 dB @600W



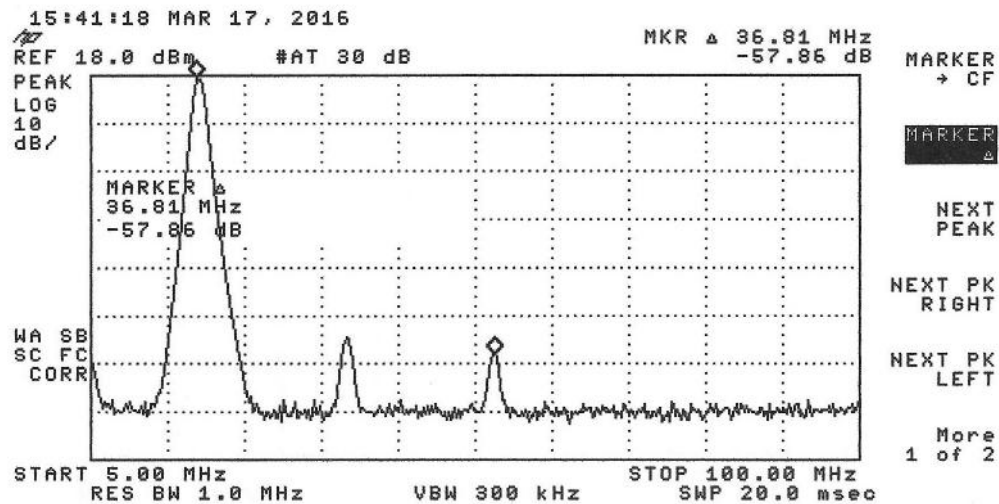
14.11 MHz 2<sup>nd</sup> harmonic -64 dB @600W



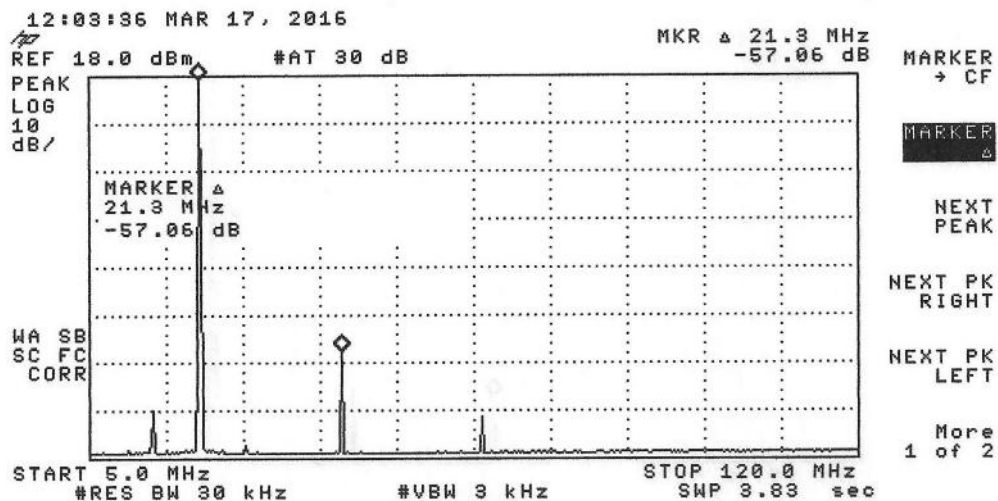
14.11 MHz 3<sup>rd</sup> harmonic -66 dB @600W



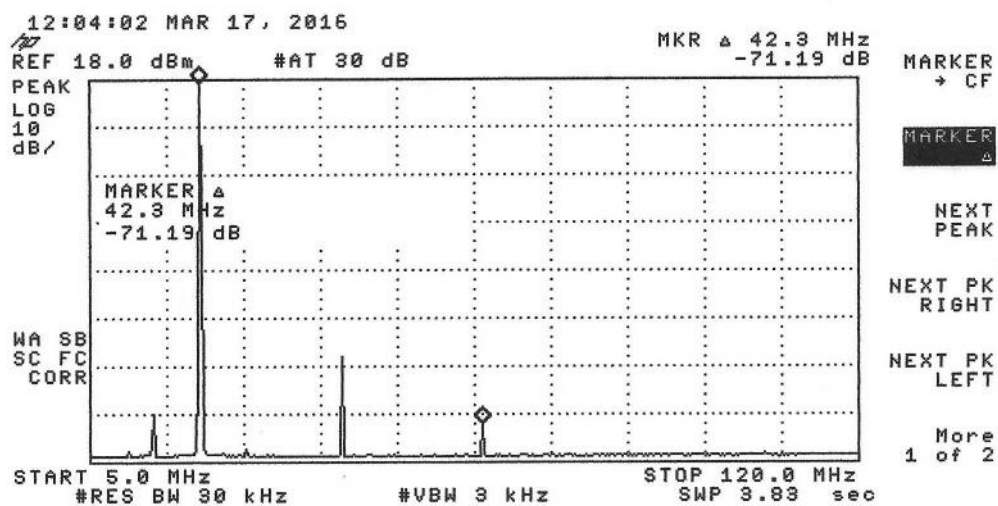
18.2 MHz 2<sup>nd</sup> harmonic -57 dB @600W



