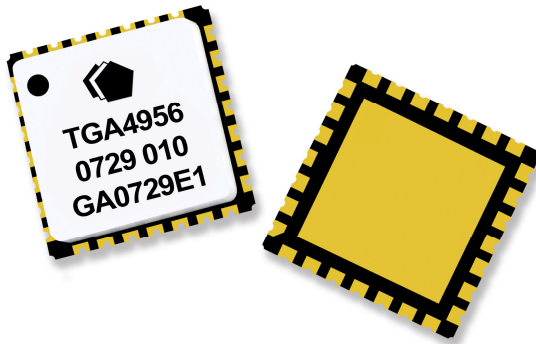


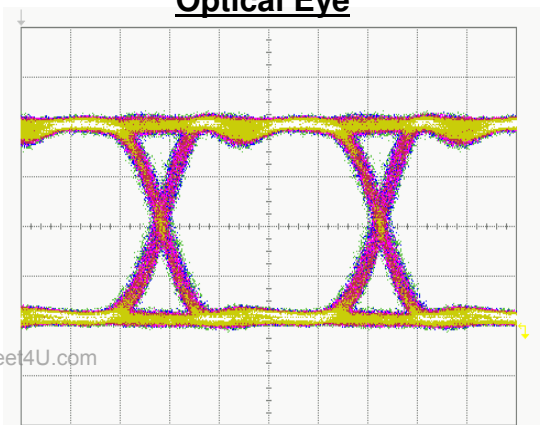
**3 V – 7 V Optical Modulator Driver**



**Measured Performance**

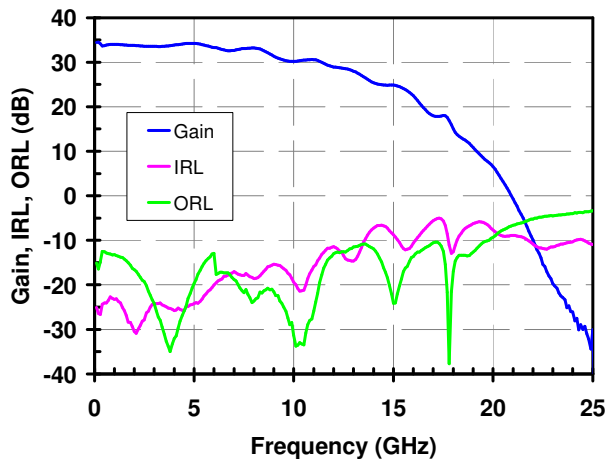
Bias conditions:  $V_d = 3.3\text{ V}$ ,  $I_d = 120\text{ mA}$

**Optical Eye**



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11.32 Gbps, PRBS 231 -1,  $V_{in} = 1\text{ Vpp}$ ,  $V_{out} = 3.0\text{ Vpp}$ , Rise / Fall time = 22.2 / 23.1 ps, Additive RMS Jitter = 1.9 ps, Extinction Ratio = 13.7 dB



**Key Features**

- 9.9 - 12.5 Gb/s Data Rates
- Additive RMS Jitter < 1.5 psec
- High Gain > 32 dB
- Adjustable Output Amplitude 3 Vpp – 7 Vpp
- Low Power Dissipation, <0.42 W
- Rise/Fall Times <25 psec
- Integrated High Frequency Bias-Tee
- 3.3 V, 120 mA Bias (3 Vpp output)
- 5 V, 200 mA Bias (6 Vpp output)
- Package Size: 8 x 8 x 2.1 mm

**Primary Applications**

- 10 Gb/s Optical Market
- MZ & Low  $V_{\pi}$  Modulator Driver

**Product Description**

The TriQuint TGA4956-SM is a MZ and low voltage modulator driver amplifier designed to operate at frequencies that target the 10 Gb/s optical market using an economical 8x8 mm surface mount package.

The TGA4956-SM consists of two high performance wideband amplifiers combined with off chip circuitry assembled in a surface mount package. A single TGA4956-SM placed between the MUX and Optical Modulator provides OEMs with a low-cost, surface mount modulator driver solution.

