

# 26.5 GHz Programmable Gain Amplifier

SC2215 | High Frequency Amplifier

Product Brief

## Summary

The SC2215 is a 2-Channel programmable gain amplifier that can operate from 10 MHz to 26.5 GHz. Each channel provides over 31.5 dB of programmable gain, controllable in 0.5 dB increments. Both channels have excellent low noise performance.

With the channels cascaded, the SC2215 can provide up to 70 dB of small signal gain and can achieve a maximum saturated output power of 28 dBm at 1 GHz and 22 dBm at 26.5 GHz.



SC2215 – High Performance in a Compact 1U PXIe Module

## Description

The SC2215 is a single-slot PXIe compliant module targeted at test and measurement applications requiring high output power and low noise performance. It is well suited for high volume production test applications.

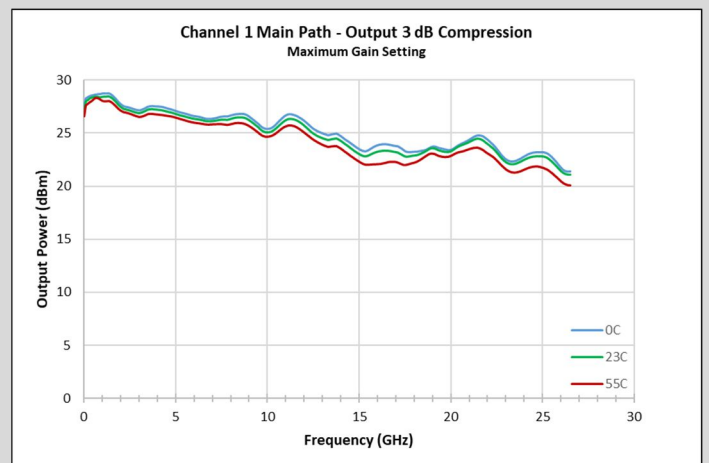
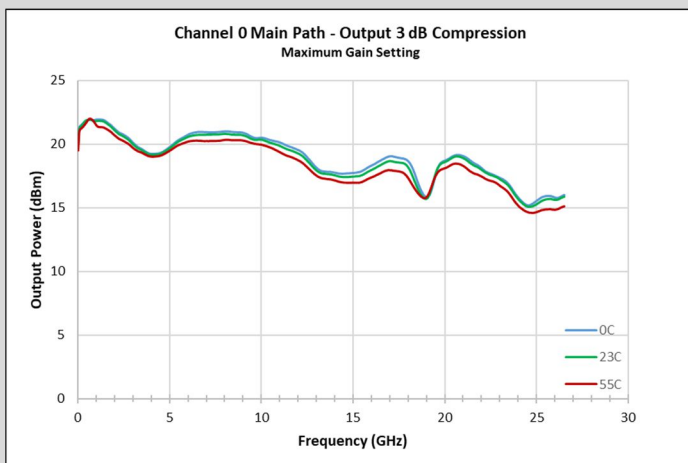
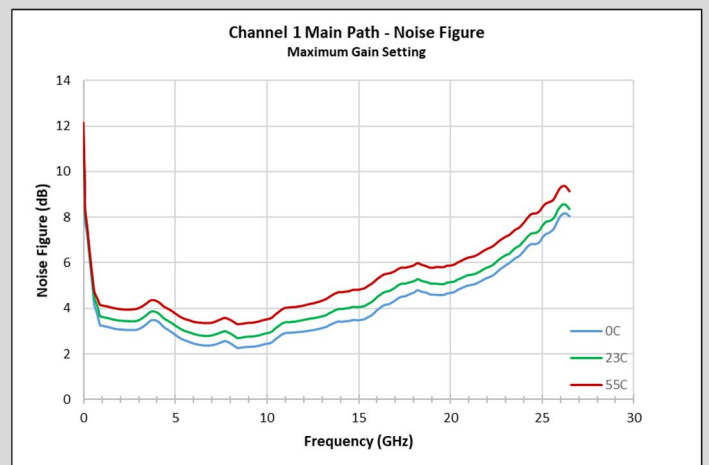
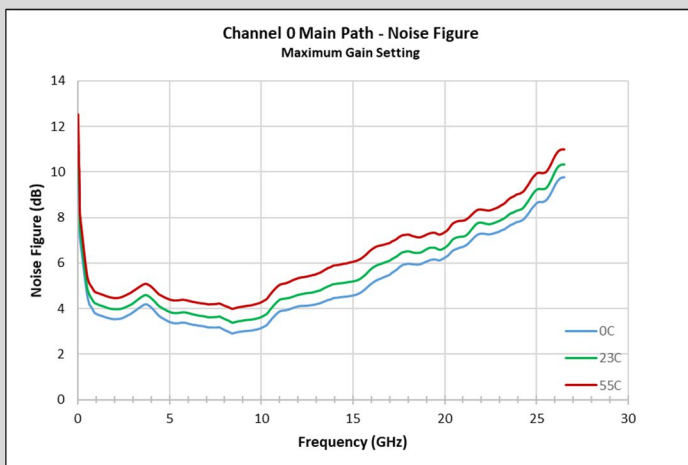
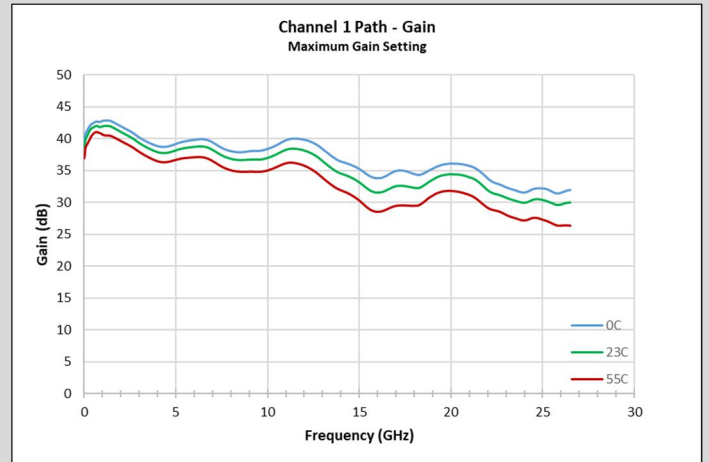
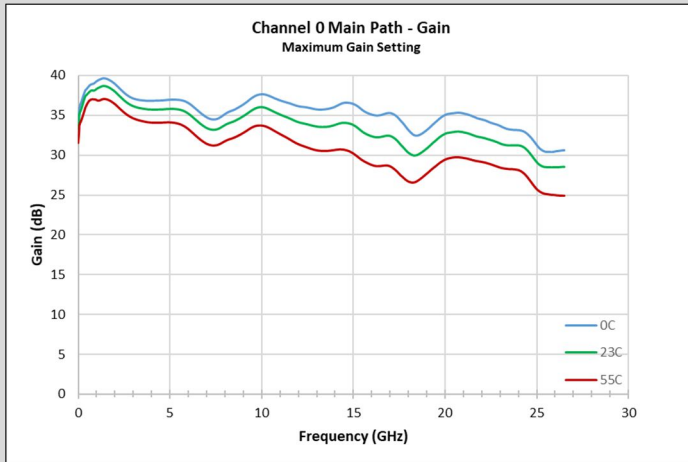
Channel 0 includes a direct path which bypasses the amplifier stages. This capability can be useful in high applications requiring bi-directional signal measurement, like those present in devices sharing Tx and Rx paths on a common port. Channel 1 has higher drive capability and can generate 28 dBm of saturated output power at 1 GHz.

