



MMIC SURFACE MOUNT

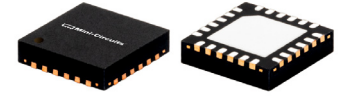
# IQ Mixer

## SMIQ-263H+

50Ω Level 18 (LO Power +18 dBm) 2000 to 6000 MHz

### THE BIG DEAL

- Wideband RF & LO, 2000 to 6000 MHz
- Wideband IF, DC to 3000 MHz
- Image Rejection, Typ. 25 dBc
- High LO-RF Isolation, Typ. 42 dB
- High Input IP3, Typ. +20 dBm
- Usable as Image Reject Mixer & SSB Converter
- 4x4 mm, 24-Lead QFN-Style Package

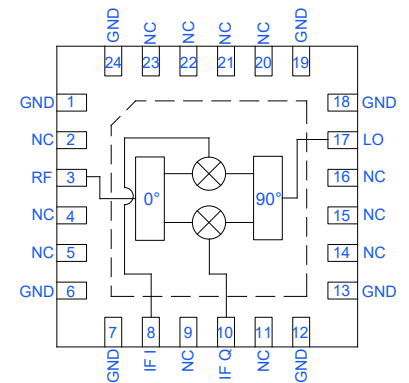


Generic photo used for illustration purposes only

### APPLICATIONS

- Test and Measurement Equipment
- Back Haul Radio
- Satellite Communications
- Radar, EW, and ECM Defense Systems

### FUNCTIONAL DIAGRAM



### PRODUCT OVERVIEW

The SMIQ-263H+ is a passive, wideband, in-phase/quadrature (I/Q) mixer fabricated using GaAs HBT technology. The SMIQ-263H+ is usable as a single-sideband upconverter for transmitter applications or an image rejection mixer for receiver applications. The SMIQ-263H+ is ideal for wideband frequency translation applications that require inherent rejection of image signals and spurious mixing products. The mixer covers a broad RF and LO frequency range of 2000 to 6000 MHz and an IF frequency range of DC to 3000 MHz. As a passive mixer, the SMIQ-263H+ offers a lower noise figure than active mixers, enabling superior dynamic range for high performance applications. The mixer is housed in a compact 4x4 mm 24-Lead QFN-style package, and no DC bias is needed for operation.

### KEY FEATURES

| Feature  | Advantages  |
|--|---|
| High Image Rejection, Typ. 25 dBc  | Provides inherent rejection of unwanted image signals without the need for external filtering.  |
| High Isolation, <ul style="list-style-type: none"> <li>• LO-RF, Typ. 42 dB</li> <li>• LO-IF, Typ. 32 dB</li> </ul> | Enables excellent carrier rejection in single-sideband upconverter transmit applications. Minimizes filtering requirements needed to ensure signal integrity.   |
| Wide RF/LO Bandwidth, 2000 to 6000 MHz   | Useful in both wideband and narrowband systems across a broad frequency range, minimizing component changes in reconfigurable systems.  |
| Wide IF Bandwidth, DC to 3000 MHz  | High IF conversion reduces filtering requirements. With IF operation as low as DC, this mixer is also usable for phase detector applications.   |
| Small Size, 4x4 mm QFN-Style Package   | Small footprint saves space in dense layouts while providing low inductance and repeatable transitions. Industry standard packaging allows for ease of assembly in high volume manufacturing processes. |

REV. OR  
ECO-023963  
SMIQ-263H+  
MCL NY  
241216





MMIC SURFACE MOUNT

## IQ Mixer

SMIQ-263H+

50Ω Level 18 (LO Power +18 dBm) 2000 to 6000 MHz

ELECTRICAL SPECIFICATIONS<sup>1</sup> AT +25°C, Z<sub>0</sub> = 50Ω, LO POWER = +18 dBm, IF = 200 MHz, UNLESS OTHERWISE NOTED.

| Parameter  | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|--|-----------------|------|------|------|------|
| RF Frequency Range   |                 | 2000 |      | 6000 | MHz  |
| LO Frequency Range   |                 | 2000 |      | 6000 | MHz  |
| IF Frequency Range   |                 | DC   |      | 3000 | MHz  |
| LO Power   |                 | +17  | +18  | +19  | dBm  |
| Conversion Loss <sup>2</sup>   | 2000 - 3000     |      | 6.4  | 12.4 | dB   |
|  | 3000 - 4000     |      | 8.4  | 13.3 |      |
|  | 4000 - 5000     |      | 8.7  | 13.3 |      |
|  | 5000 - 6000     |      | 8.0  | 13.2 |      |
| Amplitude Unbalance  | 2000 - 3000     |      | ±1.2 | ±2.9 | dB   |
|  | 3000 - 4000     |      | ±0.3 | ±1.3 |      |
|  | 4000 - 5000     |      | ±0.1 | ±0.9 |      |
|  | 5000 - 6000     |      | ±0.7 | ±2.3 |      |
| Phase Unbalance (Relative to 90°)                                    | 2000 - 3000     |      | 11   | 18   | deg  |
|  | 3000 - 4000     |      | 7    | 16   |      |
|  | 4000 - 5000     |      | 9    | 26   |      |
|  | 5000 - 6000     |      | 11   | 26   |      |
| Image Rejection <sup>3</sup><br>(Tested as a Downconverter)          | 2000 - 3000     |      | 20   |      | dBc  |
|  | 3000 - 4000     |      | 23   |      |      |
|  | 4000 - 5000     |      | 27   |      |      |
|  | 5000 - 6000     |      | 18   |      |      |
| Single Sideband Rejection <sup>4</sup><br>(Tested as an Upconverter) | 2000 - 3000     |      | 26   |      | dBc  |
|  | 3000 - 4000     |      | 26   |      |      |
|  | 4000 - 5000     |      | 27   |      |      |
|  | 5000 - 6000     |      | 14   |      |      |
| LO-RF Isolation  | 2000 - 3000     | 29   | 36   |      | dB   |
|  | 3000 - 4000     | 31   | 37   |      |      |
|  | 4000 - 5000     | 39   | 46   |      |      |
|  | 5000 - 6000     | 47   | 60   |      |      |
| LO-I Isolation   | 2000 - 3000     | 25   | 31   |      | dB   |
|  | 3000 - 4000     | 25   | 30   |      |      |
|  | 4000 - 5000     | 26   | 31   |      |      |
|  | 5000 - 6000     | 27   | 33   |      |      |
| LO-Q Isolation   | 2000 - 3000     | 22   | 29   |      | dB   |
|  | 3000 - 4000     | 24   | 30   |      |      |
|  | 4000 - 5000     | 26   | 33   |      |      |
|  | 5000 - 6000     | 31   | 40   |      |      |
| RF-I Isolation   | 2000 - 3000     | 6    | 16   |      | dB   |
|  | 3000 - 4000     | 6    | 13   |      |      |
|  | 4000 - 5000     | 11   | 19   |      |      |
|  | 5000 - 6000     | 18   | 23   |      |      |



MMIC SURFACE MOUNT

# IQ Mixer

## SMIQ-263H+

50Ω Level 18 (LO Power +18 dBm) 2000 to 6000 MHz

**ELECTRICAL SPECIFICATIONS<sup>1</sup> AT +25°C, Z<sub>o</sub> = 50Ω, LO POWER = +18 dBm, IF = 200 MHz, UNLESS OTHERWISE NOTED.**