The TGA4956-SM provides Metro and Long Haul designers with scalable power dissipation for varying output drive requirements (< 0.42 W at  $V_o = 3\text{ Vpp}$ , <1 W at  $V_o = 6\text{ Vpp}$ ).

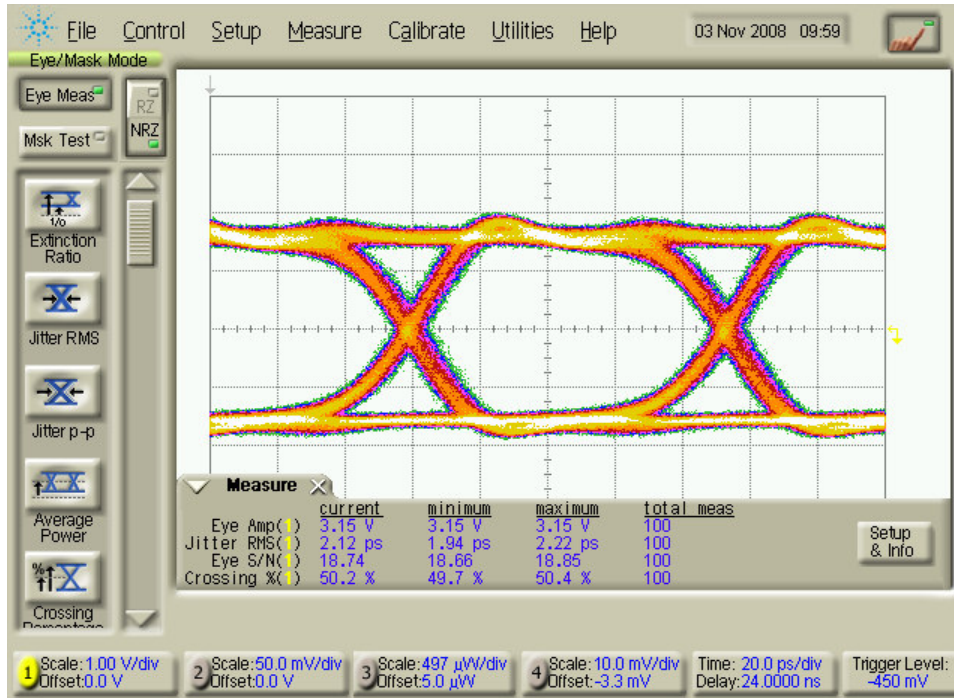
ROHS compliant, Moisture Sensitivity Level 1.

Evaluation boards available upon request.

*Datasheet subject to change without notice.*

# TGA4956-SM

**Measured Data:  $V_d = 3.3\text{ V}$ ,  $V_{in} = 0.2\text{ Vpp}$ ,  $V_{out} = 3.1\text{ Vpp}$ ,  $10.7\text{ Gb/s}$   
RMS Source Jitter =  $1.44\text{ ps}$**