18.2 MHz 3<sup>rd</sup> harmonic -58 dB @600W

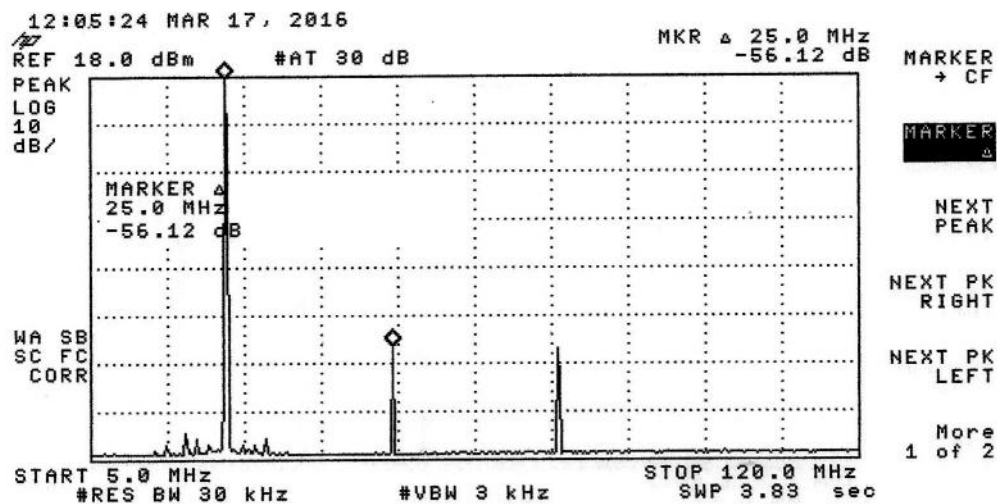


21.3 MHz 2<sup>nd</sup> harmonic -57 dB @600W

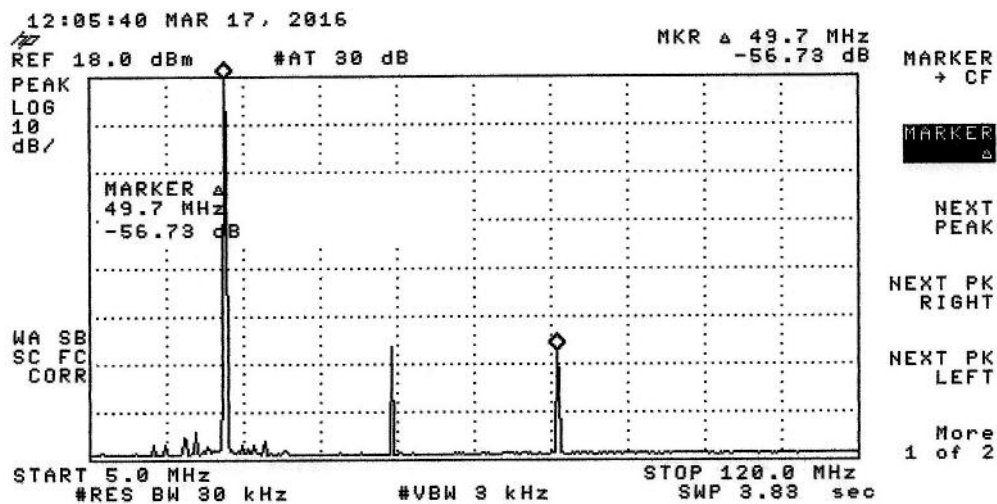