Use of solid-state switches minimizes reliability concerns associated with mechanical relays. On-board thermal measurement and in-circuit, high frequency power detectors are present on both channel outputs. These functions are accessible by the user and can be incorporated into systems requiring dynamic output power level monitoring and self-test functions, helping to minimize outages in production environments.

## Common Applications

- High Volume Production Test
- Benchtop Designer Verification Testing (DVT)
- RF/Microwave Design and Characterization
- Receiver Characterization

## Typical Performance



## Typical Performance - Summary

### Channel 0 Direct Path

- Frequency Range: 10 MHz to 26.5 GHz
- Minimum Gain:
  - -3.2 dB @ 1 GHz
  - -3.2 dB @ 6 GHz
  - -5.3 dB @ 13 GHz
  - -8.4 dB @ 26.5 GHz
- Maximum Input Power: +15 dBm
- Second Harmonic:
  - -75 dBc @ 1 GHz
  - -70 dBc @ 9 GHz
- Third Harmonic:
  - -90 dBc @ 1 GHz
  - -90 dBc @ 9 GHz

### Channel 0 Main Path

- Frequency Range: 10 MHz to 26.5 GHz
- Linear Gain (at Max Gain Setting):
  - 34.1 dB @ 1 GHz
  - 34.1 dB @ 6 GHz
  - 32.5 dB @ 13 GHz
  - 27.0 dB @ 26.5 GHz
- Gain Control Range: 0 to -31.5dB in 0.5 dB Steps
- Noise Figure:
  - 4.7 dB @ 1 GHz
  - 4.7 dB @ 6 GHz
  - 7.0 dB @ 13 GHz
  - 10.7 dB @ 26.5 GHz
- Output P3dB:
  - 18.7 dBm @ 1 GHz
  - 18.7 dBm @ 6 GHz
  - 17.0 dBm @ 13 GHz
  - 14.7 dBm @ 26.5 GHz
- Maximum Input Power: +15 dBm
- Second Harmonic (@Pout = 4 dBm):
  - -27 dBc @ 1 GHz
  - -27 dBc @ 9 GHz
- Third Harmonic (@Pout = 4 dBm):
  - -57 dBc @ 1 GHz
  - -53 dBc @ 9 GHz