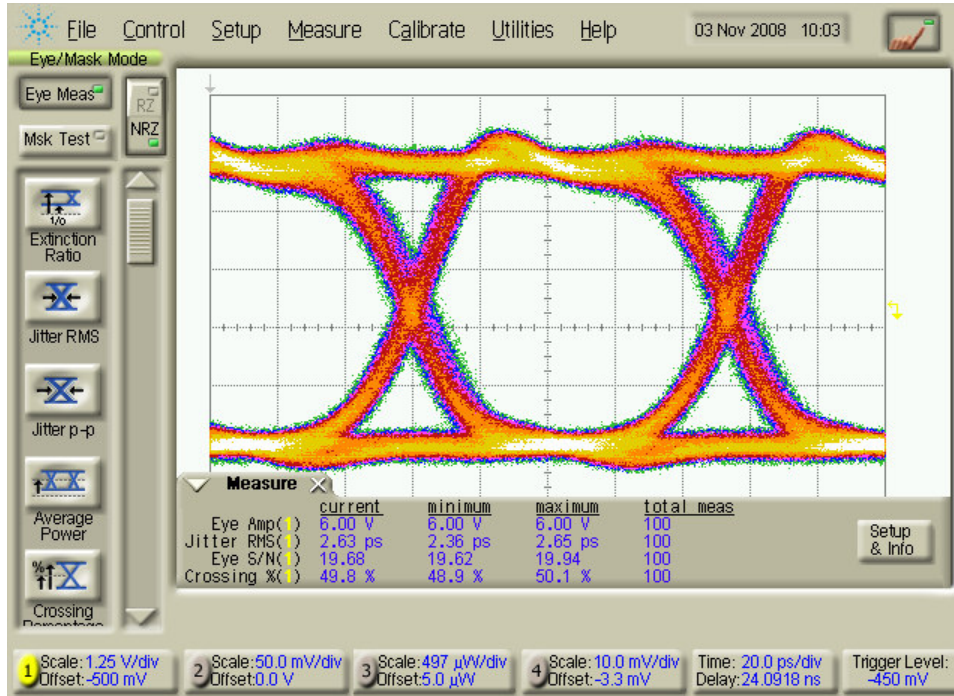


**$V_d = 3.3\text{ V}$ ,  $V_{in} = 0.5\text{ Vpp}$ ,  $V_{out} = 3.1\text{ Vpp}$ ,  $10.7\text{ Gb/s}$   
RMS Source Jitter =  $1.2\text{ ps}$**

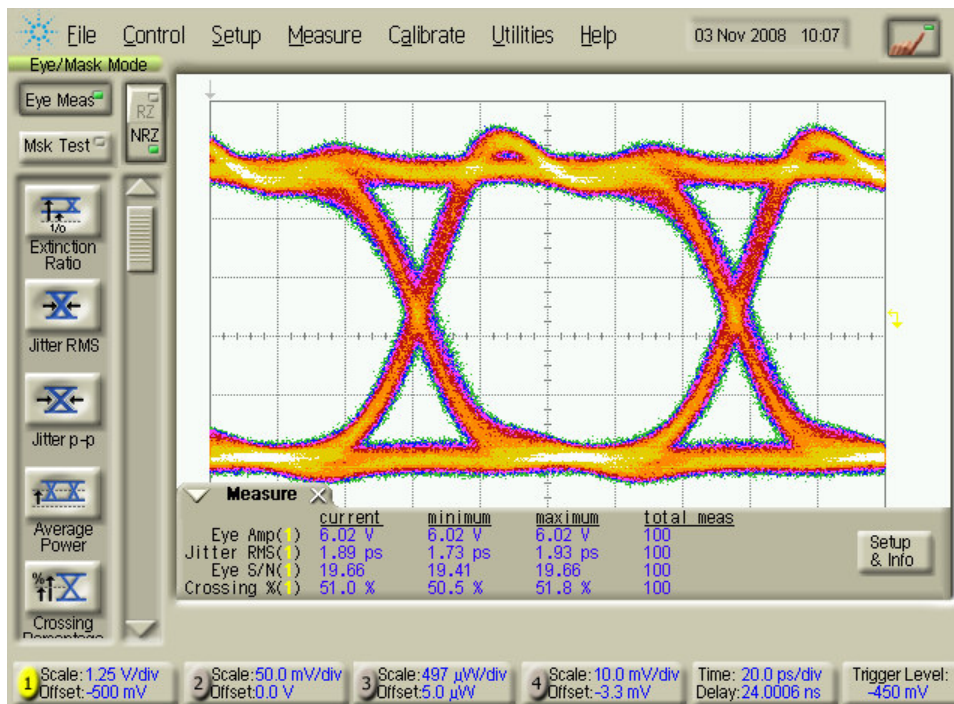


# TGA4956-SM

**Measured Data:  $V_d = 5\text{ V}$ ,  $V_{in} = 0.2\text{ Vpp}$ ,  $V_{out} = 6\text{ Vpp}$ ,  $10.7\text{ Gb/s}$   
RMS Source Jitter =  $1.44\text{ ps}$**



