

## **F(t) Forssell Technologies**

### **Differential Line Receiver (DLR-1) Module**

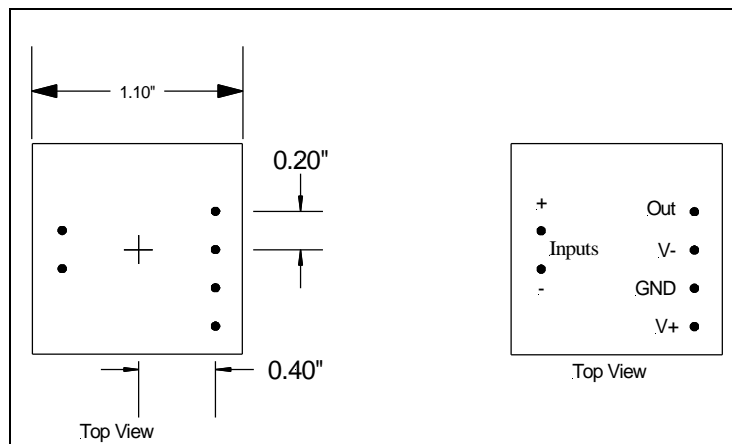
The DLR-1 is 1" x 1" potted module with a pin-out and footprint that is compatible with currently produced discrete operational amplifiers such as the API 2520™, Hardy/Jensen 990™, and others. The DLR-1 differs from these other amplifiers in that it is an all JFET Class A amplifier and is primarily designed as an input receiver. However the design of the DLR-1 allows it to be used in other applications as well, such as a standard operational amplifier in applications where driving low load impedances (< 3K ohms) is not a requirement, but where highest sonic performance is required.

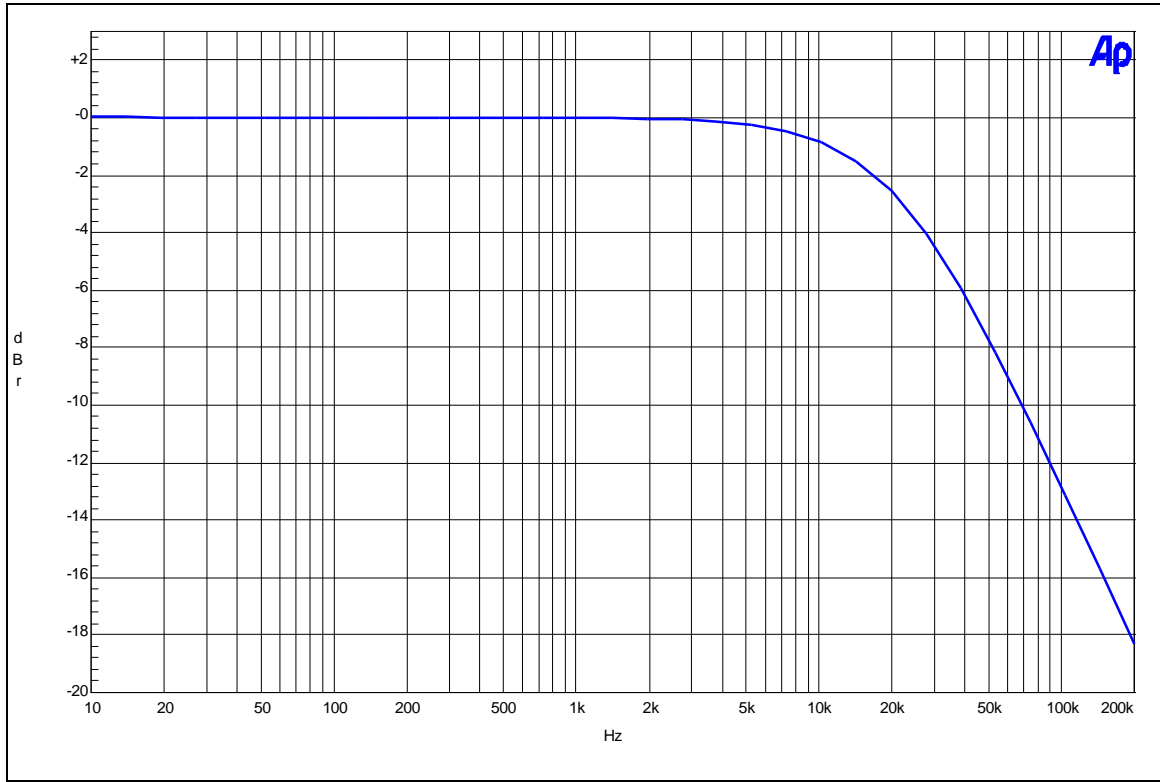
As mentioned the DLR-1 is primarily designed for input amplifier applications. Such amplifiers are usually operated at unity gain. The DLR-1 has minimal open loop gain and thus has low negative feedback applied when it is operated at unity gain, compared to most other operational amplifiers. Further, the DLR-1 is an extremely linear design and offer high performance with little or no feedback: something most other opamps can not accomplish.

