

**AB-0010:  
Limiting Characteristics of the  
IVA-05118 Variable Gain Amplifier  
May, 1991**
**Description**

The Hewlett Packard IVA-05118 Variable Gain Amplifier is designed to provide up to 30 dB of gain control with a control voltage range between 0 and 5 volts. The IVA-05118 will also function as a limiting amplifier providing up to 40 dB of limiting with the control voltage set at 0 Volts. This applications bulletin documents the results of using this device as a limiting amplifier operating at 1 GHz.

Device voltage is set at 5 volts and control voltage is set at 0 volts. Power input is varied from -32 dBm to a maximum of +12 dBm. The performance is shown in Table 1.

**Table 1. Limiting Characteristics**

Power Input	Power Output	Power Input	Power Output
dBm	dBm	dBm	dBm
-32	-2.7	-10	0.6
-30	-1.5	-8	0.4
-28	-0.7	-6	0.1
-26	-0.2	-4	-0.3
-24	0.2	-2	-0.6
-22	0.6	0	-0.6
-20	0.9	+2	-0.8
-18	1.1	+4	-0.5
-16	0.9	+6	1.3
-14	0.9	+8	1.1
-12	0.6	+10	1.0
		+12	0.8

The IVA-05118 starts to hard limit at an input power level of -28 dBm. The maximum power output variation with an input power between -28 dBm and +12 dBm, is  $\pm 1$ dB.

Harmonic level content was measured at both 0 dBm and +10 dBm input power levels. The results are shown in Table 2.

**Table 2. Harmonic Level vs. Input Power Level**

Power Input	Harmonic Level			
	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
dBm	dBc	dBc	dBc	dBc
+10	-16	-23	-20	-28
0	-12	-25	-23	-36

Comparable limiting performance can be achieved from the IVA-05218 variable gain amplifier with differential input and the IVA-05208 plastic packaged variable gain amplifier.

**For technical assistance or the location of your nearest Hewlett-Packard sales office, distributor or representative call:**

**Americas/Canada:** 1-800-235-0312 or 408-654-8675

**Far East/Australasia:** Call your local HP sales office.

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