



**CleanRF Systems**  
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## **RF-SM (Variable RF Sampler / RF Demodulator with Headphone and External Trigger Out)**

The model **RF-SM** (Variable RF Sampler / RF Demodulator with Headphone and External Trigger Out for Station Monitoring) is designed specifically for those who do not use linear amplification but want the best RF station monitoring capabilities available.

The Variable RF Sampler of the model **RF-SM** is designed to specifically sample and convert very low RF power envelopes directly to a usable signal suitable for feeding the vertical "Y" input of your oscilloscope or establish a pre-distortion feedback signal for use with SDR based systems!

The isolated External Trigger output of the model **RF-SM** provides a unique signal suitable for feeding the "External Trigger" input of your oscilloscope. This signal has an ability to synchronize your horizontal modulation envelope sweep, regardless of changing voice or data modulated frequencies, in either SSB or AM envelope monitoring making your envelope lock-in-place when you speak! No more difficult-to-view envelope patterns!

A base-band AM Audio Demodulator is also provided, designed to directly demodulate the RF envelope from your transmitter to a usable signal yielding and boasting a flat audio frequency response ranging from 10 Hz to 16 kHz! This signal is suitable for feeding stereo headphones, line level amplifiers or audio mixers with the final audio level adjustable via the AF output level pot to the 1/4" TRS output Jack, remember this does not adjust the fixed trigger output.

Additionally, the model **RF-SM** features a passive-flat operational VSWR over a broad frequency range and insertion loss is a negligible 0.1 dB. The **RF-SM** produces both an un-rectified, variable and continuously adjustable non-directional sample at the BNC; a rectified, continuously variable, non-directional demodulated source at the 1/4" TRS jack and a rectified, non-variable, non-directional demodulated source at the external triggers BNC jack making the RF-SM an ideal choice for a variety of applications.

All CleanRF Systems chassis are built, assembled and tested here in the USA headquartered near the grounds of WWV and are finished over by a baked-on black textured finish outer-coating for decades of continual service and performance. Connectors are custom long barrel SO239's for easy installation. Products are fully warranted against any defects both electrically or mechanically and include BNC cables and adapters for plug and play operation!

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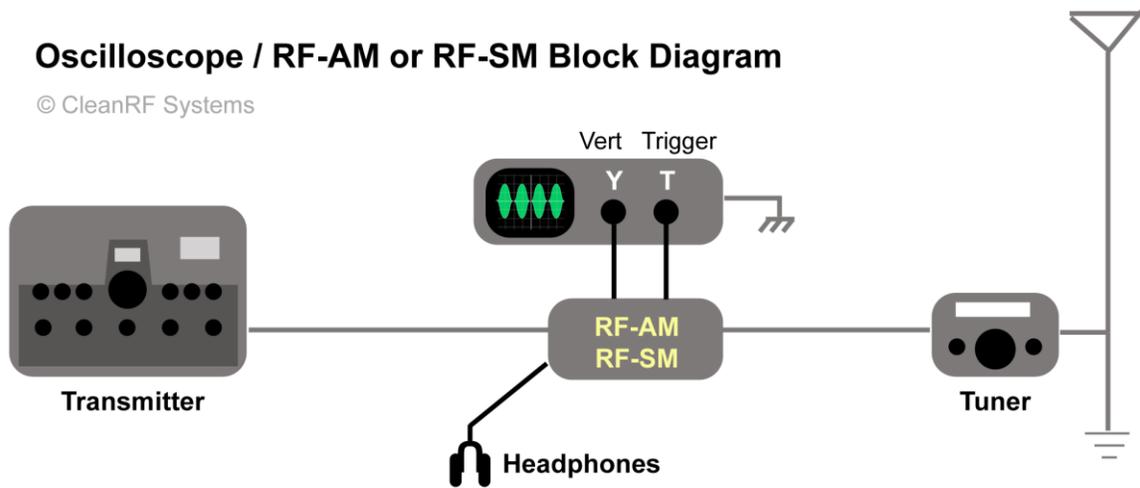
## RF-SM Specifications

- Frequency Response 500 kHz ~ 60 MHz – Audio: 10 Hz ~ 16 kHz
- Rated Input: Sampler: 0w ~ 200w PEP / Trigger: 1.5w ~ 200w PEP
- Sampler Output: -26dB ~ -50dB
- AM Dynamic Range: 60dBu
- Connectors In: SO-239
- Connectors Out: SO-239, BNC, BNC, 1/4" TRS Audio
- Controls: Variable RF Output 6dB, Variable AF Output
- VSWR: < 1:1.1
- Insertion Loss: < 0.1 dB
- Cable and Adapter: (2) 6 Ft. BNC Male-to-BNC Male and UHF Male-to-Male Adapter
- Applications:
  - RF Modulation Envelope Monitor
  - External Trigger Synchronization
  - Pre-Distortion Sampling for use with Anan Pure Signal®
  - Peak Envelope Power Monitor
  - AM Audio Modulation Monitor
- Dimensions: W 2 1/8" x L 4" x H 1 5/8"