The DLR-1 uses extremely low noise, tight-matched, complementary JFET devices for its input stage. The remaining devices are also low noise JFETs from the same family of devices. The output stage of the DLR-1 uses a common-source configuration instead of the more common common-drain (or emitter-follower) configuration. While this does result in a higher open-loop output impedance, in practical applications, this is not a problem. Shown below in the test data is a THD vs Output level plot showing the DLR-1's performance with various load impedances down to 600 ohm.

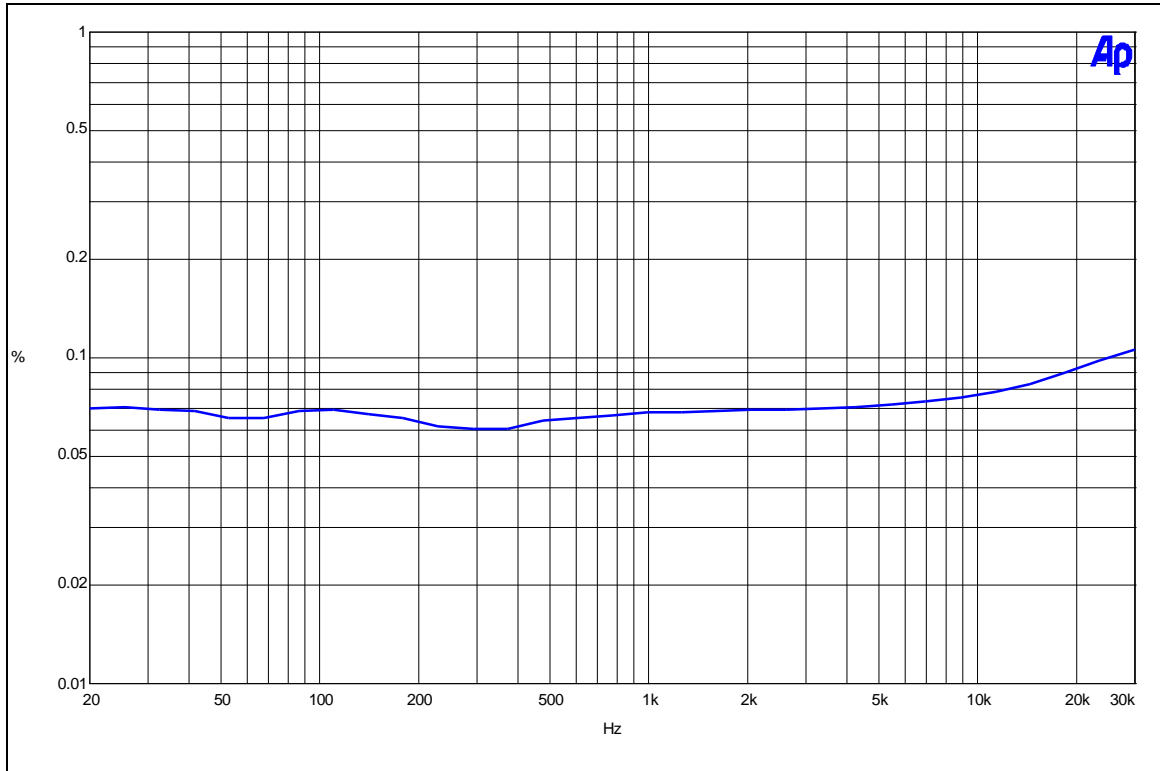
The following tests use an instrumentation load of 10k in parallel with a .001 mfd capacitor.