21.3 MHz 3<sup>rd</sup> harmonic -71 dB @600W

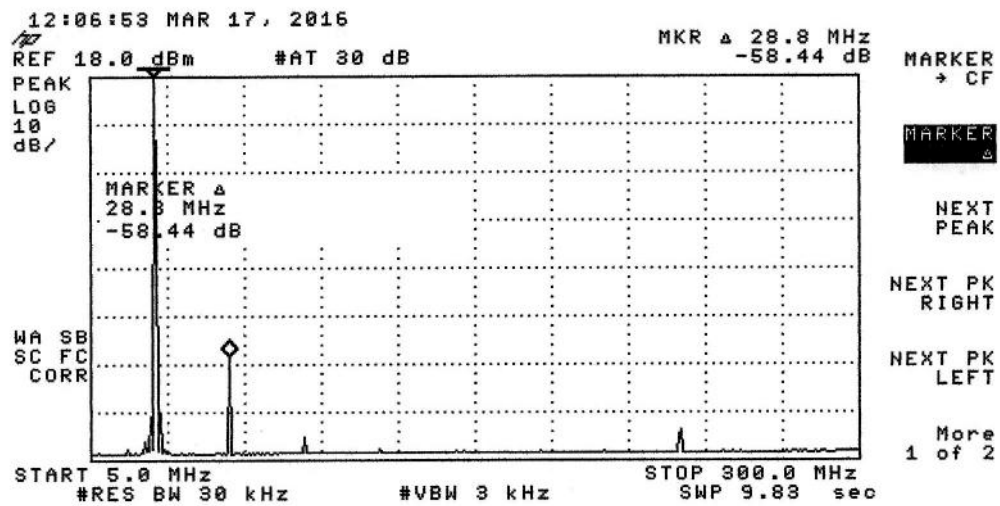




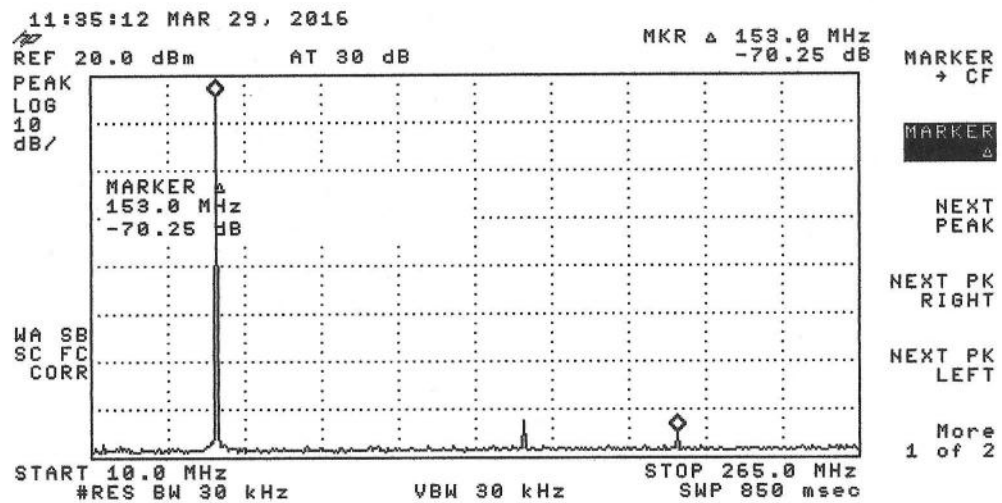
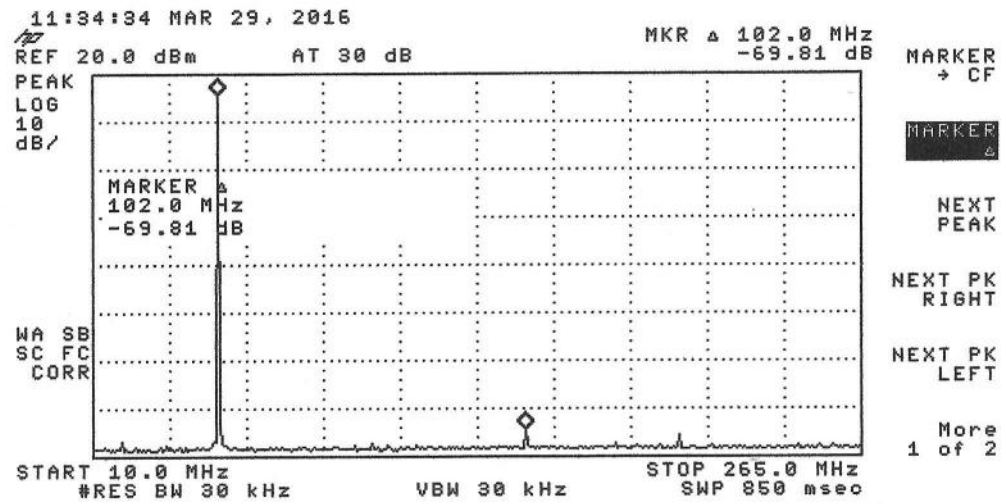
24.9 MHz 2<sup>nd</sup> harmonic -56 dB @600W