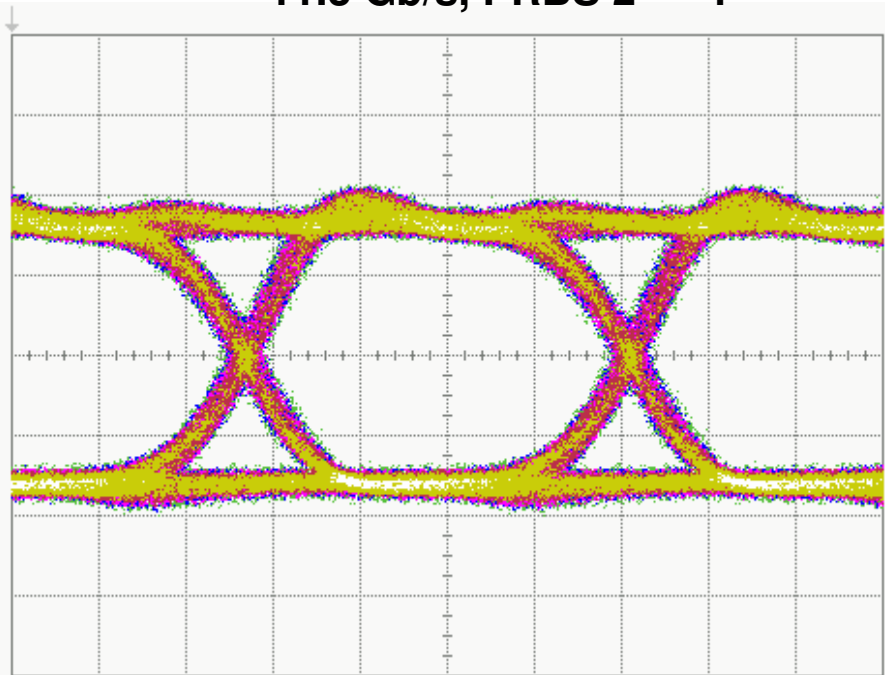
**$V_d = 5\text{ V}$ ,  $V_{in} = 0.5\text{ Vpp}$ ,  $V_{out} = 6\text{ Vpp}$ ,  $10.7\text{ Gb/s}$   
RMS Source Jitter =  $1.2\text{ ps}$**