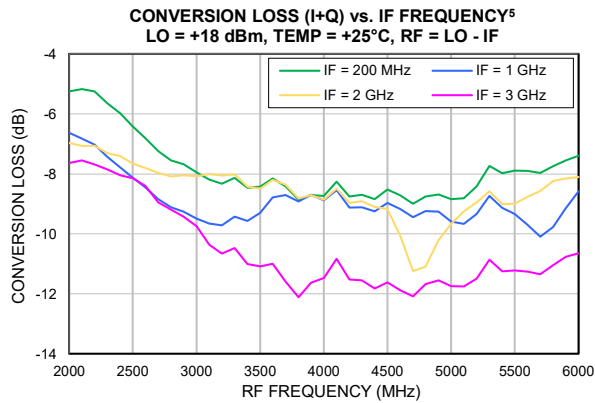
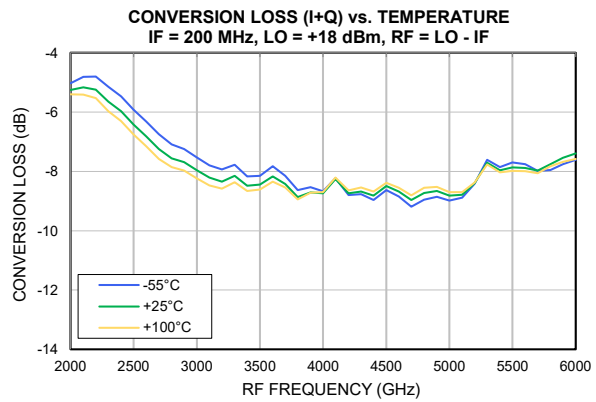
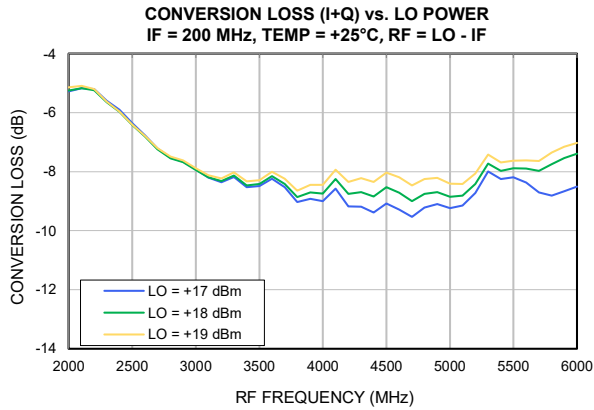
| Parameter                        | Frequency (MHz) | Min. | Typ | Max. | Unit |
|----------------------------------|-----------------|------|-----|------|------|
| RF-Q Isolation                   | 2000 - 3000     | 8    | 15  |      | dB   |
|                                  | 3000 - 4000     | 7    | 13  |      |      |
|                                  | 4000 - 5000     | 10   | 19  |      |      |
|                                  | 5000 - 6000     | 18   | 23  |      |      |
| Input Power at 1dB Compression   | 2000 - 6000     |      | +15 |      | dBm  |
| Input IP3 (I)<br>Lower Side Band | 2000 - 3000     |      | +18 |      | dBm  |
|                                  | 3000 - 4000     |      | +20 |      |      |
|                                  | 4000 - 5000     |      | +20 |      |      |
|                                  | 5000 - 6000     |      | +19 |      |      |
| Input IP3 (Q)<br>Lower Side Band | 2000 - 3000     |      | +19 |      | dBm  |
|                                  | 3000 - 4000     |      | +19 |      |      |
|                                  | 4000 - 5000     |      | +20 |      |      |
|                                  | 5000 - 6000     |      | +23 |      |      |
| Input IP3 (I)<br>Upper Side Band | 2000 - 3000     |      | +17 |      | dBm  |
|                                  | 3000 - 4000     |      | +20 |      |      |
|                                  | 4000 - 5000     |      | +20 |      |      |
|                                  | 5000 - 6000     |      | +19 |      |      |
| Input IP3 (Q)<br>Upper Side Band | 2000 - 3000     |      | +18 |      | dBm  |
|                                  | 3000 - 4000     |      | +19 |      |      |
|                                  | 4000 - 5000     |      | +20 |      |      |
|                                  | 5000 - 6000     |      | +22 |      |      |

1. Measured on Mini-Circuits Characterization Test Board TB-SMIQ-263HC+. See Figures 2, 3, 4 & 5. Board loss de-embedded to the device. Unless otherwise specified, IF = 200 MHz.
2. Conversion loss (dB) = RF Power (dBm) minus the sum of I and Q Port Power (dBm), measured as a Downconverter. Ideal combining; does not take into account 3 dB theoretical loss from internal Network Analyzer hybrid. See measurement block diagram Figure 2.
3. Level of undesired image signal below desired RF signal. See measurement block diagram Figure 3.
4. Level of undesired sideband below desired sideband. See measurement block diagram Figure 4





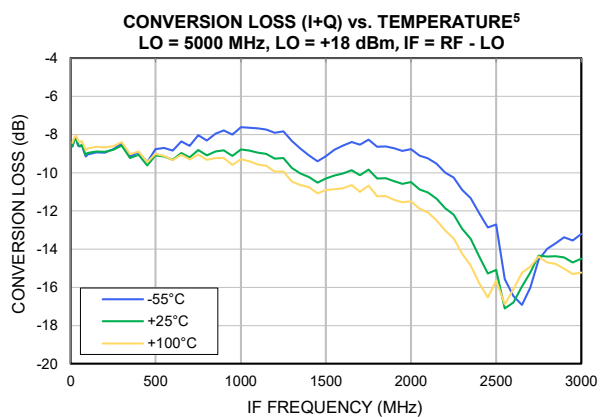
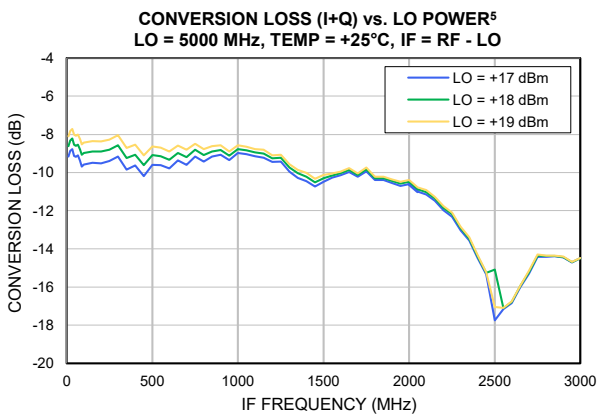
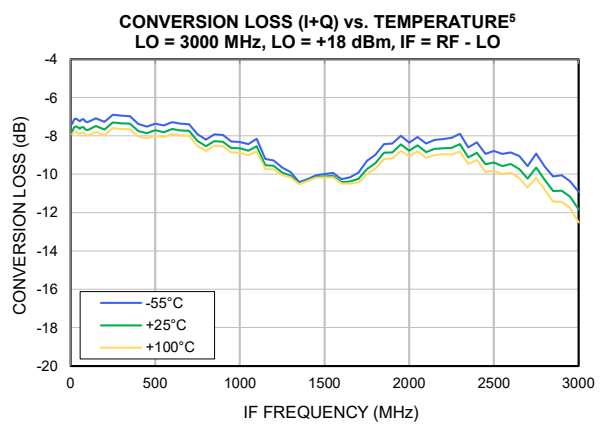
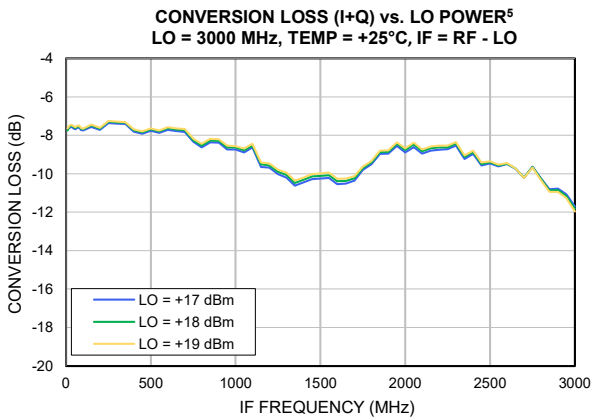
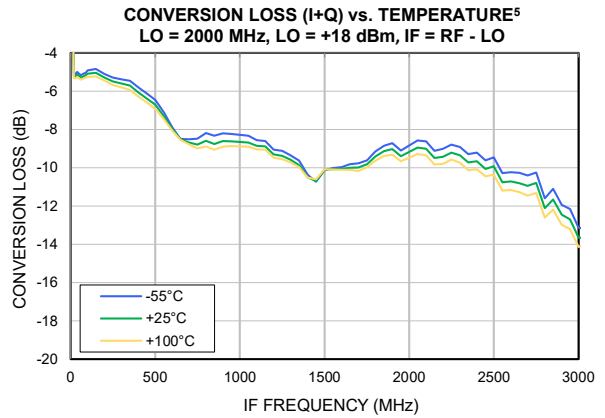
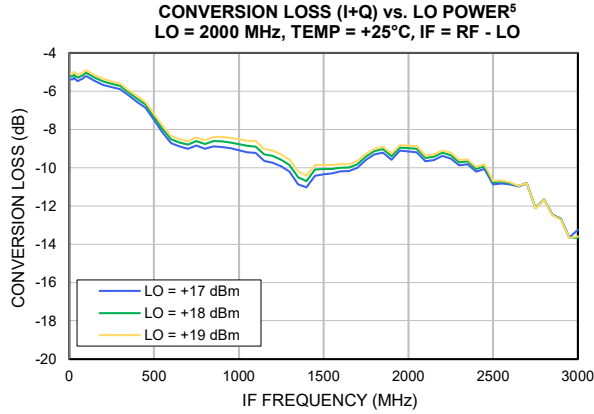
### TYPICAL PERFORMANCE GRAPHS



5. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.



