DSA815-TG 'Power Sweep' Mode

Measure Compression of a RF Amplifier to Determine Linearity

Power Sweep is used for testing an RF Amplifier's power output characteristics by displaying its power output curve approaching the level of output limiting.

Reference the DSA800 Series User Guide pages 2-42, 43 for parameters, etc.

1. Initial Settings for Configuring Power Sweep Operation:

Connections: Connect a coax cable between the TG Output and the SA Input.
Select and set: **Preset** (Green key), **FREQ**: 750MHz (Test Frequency), **SPAN**: 100Hz, **RBW**: 100Hz, **TG:** On, **TG Level:** -20dB, **Power Range:** 20dB,
 Power Sweep: On, **AMP**: Auto Scale, **Scale/Div**: 2dB, **Ref Level**: -1dBm.

This produces a Power Sweep at 750MHz with a 20dB amplitude increase in 1dB steps. It incorporates a 100Hz span for the Power Sweep (*Power Sweep will NOT work with '0 Freq. Span'*) for the measurement of an RF Amplifier's output Linearity.
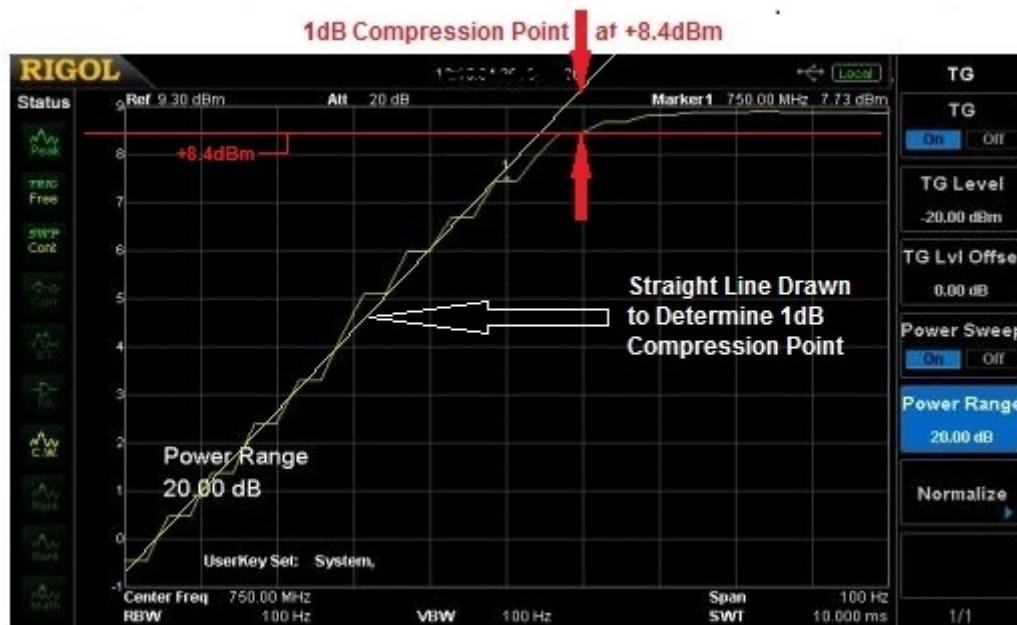
2. For Testing a Amplifier's Linearity:

Connections: Connect TG Output to RF Amp. Input, SA Input to Amp. Output.
Change the following: **FREQ:** A/R, **RF Level:** A/R, **Ref Level**: A/R.

An external attenuator and/or amplifier can be used with the Amplifier UUT if the Input/Output levels are beyond the DSA815-TG's capabilities. You can change the Scale/Div to 1dB and the Ref Level A/R to increase the display resolution.

Example DSA815-TG Power Sweep Screen Display of a RF Amplifier Linearity Test

This screen shows the change from linear behavior (at the marker) to the non-linear output of the device. The point where the measured power differs 1 dB from the theoretical linear extension is referred to as the 1dB-Compression Point (P1dB), an important parameter for RF Amplifiers, etc.

Although some level of 2 tone IMD could begin to be generated at least 10dB below the P1dB.

Note: 'P1dB' is the RF Amplifier's Input power that the output 1dB Compression Point occurs at, whereas the +8.4dBm 1dB Compression Point in this example is the Output Power.