The DLR-1 is available factory direct from Forssell Technologies and is priced as follows....  
1-24 each \$39.95    25-50 each \$36.95    Over 50    \$32.95

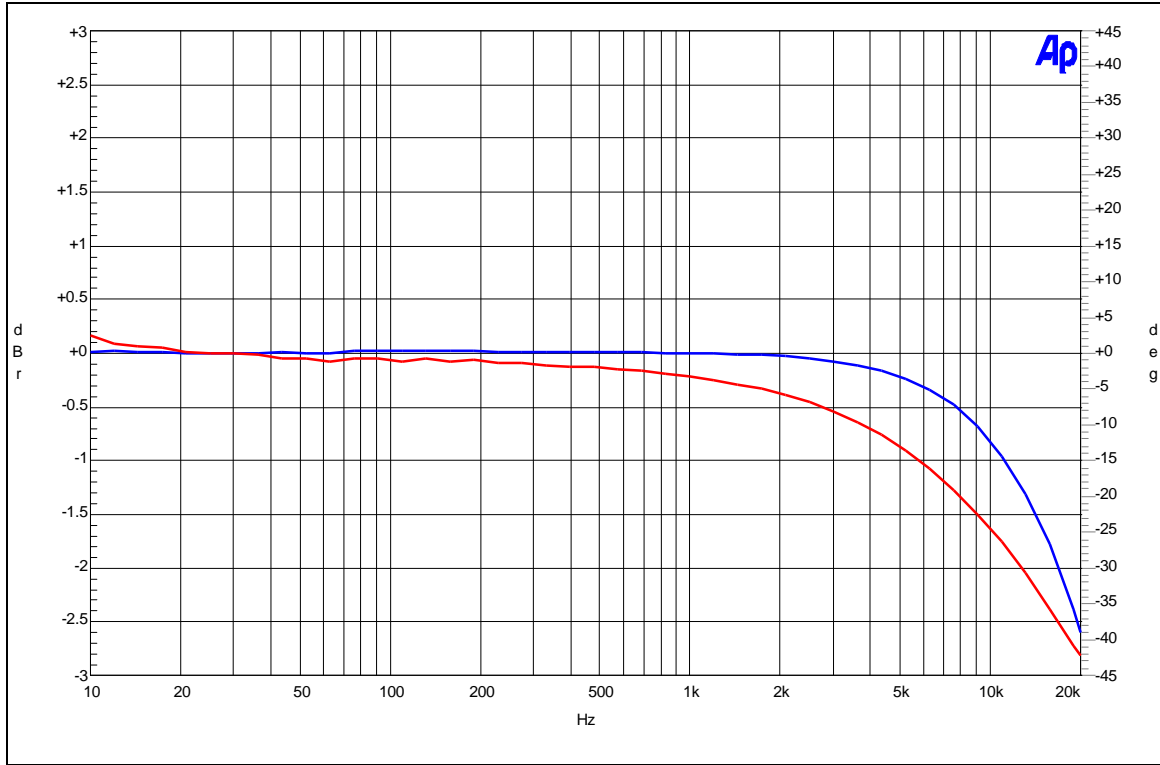