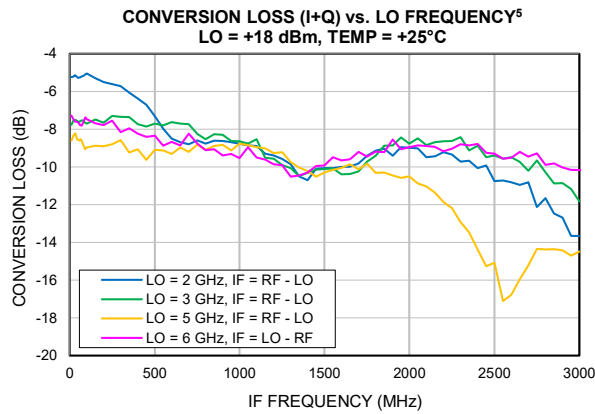
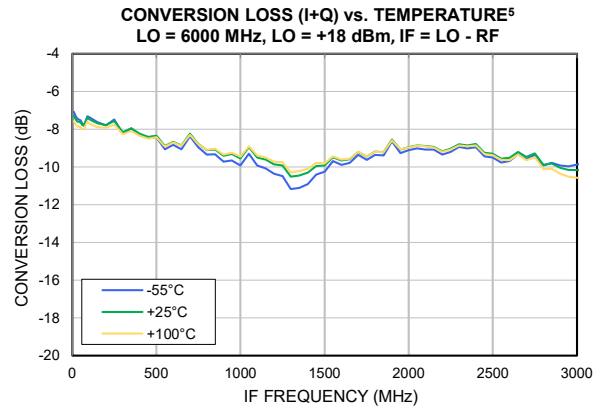
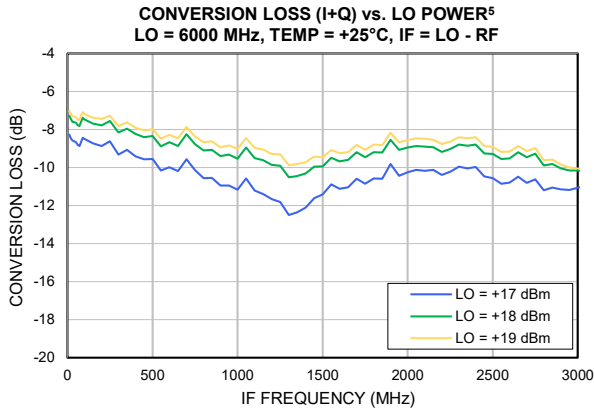
### TYPICAL PERFORMANCE GRAPHS



5. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.



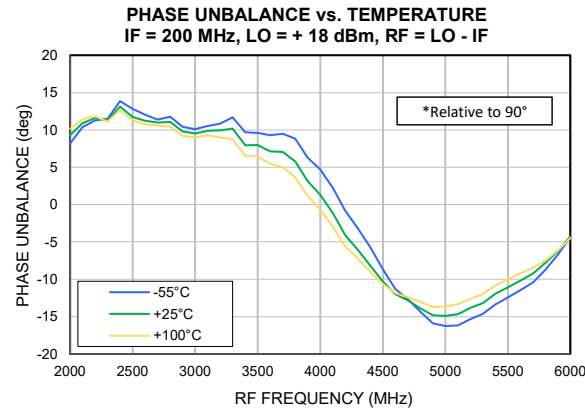
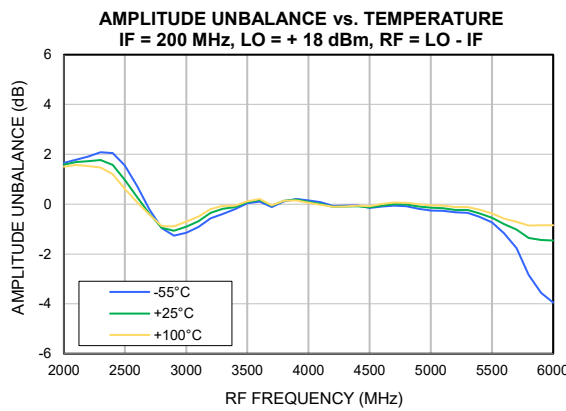
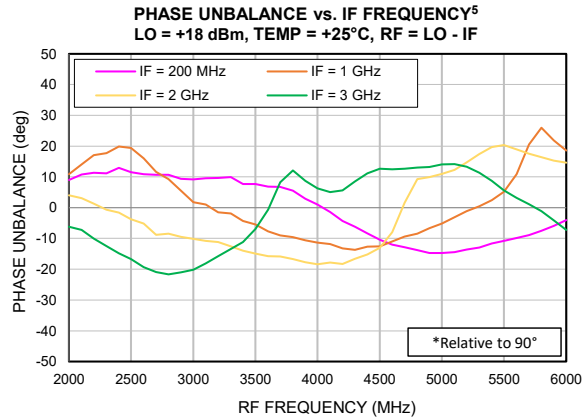
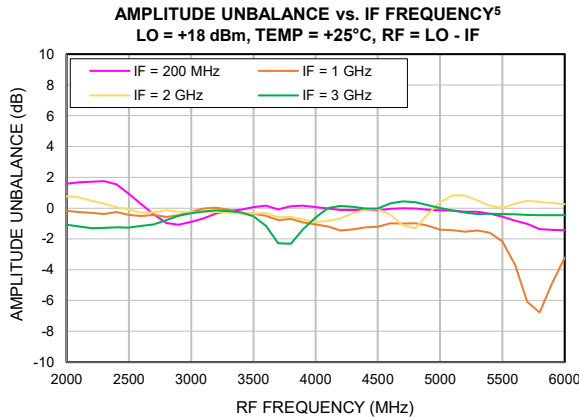
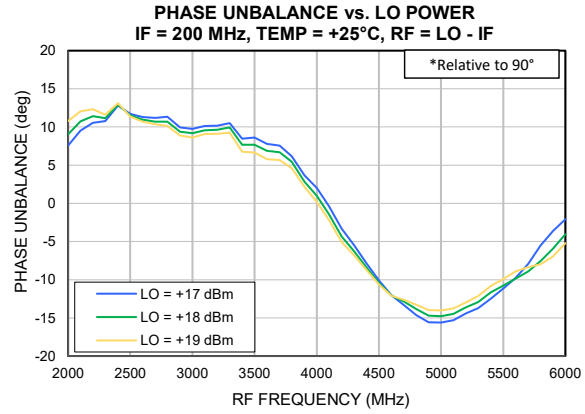
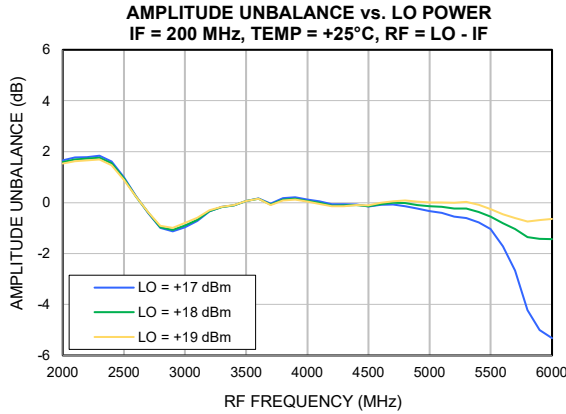
### TYPICAL PERFORMANCE GRAPHS



5. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.