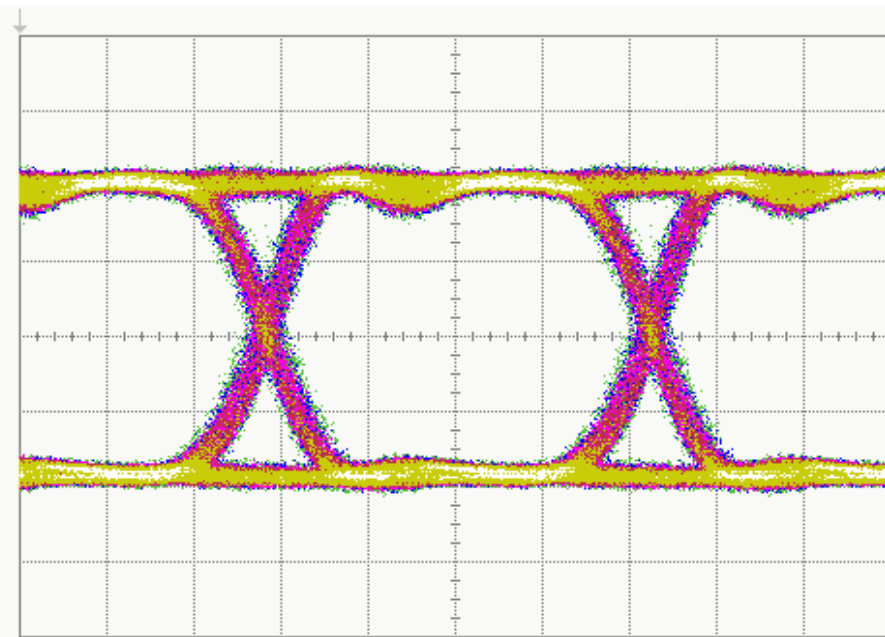
# TGA4956-SM

**Measured Data:  $V_d = 3.3\text{ V}$ ,  $V_{in} = 1\text{ V}_{pp}$ ,  $V_{out} = 3.0\text{ V}_{pp}$ ,  
 $11.3\text{ Gb/s}$ , PRBS  $2^{31} - 1$**



### Electrical Eye:

**Additive RMS Jitter = 2.0 ps, 10%-90% Rise / Fall Time = 30.7 / 35.1 ps**

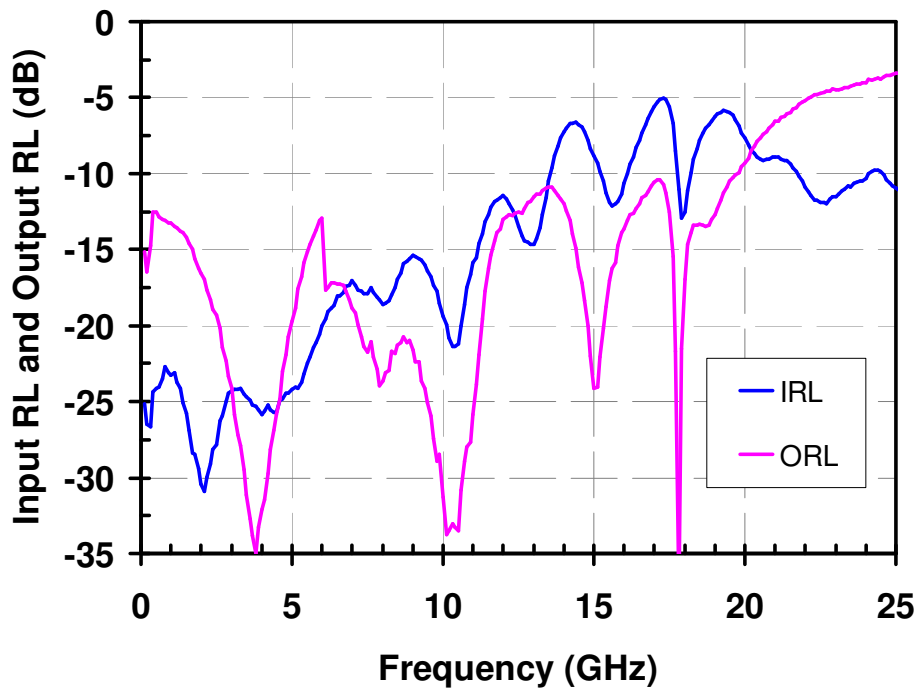
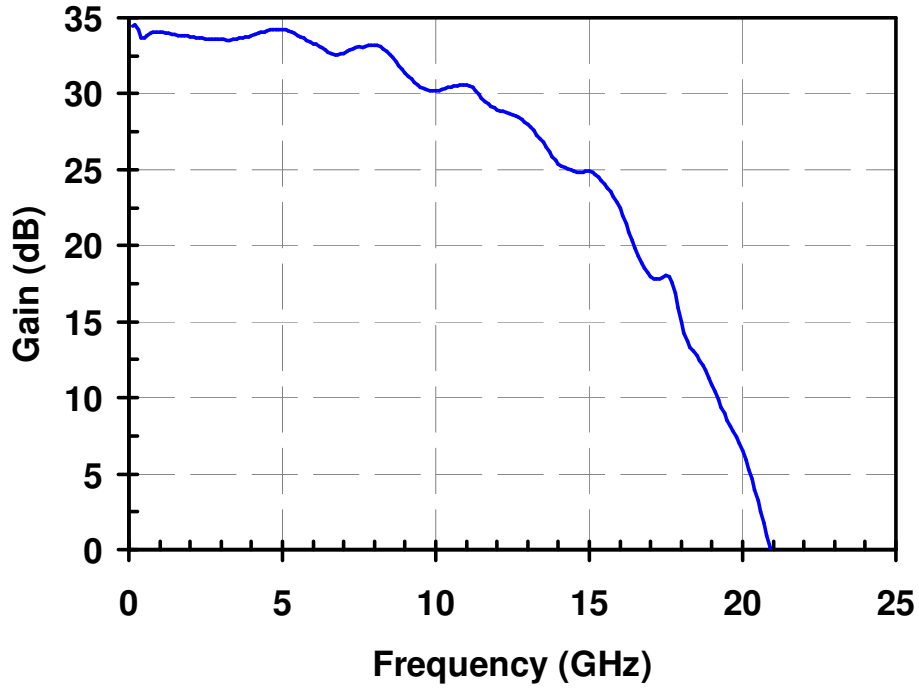