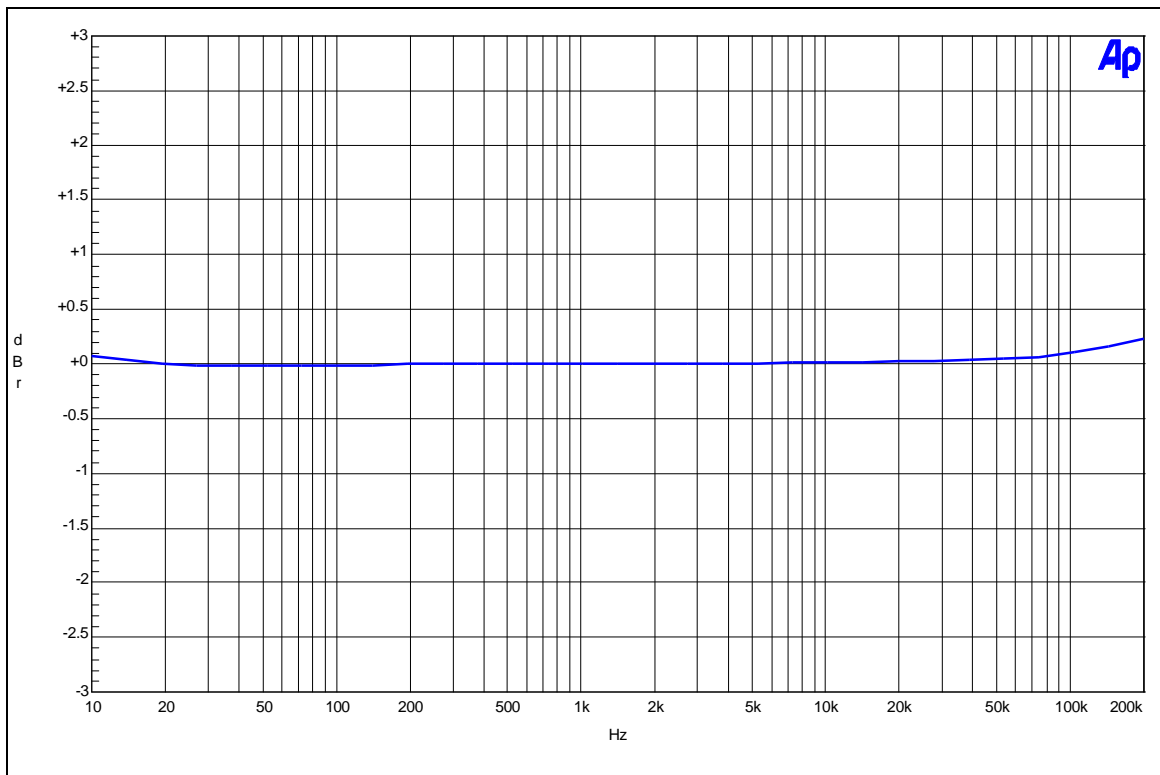
**Open Loop Freq Resp**



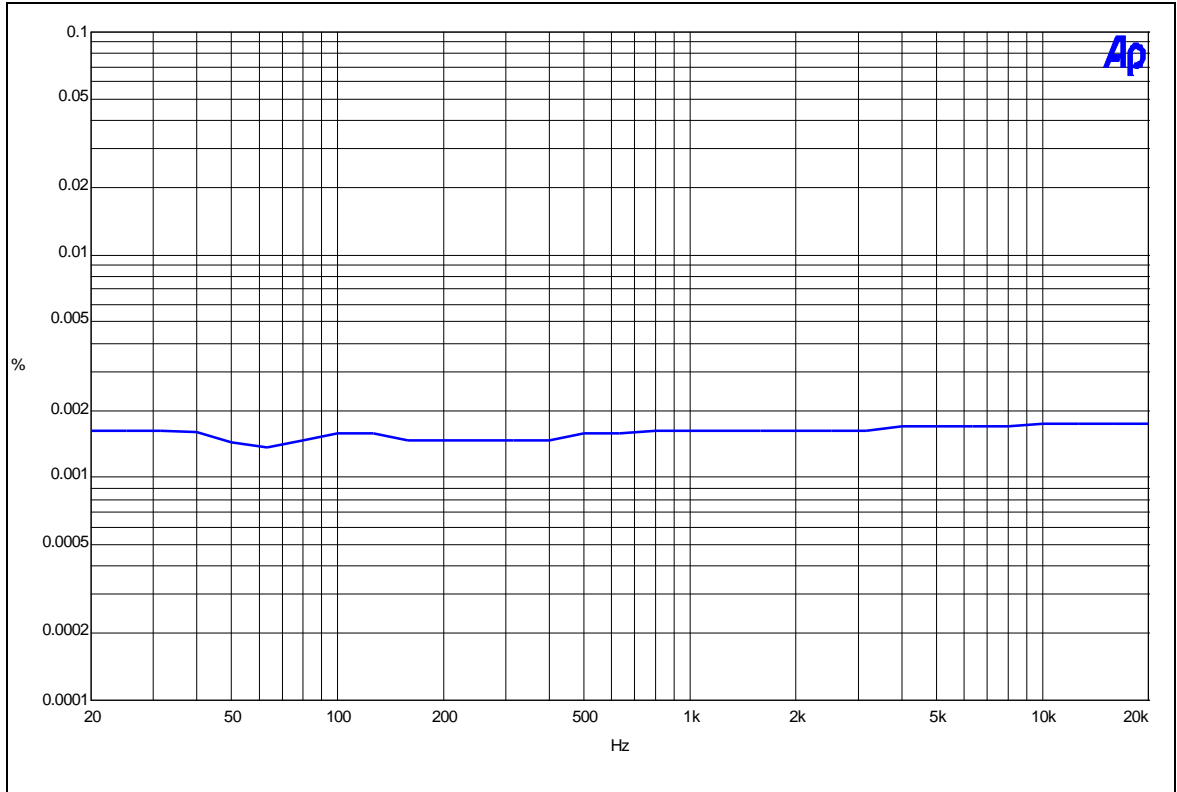
**Open Loop THD+N 22Hz - 80Khz Bandwidth Inst Load**