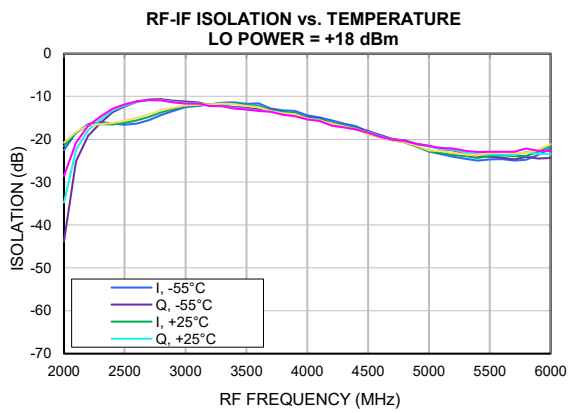
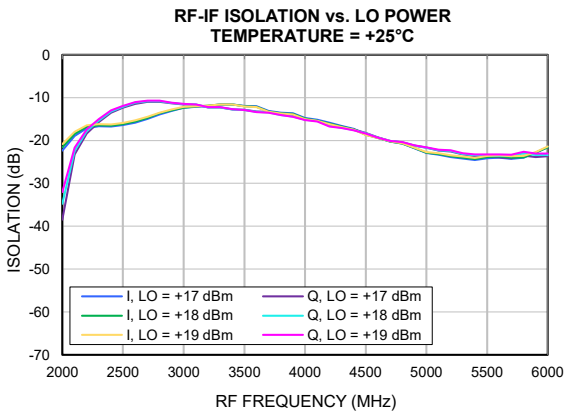
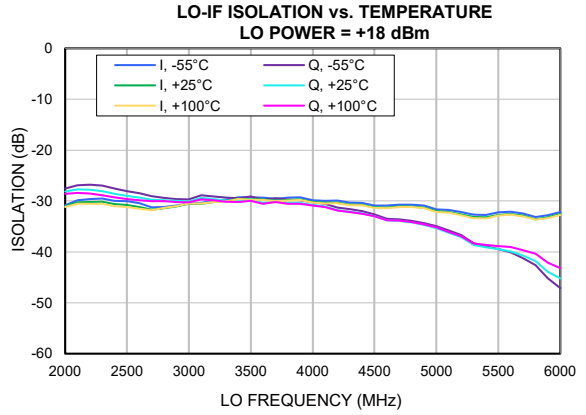
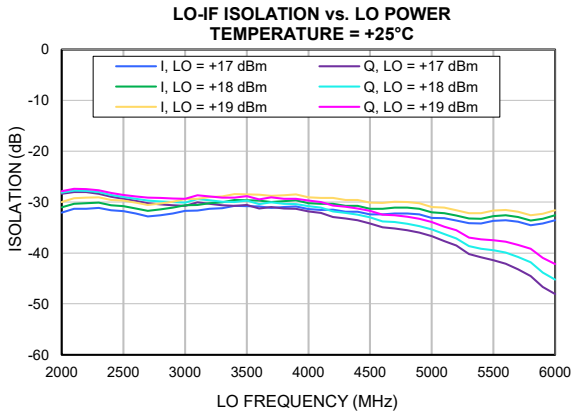
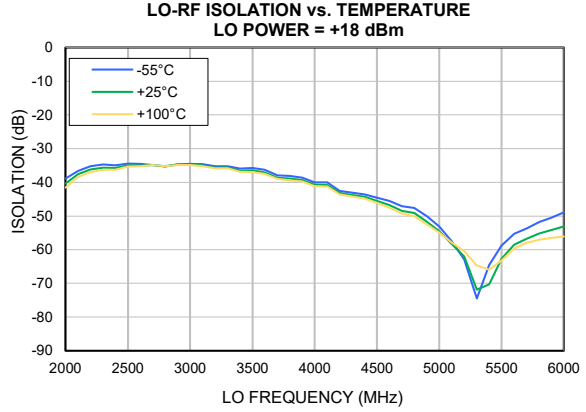
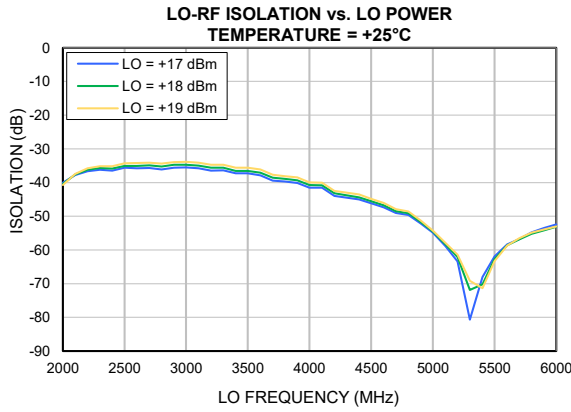
### TYPICAL PERFORMANCE GRAPHS



5. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.



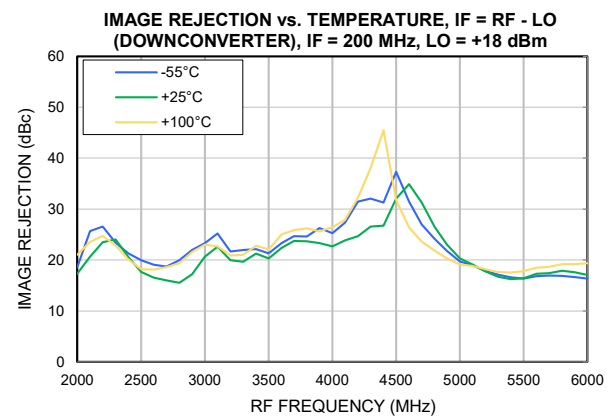
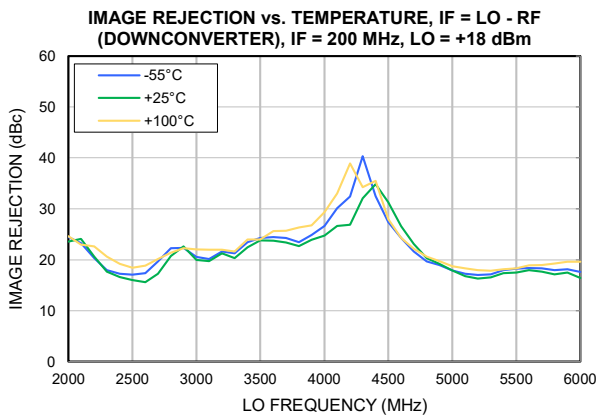
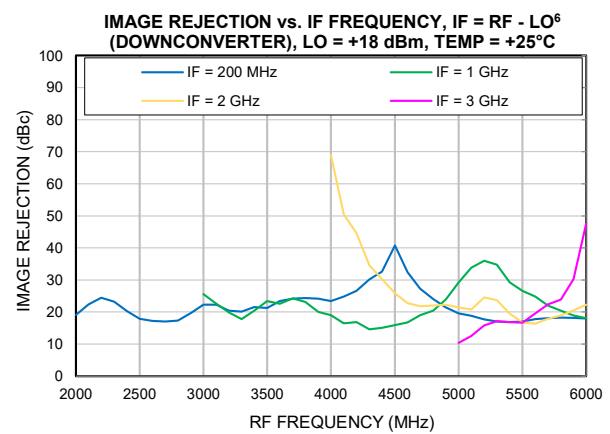
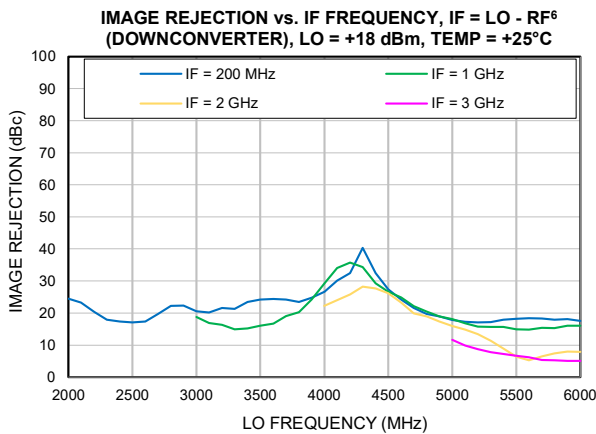
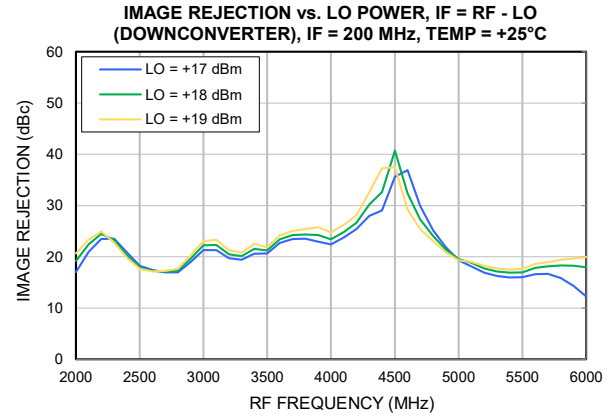
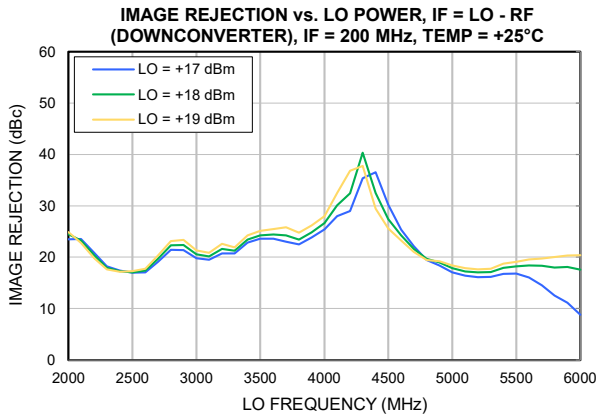
### TYPICAL PERFORMANCE GRAPHS