### Optical Eye:

**Additive RMS Jitter = 1.9 ps, 20% - 80% Rise / Fall Time = 22.2 / 23.1 ps, Extinction Ratio = 13.7 dB**

# TGA4956-SM

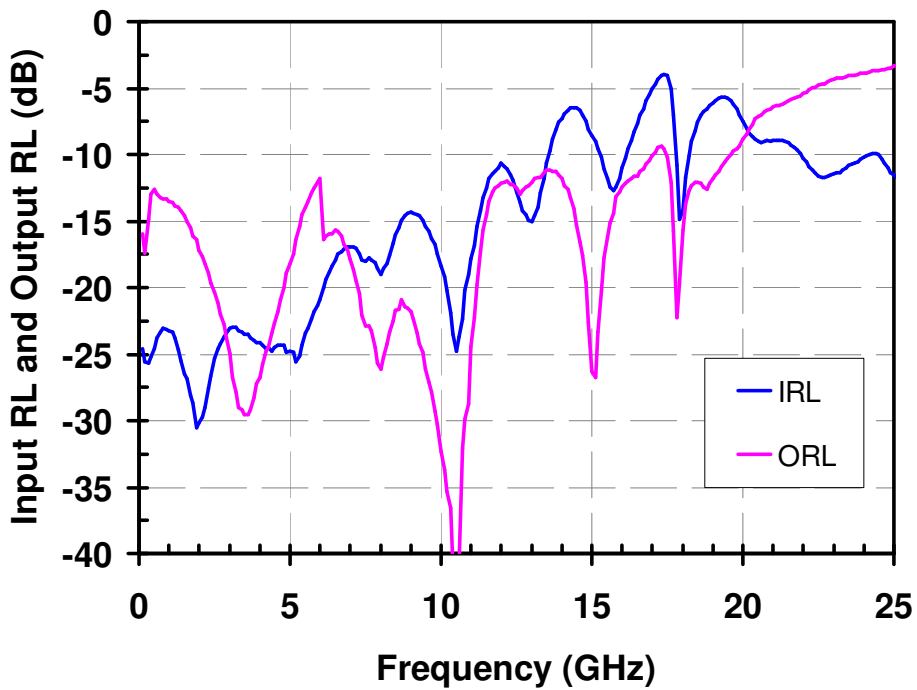
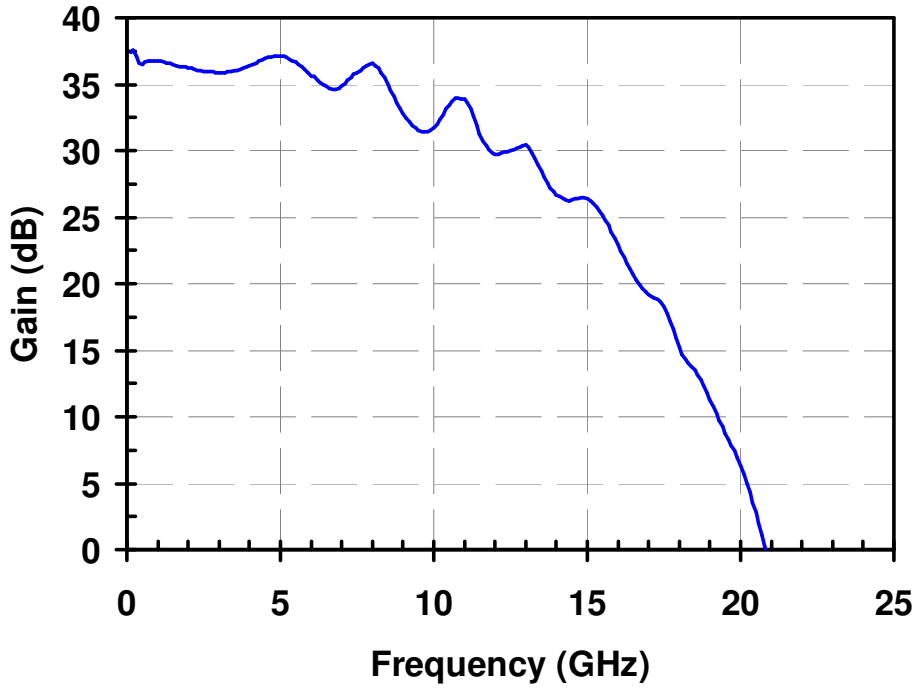
**Measured Data**  
**Vd = 3.3 V, Id = 115 mA**