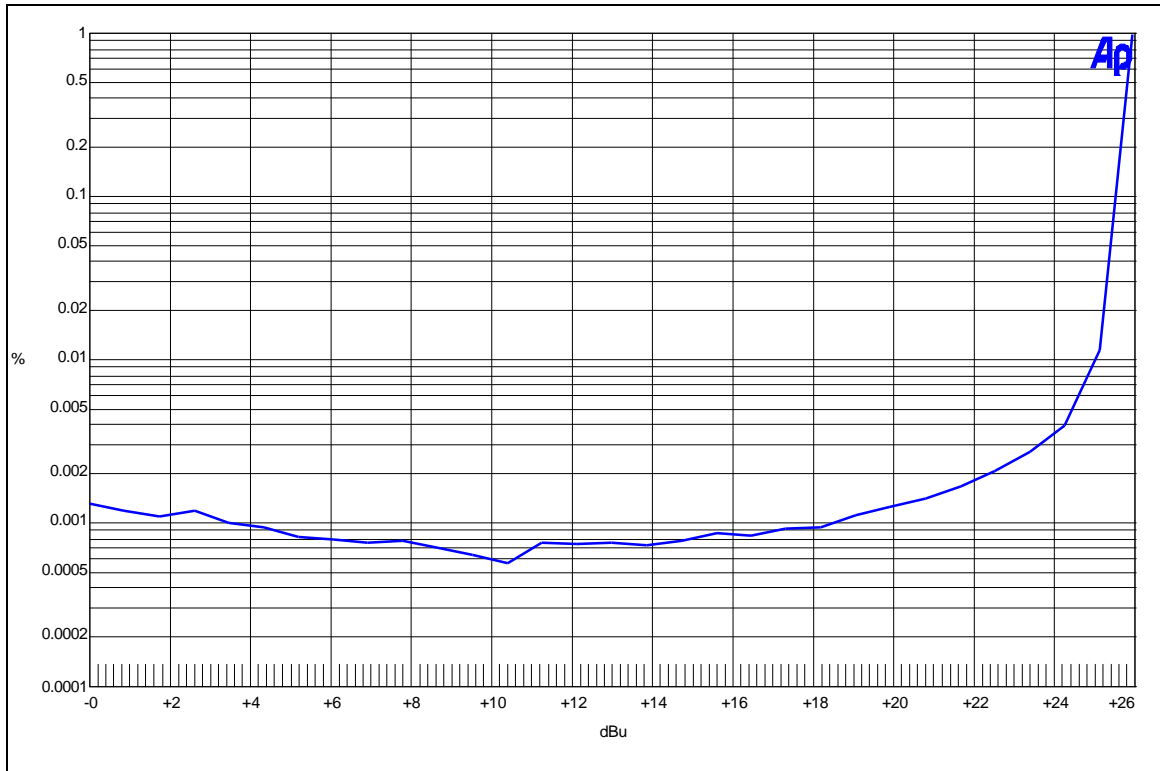
**Open Loop Freq - Phase Resp Blue = Freq, Red = Phase**