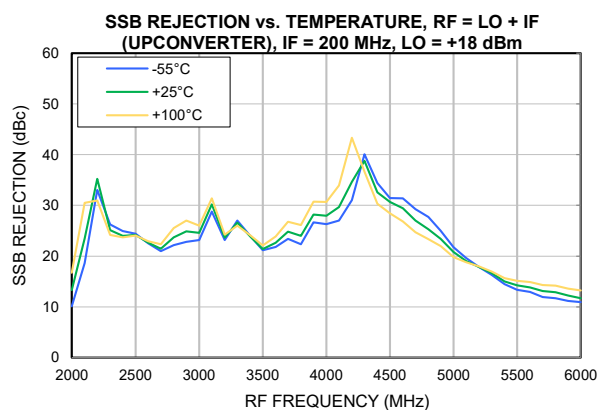
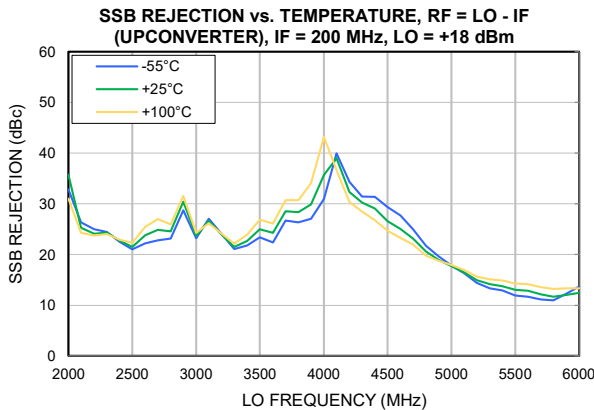
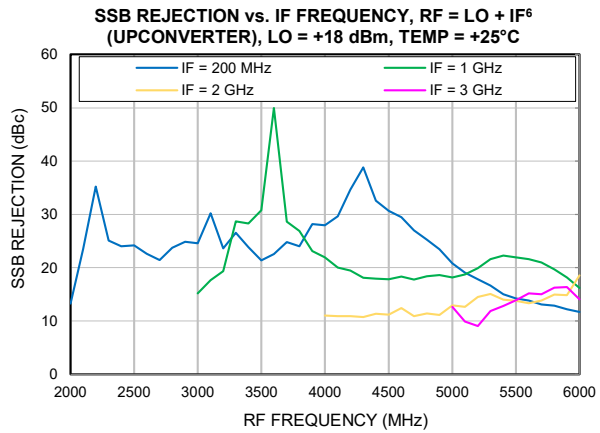
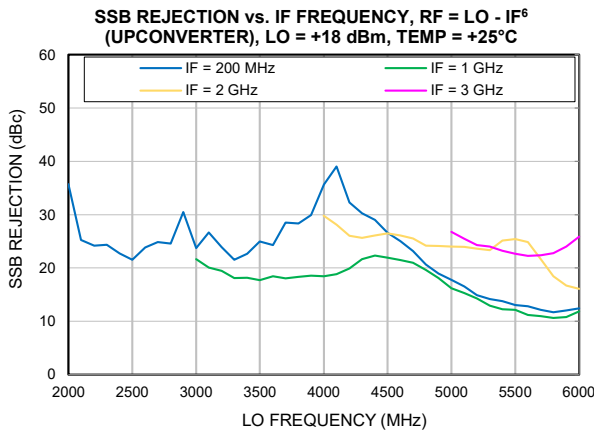
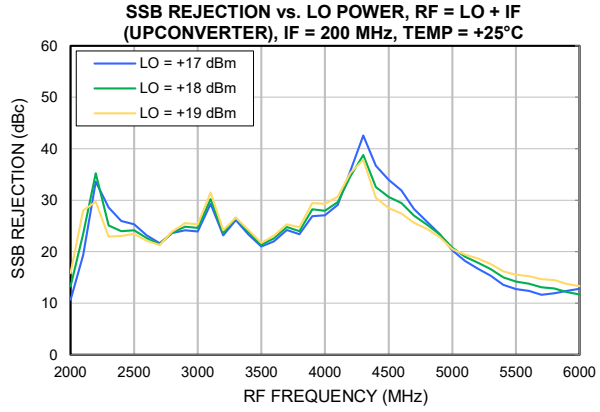
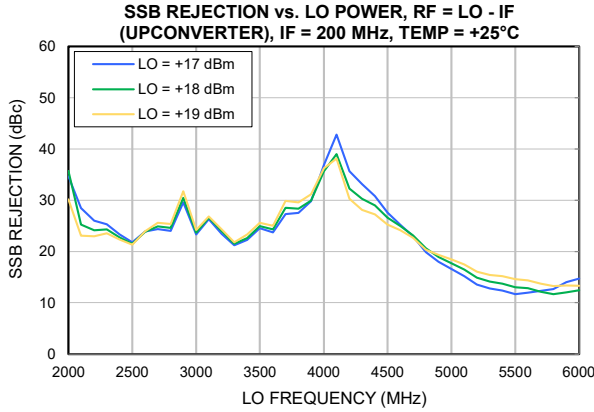
### TYPICAL PERFORMANCE GRAPHS



6. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.