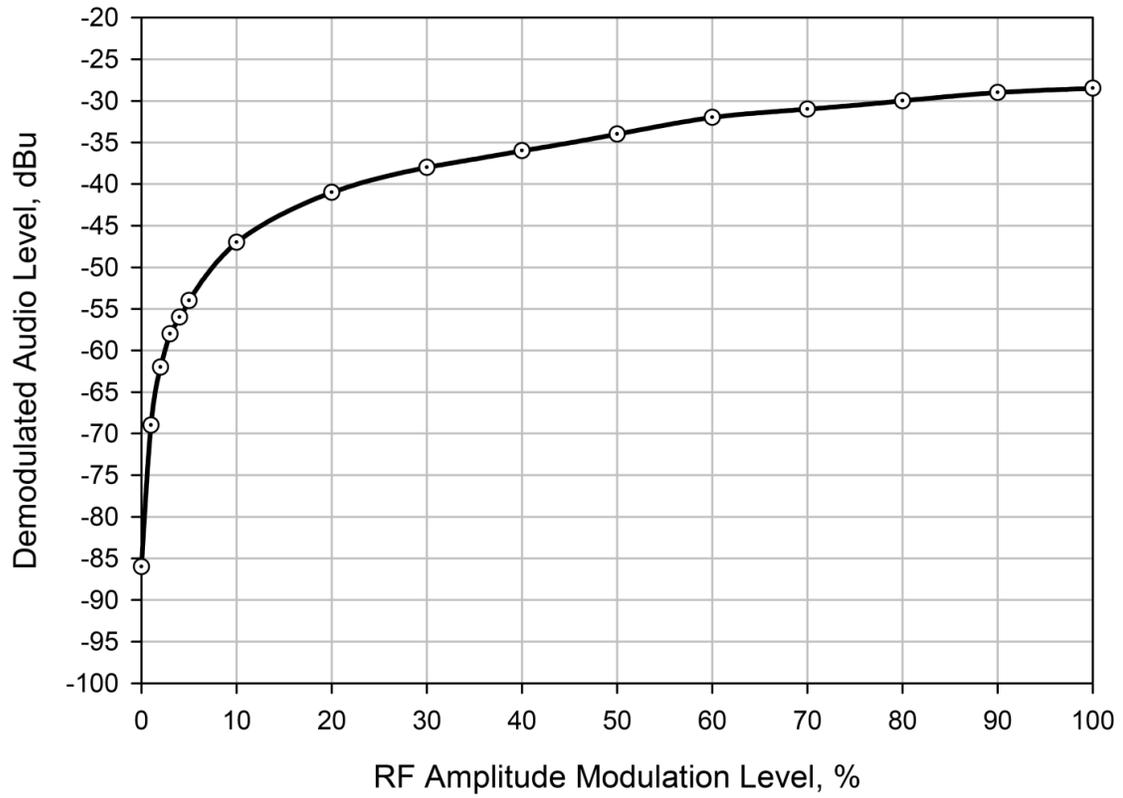


### Oscilloscope / RF-AM or RF-SM Block Diagram

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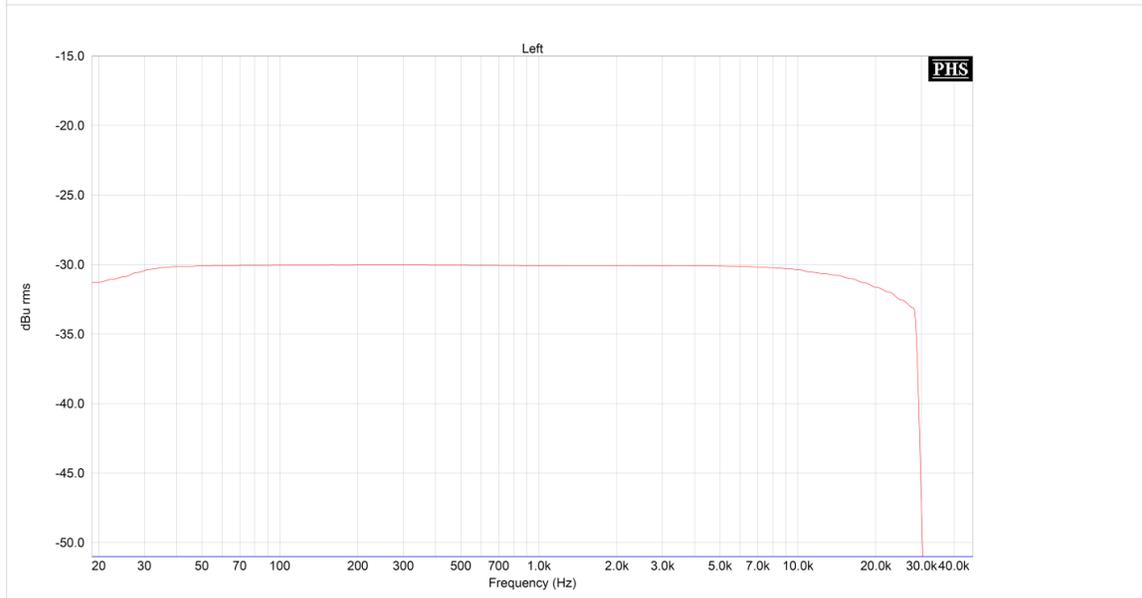
## Amplitude Modulation Dynamic Range at 1 kHz



Sampling: 96000 Hz  
FFT size: 65536  
Averaging: 1  
Window: Hanning

CleanRF.com RF Demodulator  
RF at +7.1dBm, AM sweep 80% depth

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RF signal generated by HP2920A Comm Test Set = 7 MHz at +7.1 dBm carrier and 80% AM level.  
RF Demodulator BNC output to M-Audio Delta 1010LT soundcard calibrated with Fluke 289 True RMS Meter at 1kHz.