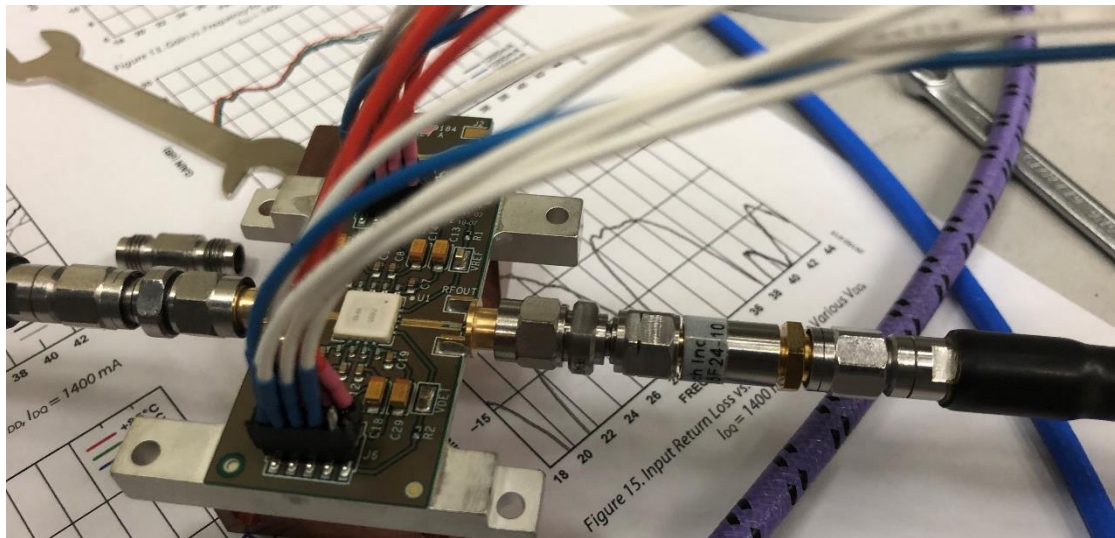


- Test instruments:

Keysight PNA-X N525A, Keysight power supply E3631A E3634A, Woken 10dB attenuator

- Test setup:

1. Connect PNA-X port1 to RFin, add 10db pad at RfOut and connect to PNA-X port2



2. PNA setting:

frequency range: 18GHz-44GHz

power: 0dBm

calibrated by E-cal N4693-60001

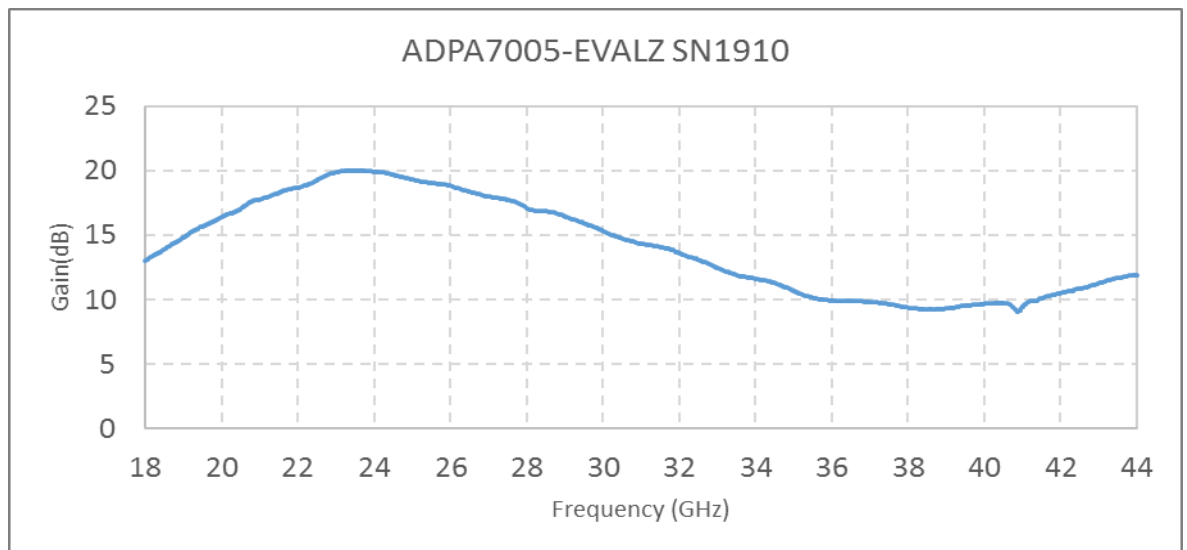
- Test process:

1. Followed ADPA7005-EVALZ user guide to power up the amplifier:
  - [1]. Connect the ADPA7005 GND pin to the RF ground and dc ground.
  - [2]. Initially, set all gate voltages (VGG1, VGG2) and drain voltages (VDD1, VDD2, VDD3, VDD4, VDD5, and VDD6) to 0 V.
  - [3]. Set the ADPA7005 VGG1 pin and VGG2 pin voltages to  $-1.5$  V.
  - [4]. Set all drain bias voltages (VDDX pin voltages) to 5 V.
  - [5]. Increase the VGG1 pin and VGG2 pin voltages to achieve a quiescent drain current of 1.4 A.
  - [6]. Apply the RF signal.
2. Record result

3. Followed ADPA7005-EVALZ user guide to power down the amplifier:

- [1]. Turn off the RF signal.
- [2]. Decrease the VGG1 pin and VGG2 pin voltages to  $-1.5$  V to achieve  $I_{DQ} = 0$  mA (approximately, where  $I_{DQ}$  is quiescent drain current).
- [3]. Decrease all VDDX pin voltages to 0 V.
- [4]. Decrease the VGG1 and VGG2 pin voltages to 0 V.

● Test result:



Data sheet:

<https://www.analog.com/media/en/technical-documentation/data-sheets/ADPA7005.pdf>

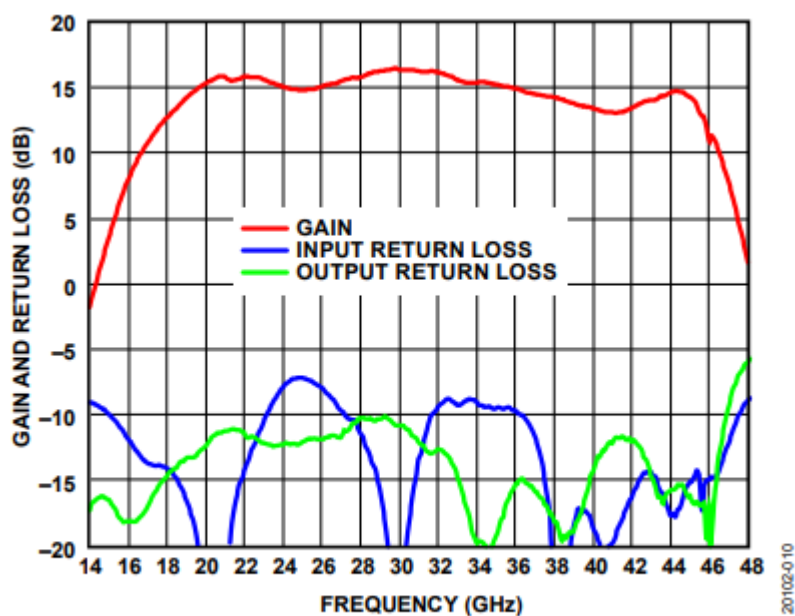


Figure 10. Gain and Return Loss vs. Frequency,  $V_{DD} = 5$  V,  $I_{DQ} = 1400$  mA