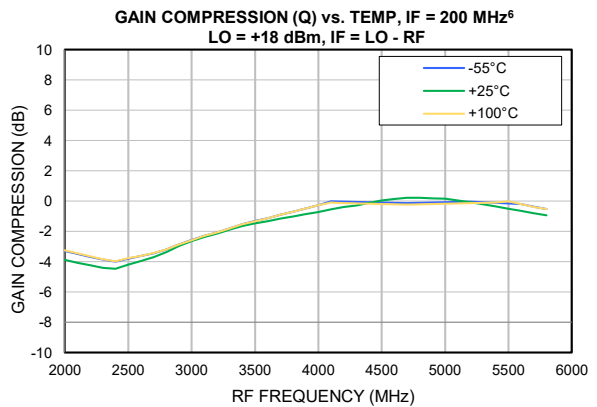
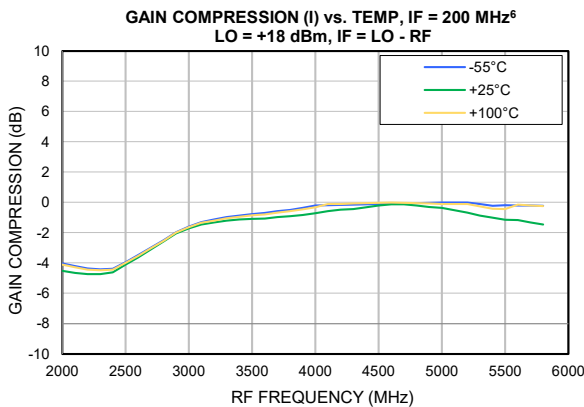
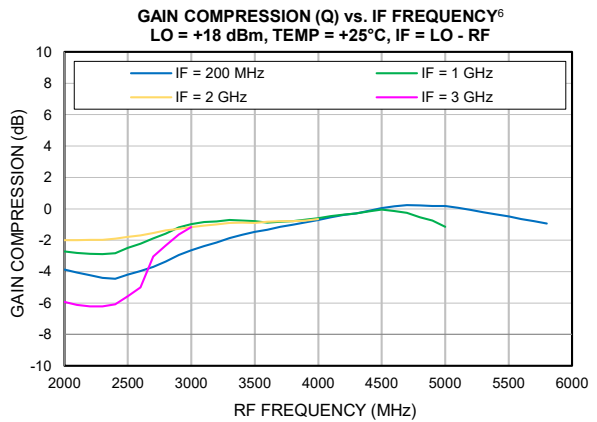
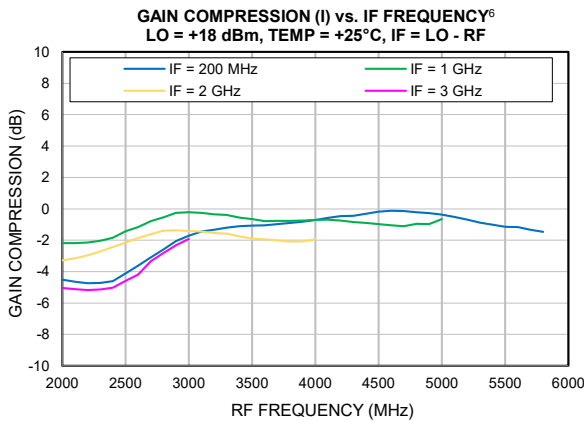
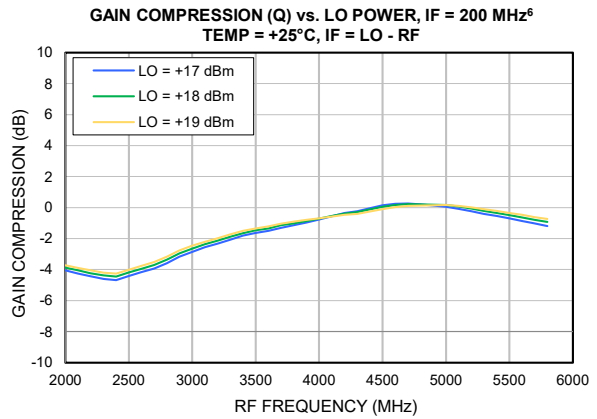
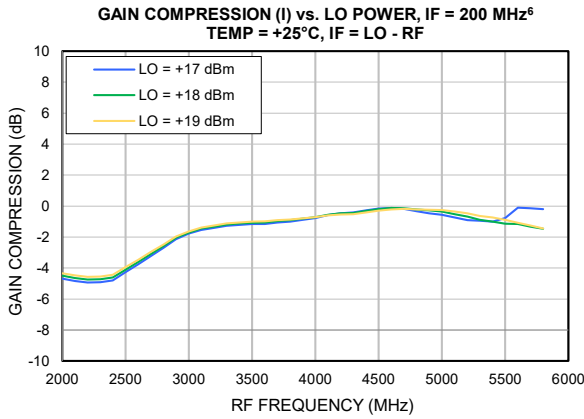
### TYPICAL PERFORMANCE GRAPHS



6. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.



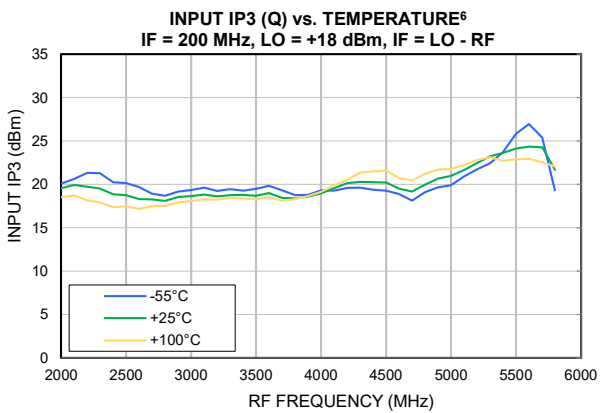
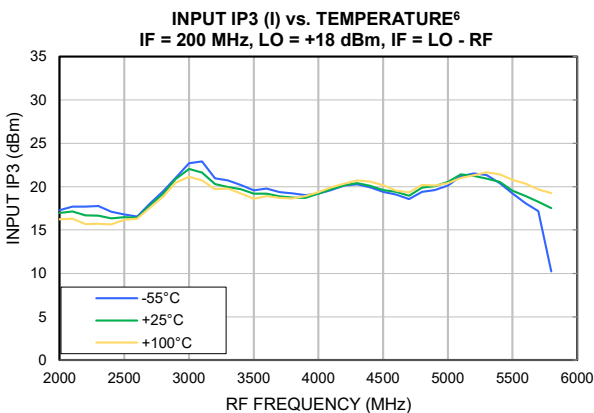
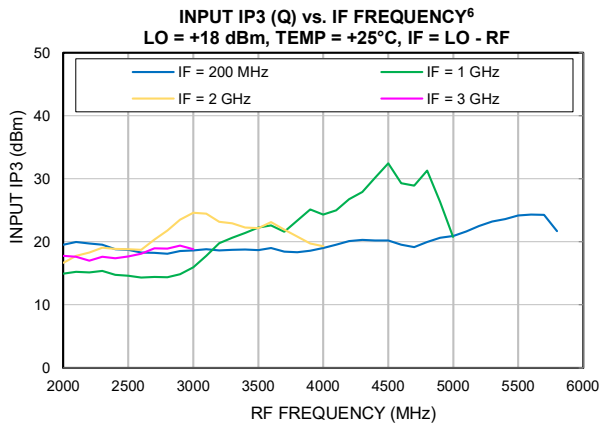
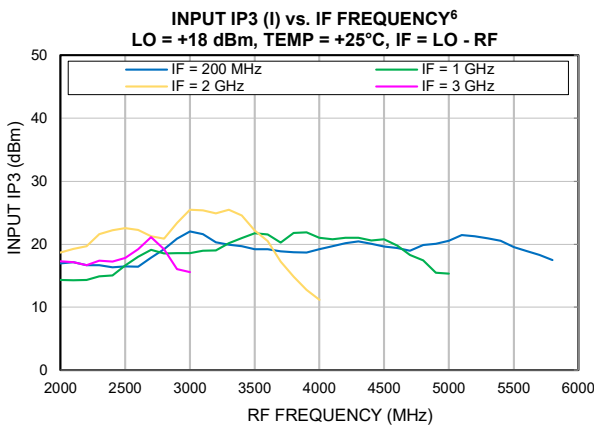
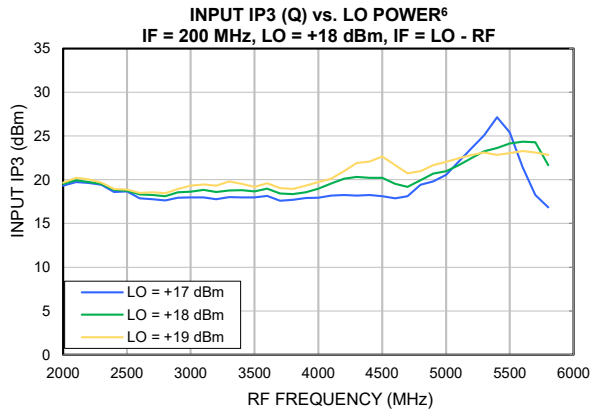
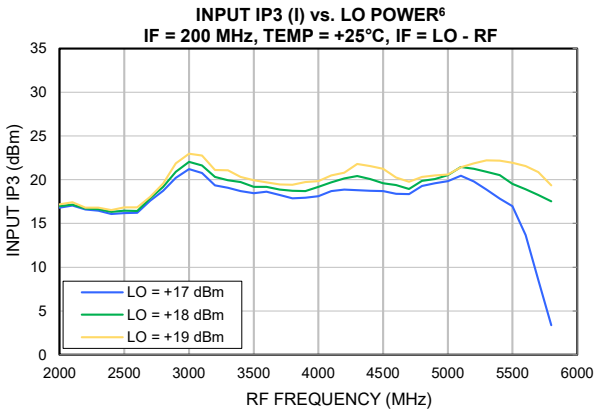
### TYPICAL PERFORMANCE GRAPHS



6. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.