### Channel 1 Path

- Frequency Range: 10 MHz to 26.5 GHz
- Linear Gain (at Max Gain Setting):
  - 37.7 dB @ 1 GHz
  - 37.7 dB @ 6 GHz
  - 31.1 dB @ 13 GHz
  - 28.3 dB @ 26.5 GHz
- Gain Control Range: 0 to -31.5dB in 0.5 dB Steps
- Noise Figure:
  - 4.1 dB @ 1 GHz
  - 4.1 dB @ 6 GHz
  - 4.1 @ 13 GHz
  - 9.5 @ 26.5 GHz
- Output P3dB:
  - 25.8 dBm @ 1 GHz
  - 25.8 dBm @ 6 GHz
  - 21.5 dBm @ 13 GHz
  - 20.5 dBm @ 26.5 GHz
- Maximum Input Power: +15 dBm
- Second Harmonic (@Pout = 4 dBm):
  - -48 dBc @ 1 GHz
  - -48 dBc @ 9 GHz
- Third Harmonic (@Pout = 4 dBm):
  - -66 dBc @ 1 GHz
  - -66 dBc @ 9 GHz

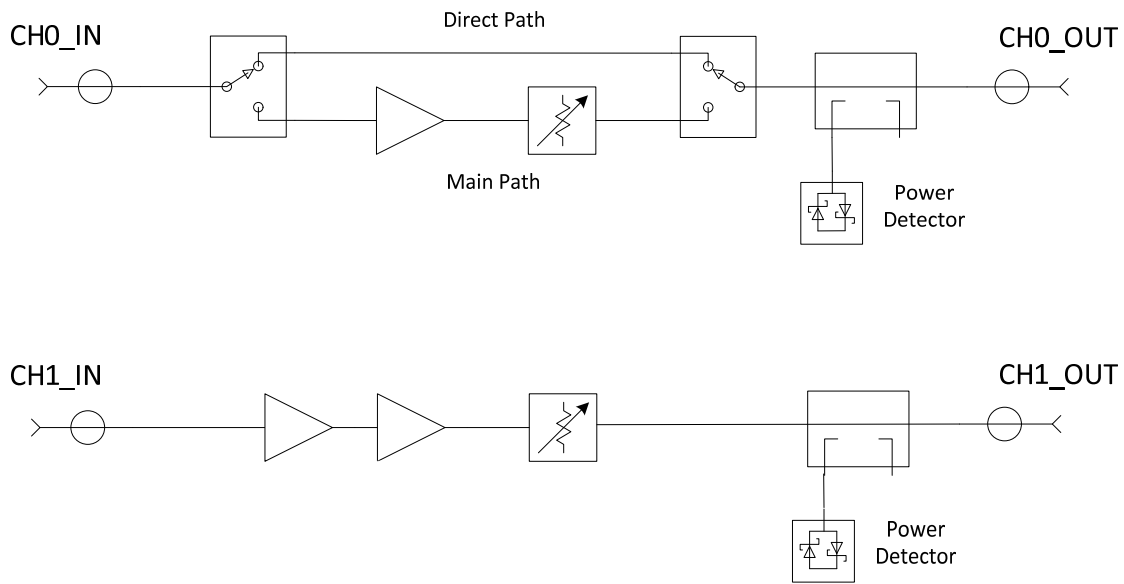
### Compliance

- EN 61326-1:2013: Class A emissions; Basic Immunity
- AS/NZS CISPR 11: Group 1, Class A
- FCC Part 15/B: Class A emissions
- ICES-001: Group 1, Class A
- KN11: Group 1, Class A
- RoHS Compliant

### Environmental

- Operating temperature: 0 to 55 °C
- Storage temperature: -40 to 70 °C

## Block Diagram



### Support

Technical support is available through our website, [www.signalcraft.com/support](http://www.signalcraft.com/support), or by contacting us at [support@signalcraft.com](mailto:support@signalcraft.com).

### Warranty

Full one-year parts and labor when used under normal installation and operation conditions. Repair services are available for products no longer covered under warranty.

### Ordering Information

Send inquiries to [info@signalcraft.com](mailto:info@signalcraft.com).