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# TGA4956-SM

**Measured Data**  
**Vd = 5 V, Id = 200 mA**

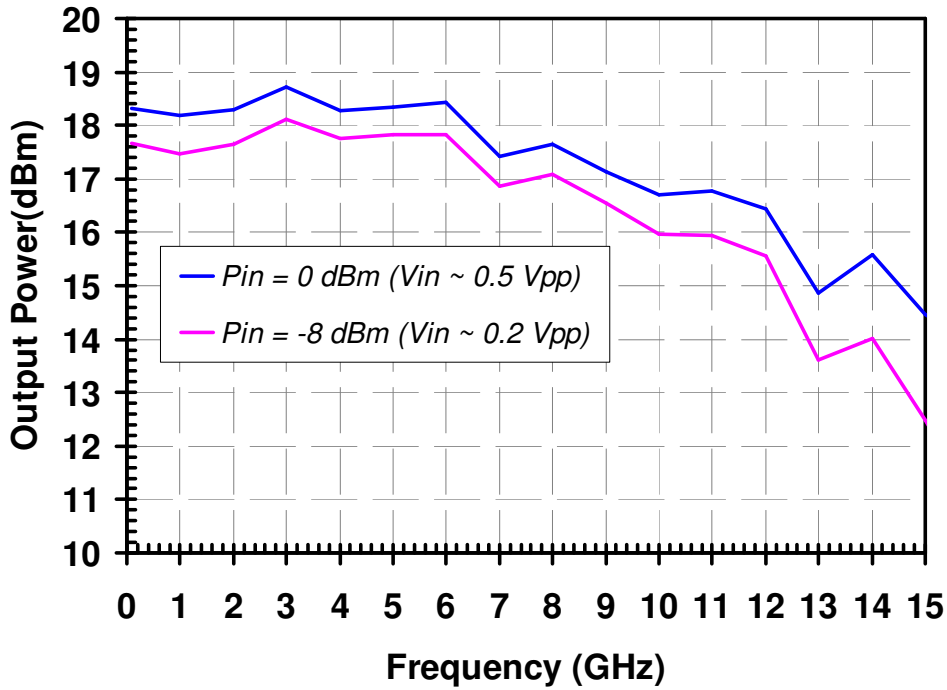


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**TGA4956-SM**

**Measured Data**

**Vd = 3.3 V, Idq = 115 mA**



**Vd = 5 V, Idq = 200 mA**