### TYPICAL PERFORMANCE GRAPHS



6. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.



### ABSOLUTE MAXIMUM RATINGS<sup>7</sup>

| Parameter             | Ratings         |
|-----------------------|-----------------|
| Operating Temperature | -55°C to +105°C |
| Storage Temperature   | -65°C to +150°C |
| Junction Temperature  | +175°C          |
| RF Power              | +27 dBm         |
| LO Power              | +27 dBm         |
| I/Q Power             | +27 dBm         |
| IF Current            | 144 mA          |

7. Permanent damage may occur if any of these limits are exceeded. Electrical maximum ratings are not intended for continuous normal operation.

### ESD RATING

|     | Class | Voltage Range      | Reference Standard          |
|-----|-------|--------------------|-----------------------------|
| HBM | 1A    | 250 V to < 500 V   | ANSI/ESDA/JEDEC JS-001-2023 |
| CDM | C2B   | 750 V to < 1,000 V | ANSI/ESDA/JEDEC JS-002-2022 |



ESD HANDLING PRECAUTION: This device is designed to be Class 1A for HBM. Static charges may easily produce potentials higher than this with improper handling and can discharge into DUT and damage it. As a preventive measure Industry standard ESD handling precautions should be used at all times to protect the device from ESD damage

### MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020E /JEDEC J-STD-033C



### FUNCTIONAL DIAGRAM

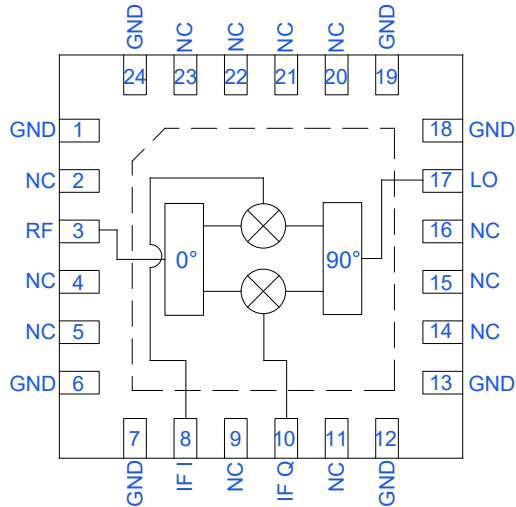


Figure 1. SMIQ-263H+ Functional Diagram

### PAD CONNECTIONS

| Function | Pad #                                | Description   |
|----------|--------------------------------------|---|
| RF       | 3                                    | RF Port. Connects to RF Output for Upconverters or RF Input for Downconverters.           |
| LO       | 17                                   | LO Port. Connects to LO Input.  |
| IF I     | 8                                    | IF I Port. Connects to the IF I Input for Upconverters or IF I Output for Downconverters. |
| IF Q     | 10                                   | IF Q Port. Connects to the IF Q Input for Upconverters or IF Q Output for Downconverters. |
| GND      | 1, 6, 7, 12, 13, 18, 19, 24 & Paddle | Connects to ground.   |
| NC       | 2, 4, 5, 9, 11, 14-16, 20-23         | No connection. Grounded on test board.  |

### CHARACTERIZATION TEST CIRCUITS

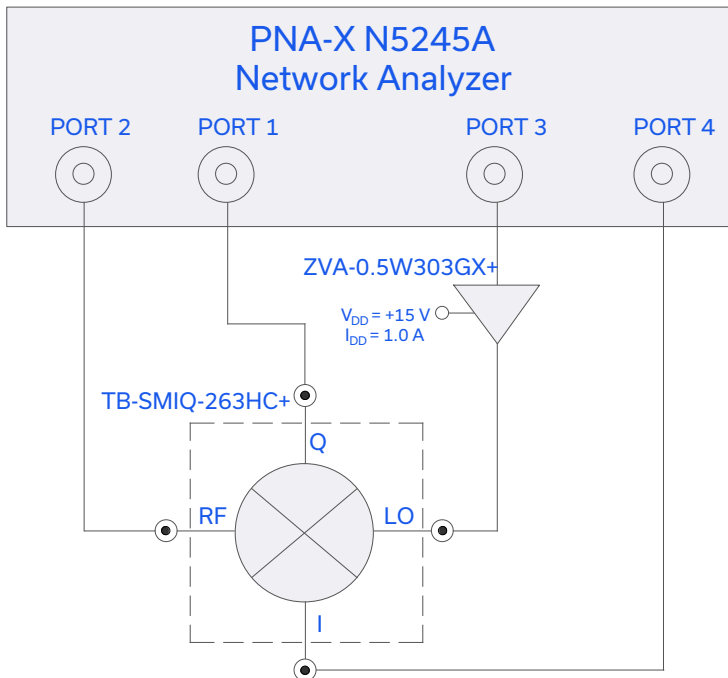


Figure 2. Block diagram of test circuit used to characterize: Conversion Loss, Amplitude Unbalance, Phase Unbalance, Isolation, Return Loss, and Input IP3

**Test conditions (For Conversion Loss, Amplitude Unbalance, Phase Unbalance, Isolation, and Return Loss):**  
RF Input Power = -10 dBm, LO Input Power = +17 to +19 dBm, IF = 200 MHz, 1000 MHz, 2000 MHz, and 3000 MHz

**Test conditions (For Input IP3):**  
RF Input Power = -10 dBm/Tone, LO Input Power = +17 to +19 dBm. Two tones, spaced 1 MHz apart

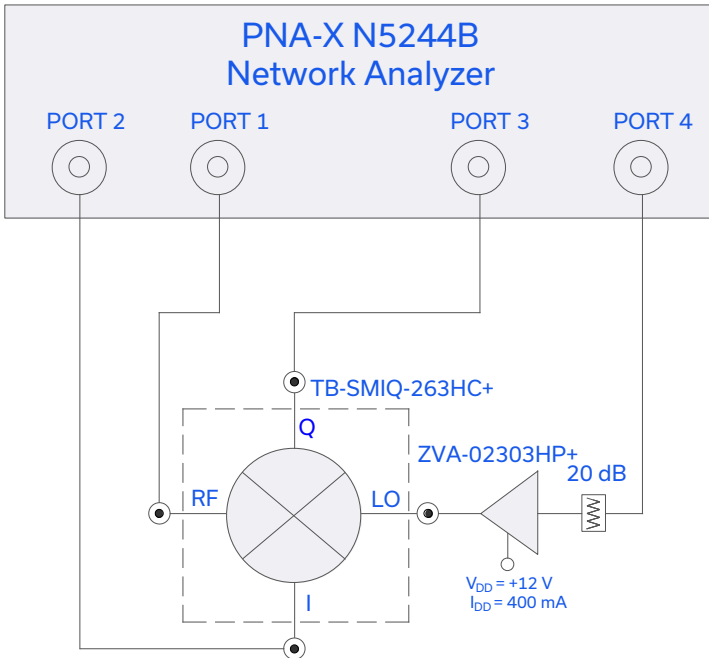


Figure 3. Block diagram of Test Circuit used for characterization of Image Rejection (Downconverter)

**Test conditions:**

RF Input Power = -10 dBm, LO Input Power = +17 to +19 dBm, IF = 200 MHz, 1000 MHz, 2000 MHz, and 3000 MHz