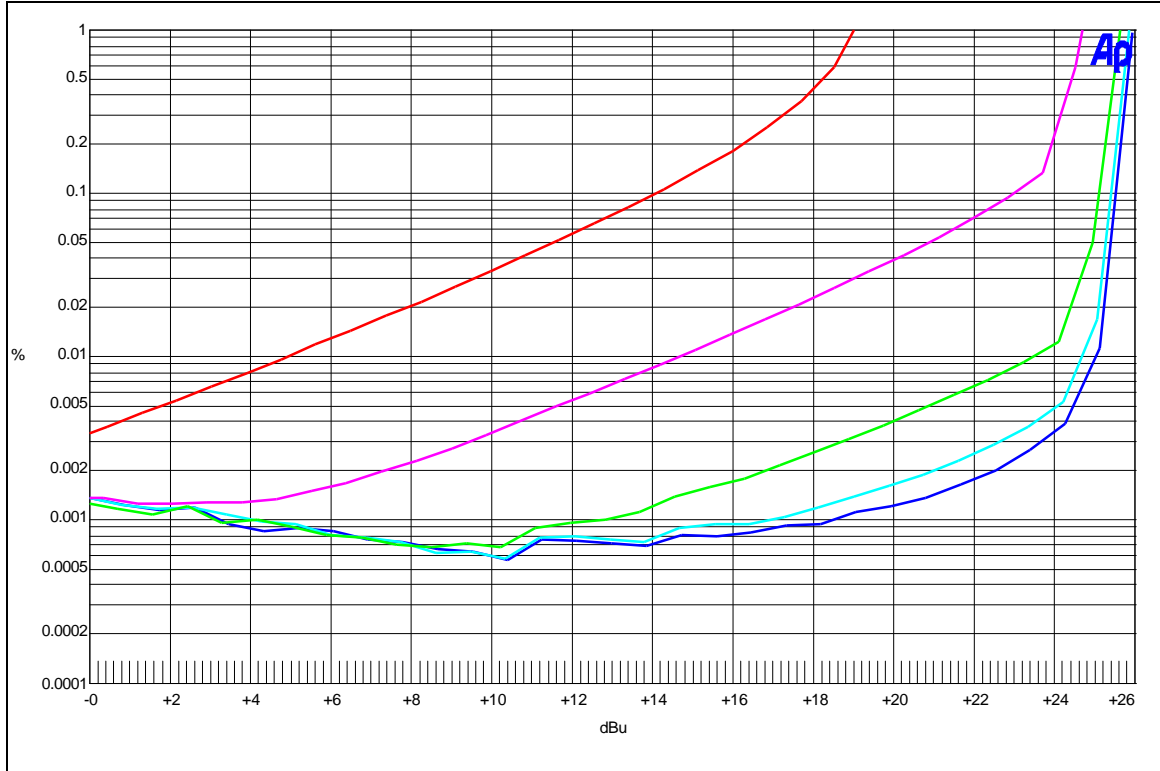
**Gain of 3 Uncompensated Freq Resp**



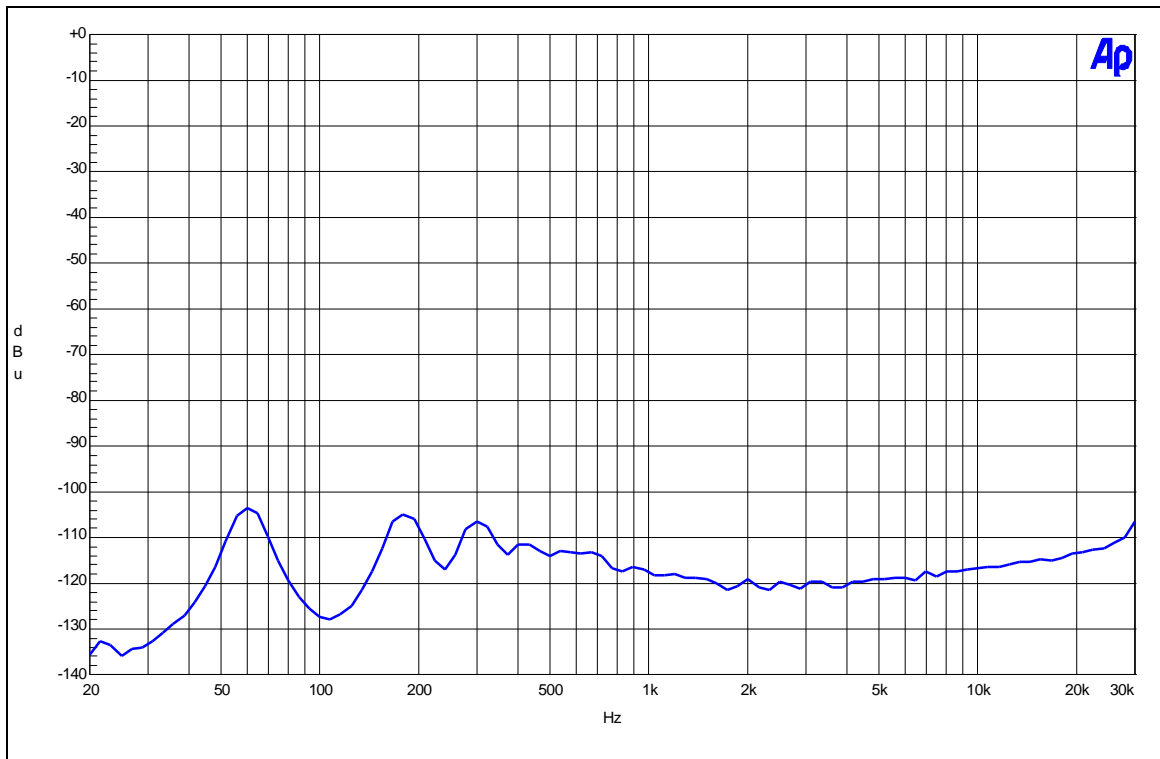
