Output level accuracy (IQ modulation relative to CW)

This test checks the output level accuracy of the IQ modulation inputs relative to continuous waveform

Required equipment

Spectrum analyzer: Tektronix RSA5106B
Arbitrary function generator: Tektronix AFG3252C
Two BNC - BNC cables
Type-N (male) - Type-N (male) cable

1. Using a BNC to BNC cable, connect the AFG3252C (Channel 1) to the Vector Modulation I input of the TSG (located on the rear panel).
2. Using the second BNC to BNC cable, connect the AFG3252C (Channel 2) to the Vector Modulation Q input of the TSG (located on the rear panel).
3. Set the AFG3252C as follows:
    a. Set phase on Channel 1 to 90, frequency to 1 MHz, and amplitude to 1 Vp-p.
    b. Set phase on Channel 2 to zero, frequency to 1 MHz, and amplitude to 1 Vp-p.
    c. Press **Phase/Delay** and then **Align** phase in the menu. This aligns the phase between Channel 1 and Channel 2 to obtain the quadrature input for the TSG.
4. Set the TSG as follows:
    a. Press and hold the **Preset** button to reset the instrument.
    b. Press the **RF/LF** button to access the output settings menu.
    c. Press the **Freq** button on the front panel.
    d. Set the frequency to 2000 MHz (fc) using the general knob or the number keys.
    e. Select **RF Ampt** from the menu.
    f. Set the RF amplitude to 0 dBm using the general knob or number keys.
    g. Connect the output from the TSG to the input of the spectrum analyzer.
    h. Press the gray color  **Mod** button on the front panel to access the modulation parameters menu.
    i. Set the Source to Ext.
    j. Select **RF Output** from the menu to turn the RF output to ON (text will turn blue).
5. Set the spectrum analyzer as follows:
    a. Reset the instrument.
    b. Set the center frequency to 2000 MHz and the span to 5 MHz.
    c. Set markers to peak search.

    d. Write down the peak value and note it is = A for later reference.
6. Press the **Mod** button on the TSG front panel to turn modulation on. Notice that **MODON** indicator will appear in yellow in the top right portion of the screen.
7. Set the MOD Type to Vector -> QAM and the Source to External.
8. Write down the 2000 + 1 MHz amplitude level from the RSA and note it is = B for later reference.
9. Calculate the IQ modulation value B–A. Record this value in the test record.
10. Continue to test the modulation at each frequency listed in the test record for the specific instrument model you are testing. Record the results.