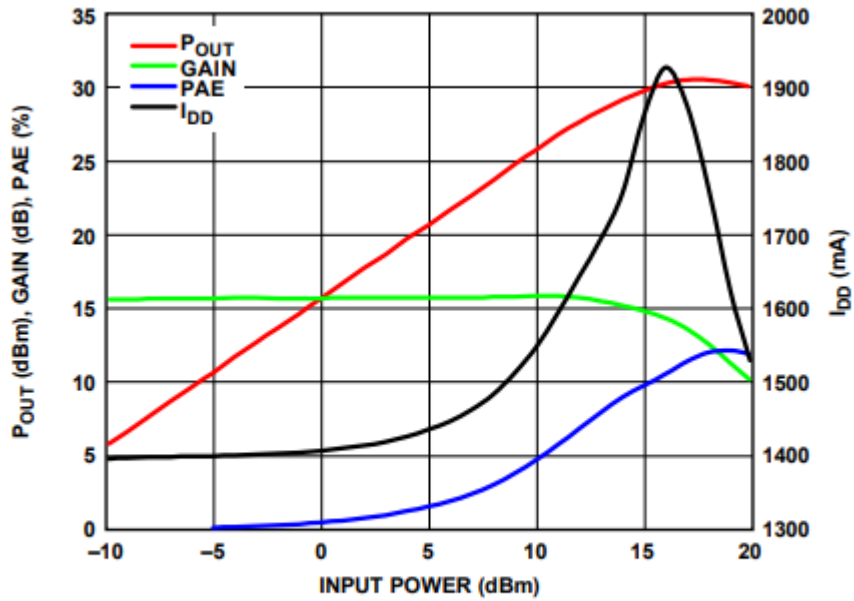


Figure 30.  $P_{OUT}$ , Gain, PAE, and Drain Current with RF Applied ( $I_{DD}$ ) vs. Input Power, 22 GHz,  $V_{DD} = 5 V$ ,  $I_{DQ} = 1400 mA$

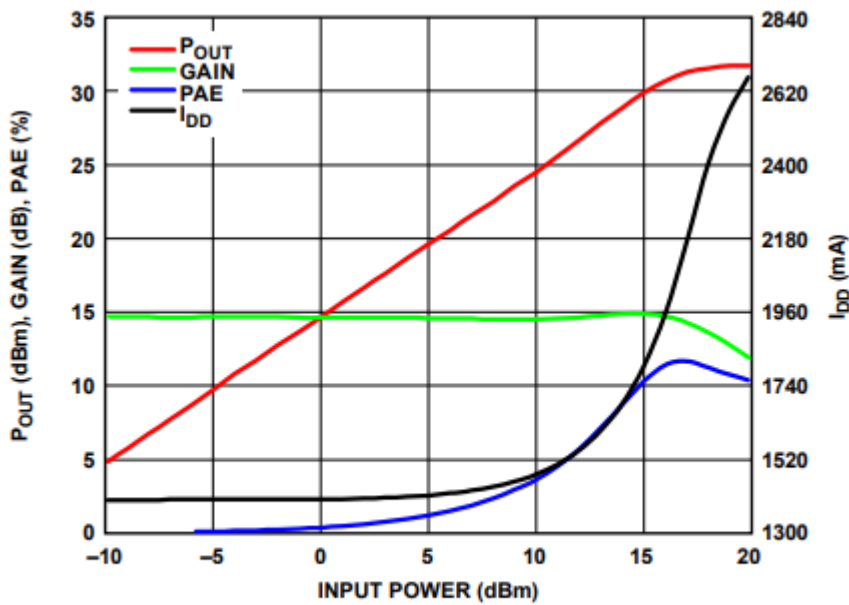


Figure 37.  $P_{OUT}$ , Gain, PAE, and  $I_{DD}$  vs. Input Power, 38 GHz,  $V_{DD} = 5 V$ ,  $I_{DQ} = 1400 mA$

The result shows the gain around 38GHz is under 10dB which contrast with the 14dB gain on the data sheet.

The Gain around frequency 24GHz is 20dB while on data sheet is slight better than 15dB.

The measurement curve remain the same across the input power region  $0 \pm 5dBm$ .