**Gain of 3 THD+N vs Freq at 0 dBu Output with Inst Load**



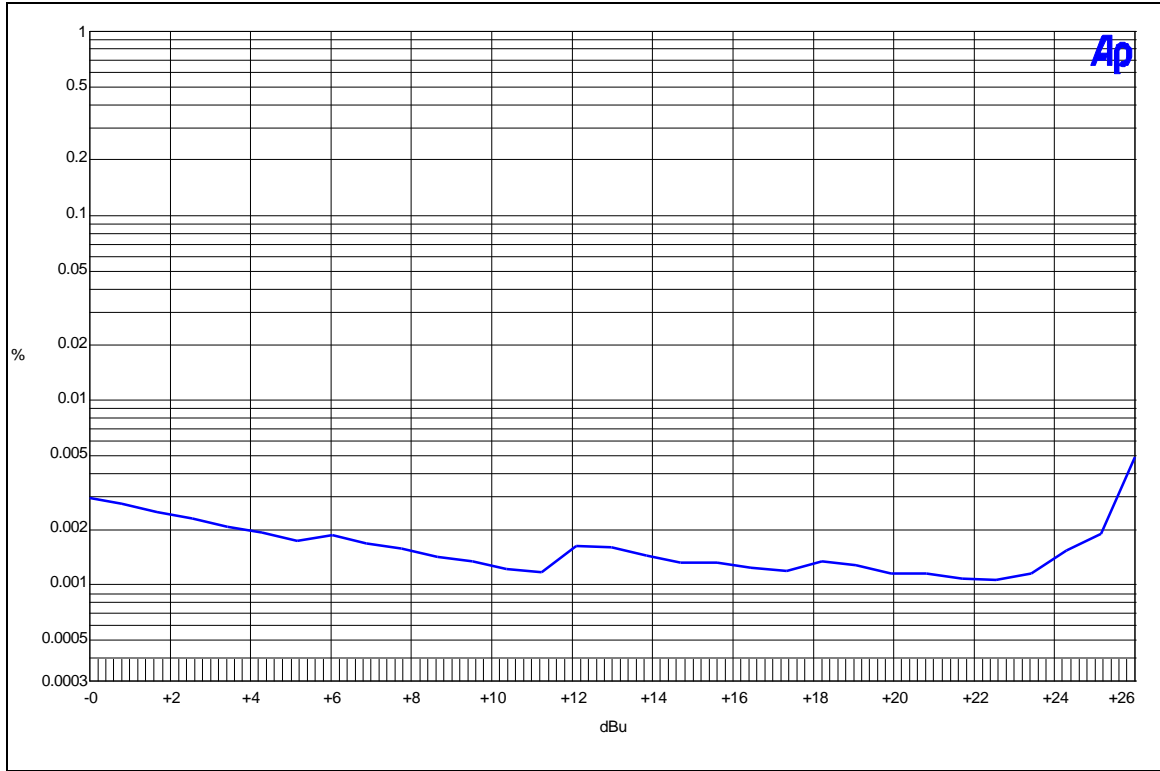
**Gain of 3 THD+N vs Output Level into Inst Load**



