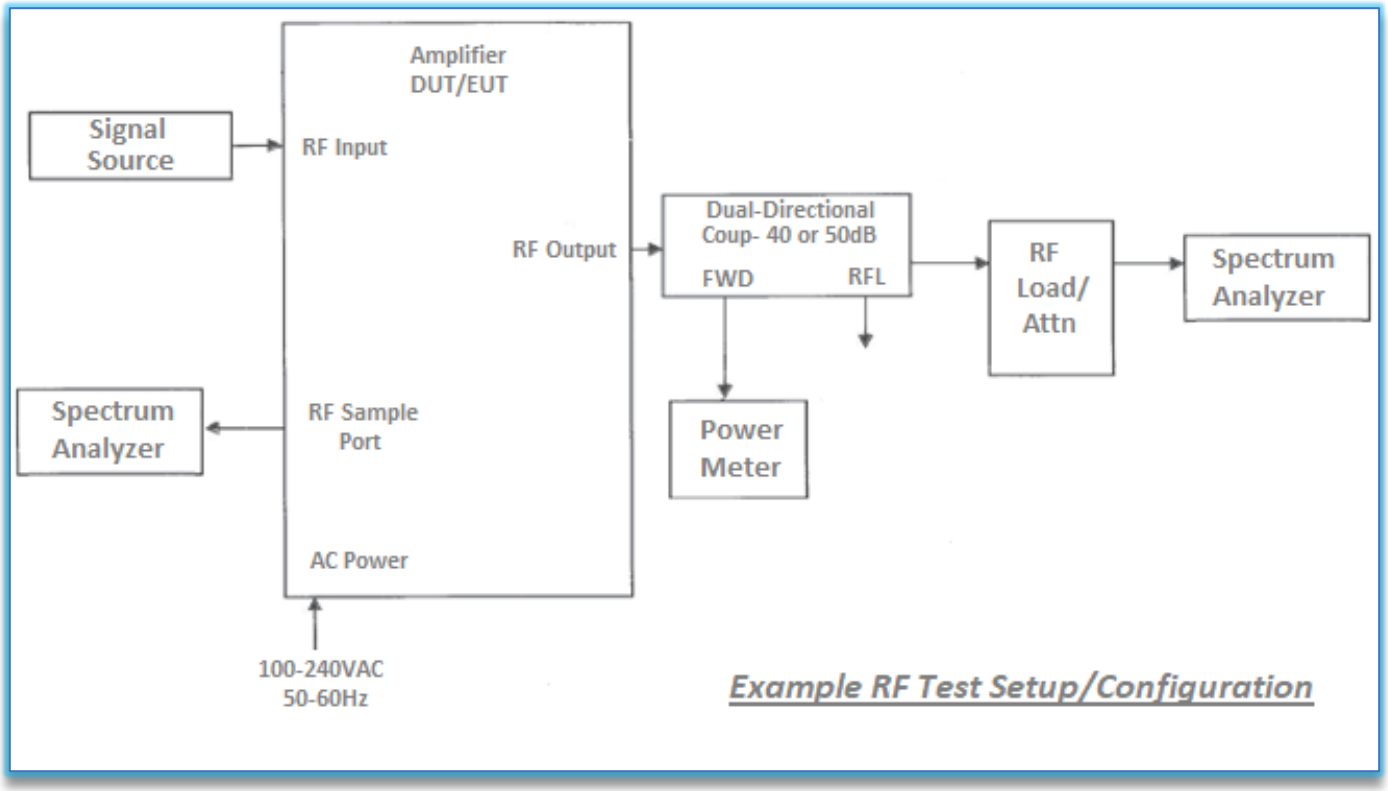
EXODUS ADVANCED COMMUNICATIONS
EXIT OUT OF THE ORDINARY

App-Note: 004 - RF Test setup for measuring Power & Harmonics



Summary Explanation:

This test setup illustration is a basic diagram to show how the measurement of Power & Harmonics are recorded.

1. Power measurement is accomplished by using a high-power calibrated coupler (or high-power calibrated attenuator) which gets attached to the Amplifier RF output connector. Attached to the calibrated coupler (or attenuator) is a calibrated power meter/sensor for absolute power measurements. The RF input drive to the amplifier is increased from the signal source until the power meter reads the rated power specified for the product under test. This test verifies the amplifier meets the specified RF output power. Normal practice for a basic product verification is to record 3-5 frequency points; example: low, mid & high band point or as desired.

2. Harmonics are recorded in a similar manner by simply increasing the input drive from the signal source. The level is increased until the specified power level is achieved for where harmonics would be recorded. (The industry standard is normally the amplifier P1dB rating for harmonic measurement) The 2^{nd} & 3^{rd} harmonics are recorded on the test data sheet as measured from the Spectrum Analyzer. It is more common to use the amplifier output for harmonic measurement. If this is not possible then if available the Amplifier RF sample port may be used. Normal practice for a basic product verification is to record harmonics for the same 3-5 frequency points; example: low, mid & high band point or as desired.

3. Reference line item 2 description; about harmonics, using the spectrum analyzer you can record the harmonic reduction or difference from the fundamental that is being viewed on the spectrum analyzer. To confirm the amplifier is working accordingly with respect to harmonic reduction, you can move the spectrum analyzer to the RF Sample port as there are no filters on the RF sample port. This can confirm that the RF output harmonic reduction filters are reducing the harmonics as specified from the RF output line.

4. Alternatively, for harmonic measurements, the amplifier can transmit into an anechoic chamber and a broadband horn can be used to pick up the signals which can be viewed on a spectrum analyzer.

5. Equipment used list, example:

Signal Source:	Anritsu-68369A/NV or equivalent
Power Meter:	Anritsu-ML2487A or equivalent
Power Sensor:	Anritsu-MA244D or equivalent
RF Load/Attenuator:	Weinshel-82-30-34 or equivalent
Spectrum Analyzer:	Agilent-E4408B or equivalent
High Power Coupler:	Werlatone-C10336-16 or equivalent
Miscellaneous:	Low & High power cables, RF connectors/Adaptors as needed

Note: When performing RF Power measurements please ensure proper calibration of the test equipment being used. Be sure to take into account insertion loss of couplers, attenuators, cables, connectors used when performing accurate power measurements.