24.9 MHz 3<sup>rd</sup> harmonic -57 dB @600W

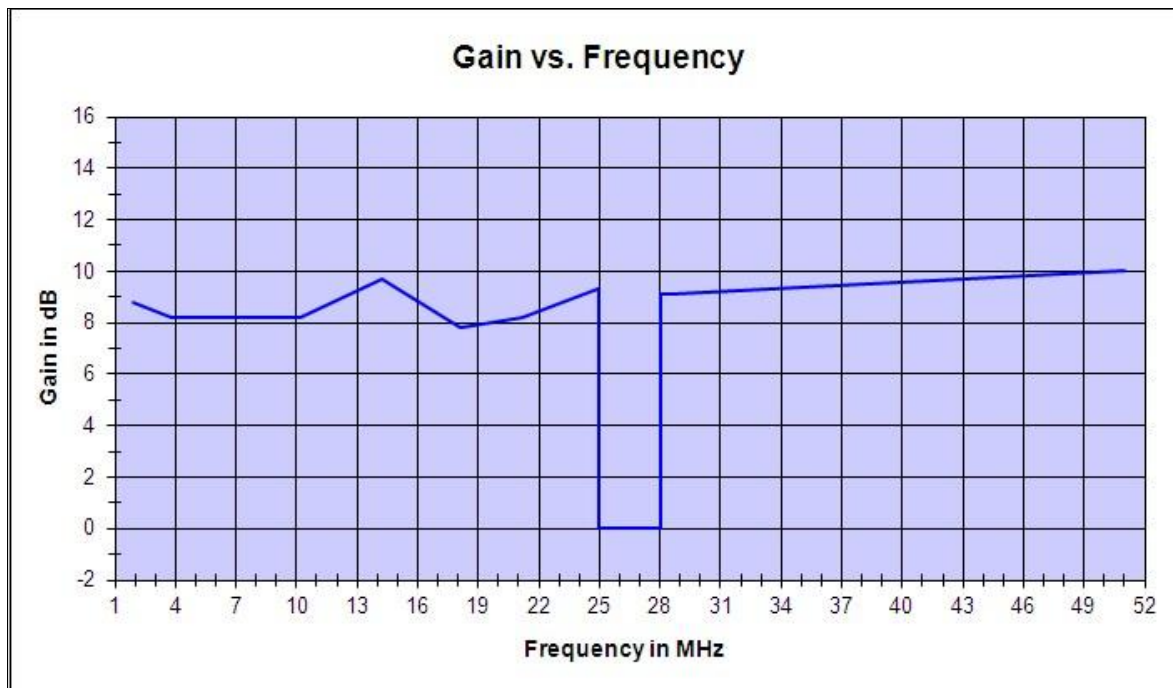


28.7 MHz 2<sup>nd</sup> harmonic -58 dB @600W



50 MHz 3<sup>rd</sup> harmonic -69.8 dB @600W  
50 MHz 4<sup>th</sup> harmonic -70.25 dB @600W

97.317 (2) Not be capable of amplifying the input RF power (driving signal) by more than 15 dB gain. Gain is defined as the ratio of the input RF power to the output RF power of the amplifier where both power measurements are expressed in peak envelope power or mean power.



Graph at rated power output, 600 watts.