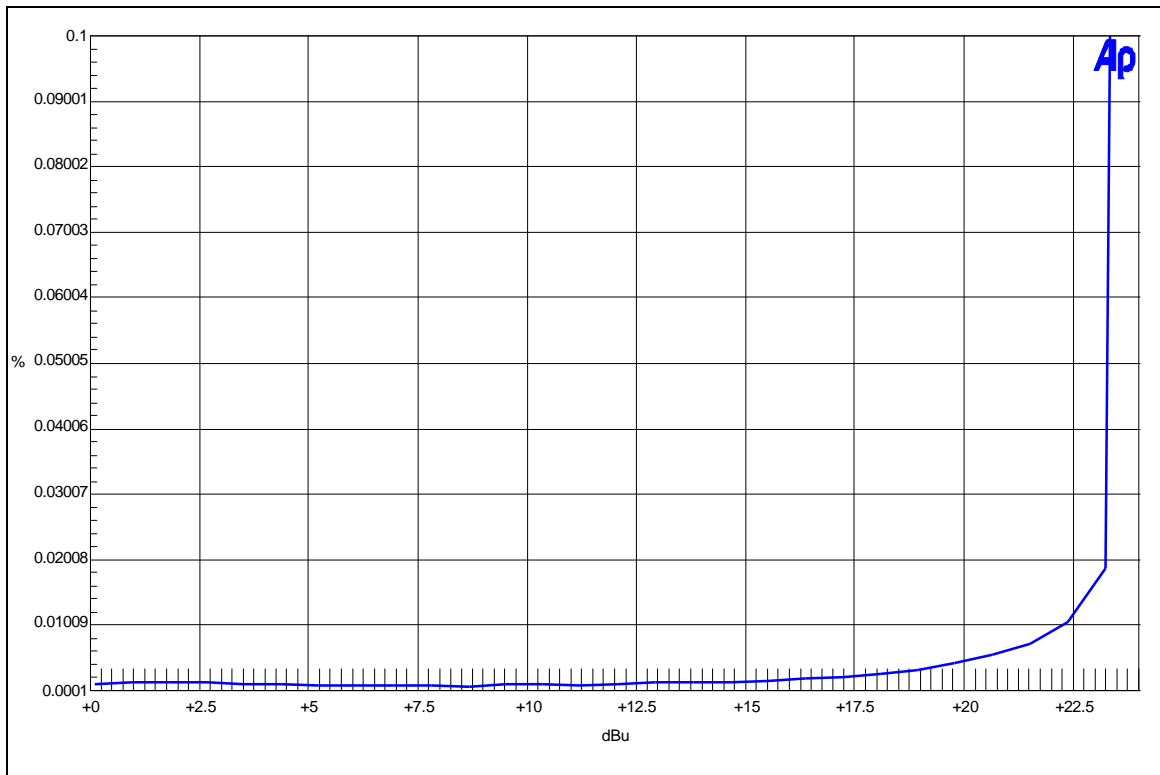
**Gain of 3 THD+N vs Output Level with various Load Impedance**  
**Blue = 10k, Cyan = 6k, Green = 3k, Magenta = 1.5k, and Red = 600 ohms**



**Gain of 3 Noise Floor measured with 1/3 Octave Swept Bandpass Filter**



**Dynamic Intermodulation Distortion (DIM/TIM) vs Output Level into Inst Load**



**Gain of 3 IMD vs Output Level into Inst Load**

(Please note that the - labels on the output level are a graph labeling error.)