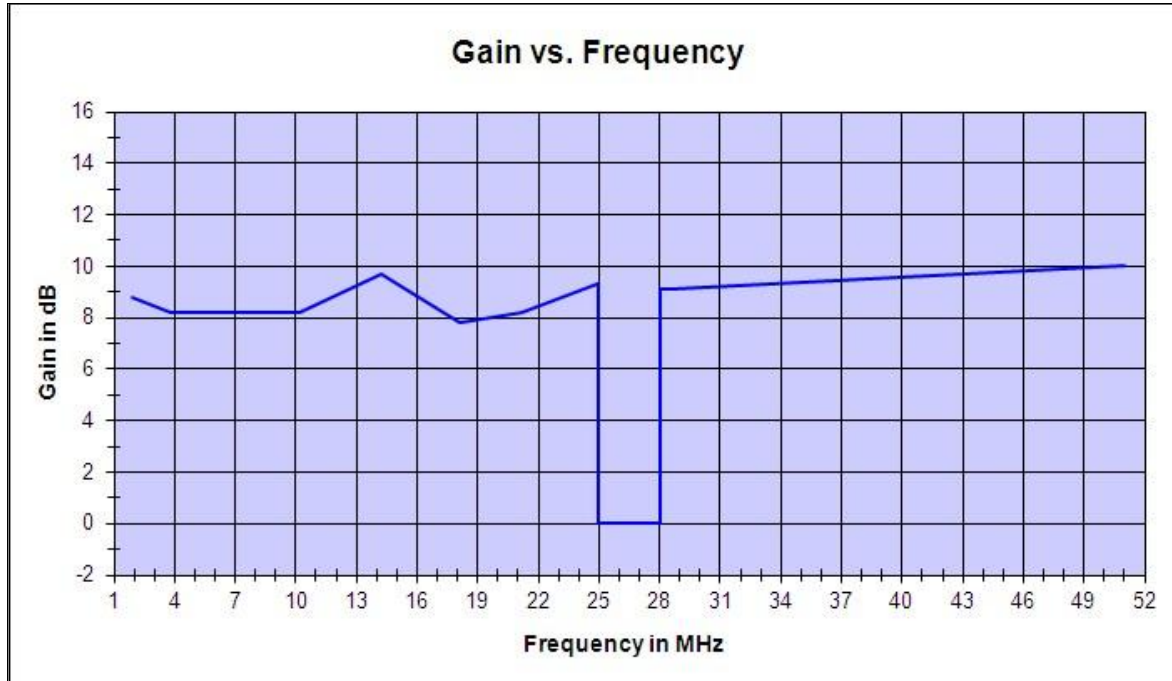
Frequency MHz	600W Gain dB	Peak Gain dB	Frequency MHz	600W Gain dB	Peak Gain dB
1.9	8.8	9.6	24.9	9.3	9.6
3.8	8.2	8.8	24.99	9.3	9.6
7.1	8.2	8.5	25	0.0	
10.15	8.2	8.3	27.99	0.0	
14.2	9.7	9.1	28	9.1	9.3
18.15	7.8	8.3	28.5	9.1	9.3
21.2	8.2	8.9	51	10.0	11.3

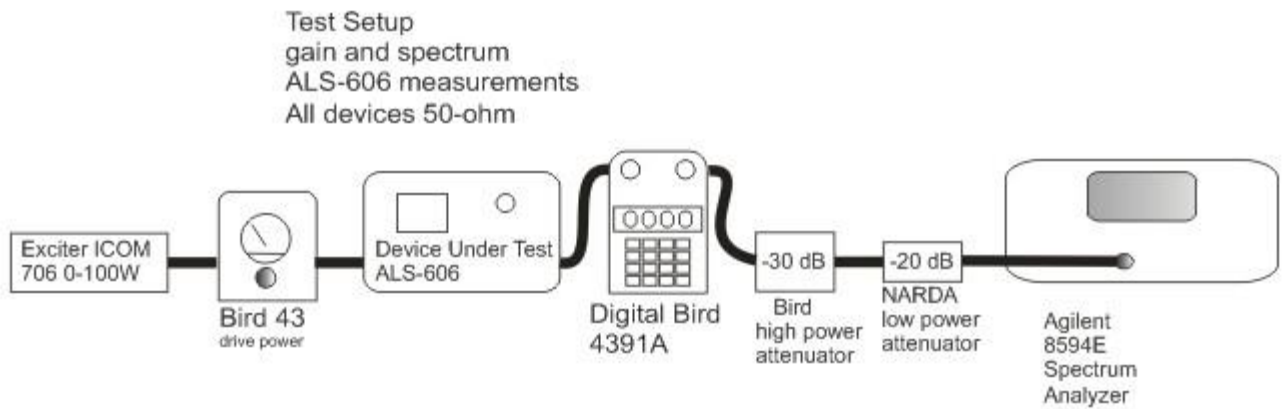
On the highest gain band, 6 meters (51 MHz), maximum gain at any drive level is 11.3 dB.



Gain vs. Drive (in watts) on highest gain band. Maximum gain is 11.3 dB. Gain remains 11.3 dB below 5 watts drive.

97.317 (3) Exhibit no amplification (0 dB gain) between 26 MHz and 28 MHz





Exciter: ICOM IC-706 transceiver

Drive power meter: Bird 43 with 100-watt element

Power output meter: Bird 4391A digital meter with 250- and 2500-watt elements

High power 30 dB attenuator: Bird 2000-watt attenuator

Low power 20 dB attenuator: NARDA 50-ohm 20 dB attenuator

Spectrum Analyzer Agilent 8594E

**7/29/2016**

**Charles T. Rauch**

**Engineer Ameriton**