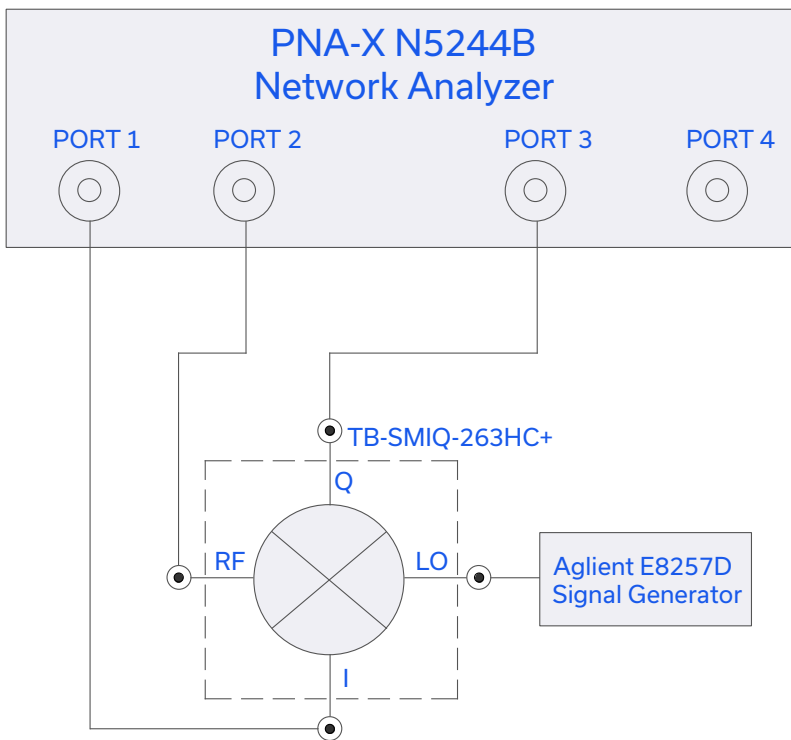
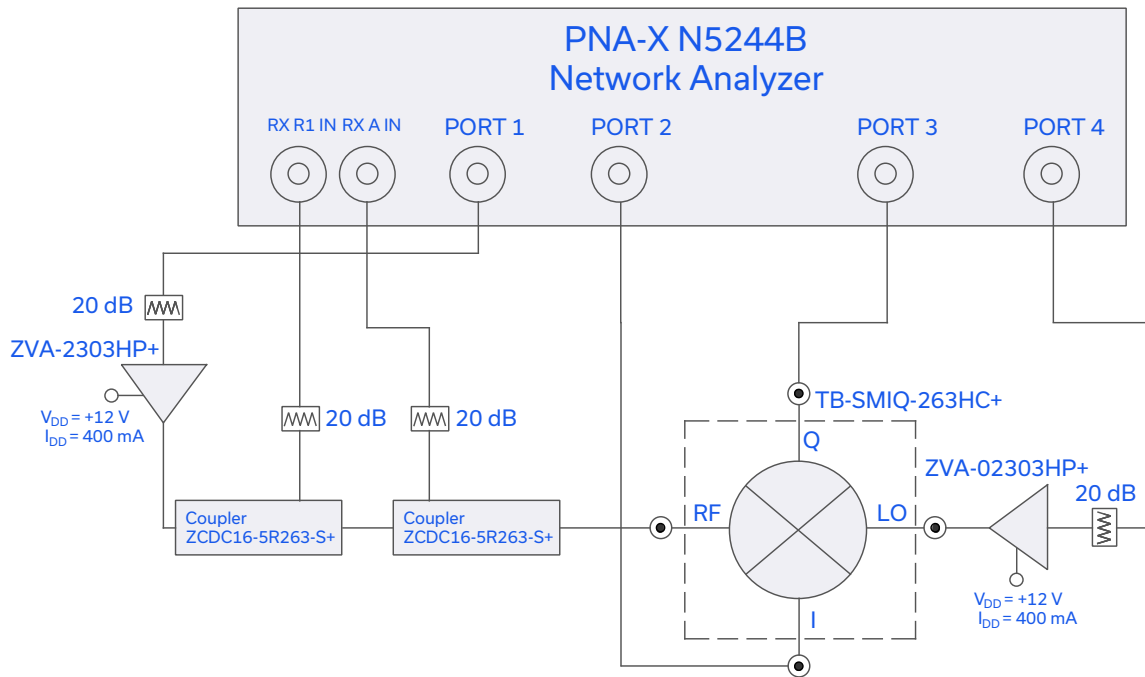


Figure 4. Block diagram of Test Circuit used for characterization of Single Side Band Rejection (Upconverter)

**Test conditions (For Single Side Band Rejection):**

IF Input Power = -10 dBm, LO Input Power = +17 to +19 dBm, IF = 200 MHz, 1000 MHz, 2000 MHz, and 3000 MHz



**Figure 5. Block diagram of Test Circuit used for characterization of Compression:**  
 RF Input Power = +15 dBm and -10 dBm, LO Input Power = +17 to +19 dBm, IF = 200 MHz, 1000 MHz, 2000 MHz, and 3000 MHz  
 Compression = (Conversion Loss @ RF Power = +15 dBm) - (Conversion Loss @ RF Power = -10 dBm)





### APPLICATION CONFIGURATION FOR IMAGE REJECT AND SINGLE SIDE BAND MIXER

In Image Reject or Single Sideband Upconverter applications an external 90° Hybrid is needed. Refer to Mini-Circuits extensive portfolio of 90° Hybrids.

#### IMAGE REJECT MIXER APPLICATION

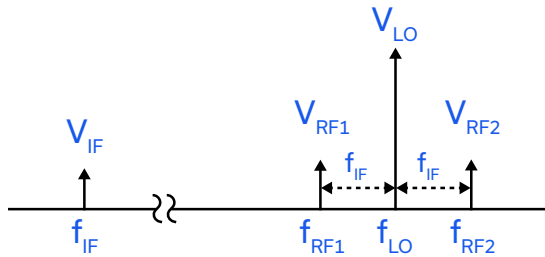


Figure 6. Spectral representation of Signals

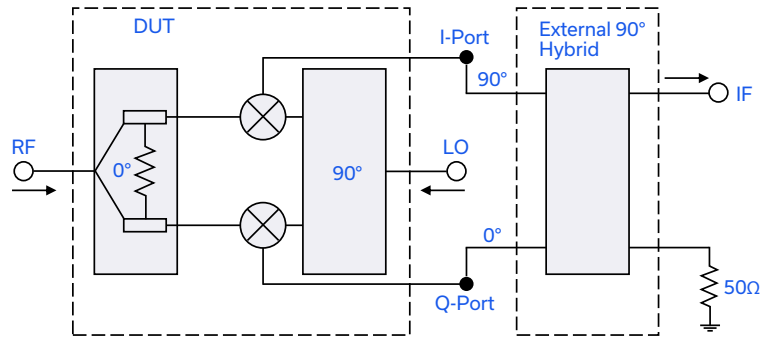


Figure 7. Block Diagram of Image Reject Mixer

If  $f_{RF1}$  is the desired signal and  $f_{RF2}$  is the image, connect the I port of DUT to the 90° port of the external hybrid and the Q port to the 0° port of the hybrid. This will send the  $f_{RF2}-f_{LO}$  IF signal to the terminated output of the external 90° hybrid and desired IF signal  $f_{LO}-f_{RF1}$  to the IF output port.

If  $f_{RF2}$  is the desired signal and  $f_{RF1}$  is the image signal, connect the I port of the external 90° hybrid and the Q port to the 90° port of the external hybrid. This will send  $f_{LO}-f_{RF1}$  IF signal to the terminated output of the external 90° hybrid and desired IF signal  $f_{RF2}-f_{LO}$  to IF port.

If  $f_{RF1}$  is the desired signal and  $f_{RF2}$  is the image signal, connect the I port of the external 90° hybrid and the Q port to the 90° port of the external hybrid. This will send  $f_{LO}-f_{RF1}$  IF signal to the terminated output of the external 90° hybrid and desired IF signal  $f_{RF2}-f_{LO}$  to the IF output port.

#### SINGLE SIDE BAND (SSB) UPCONVERTER APPLICATION

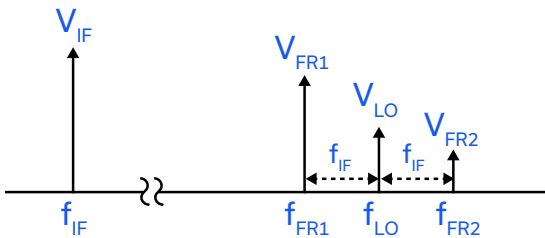


Figure 8. Spectral representation of Signals

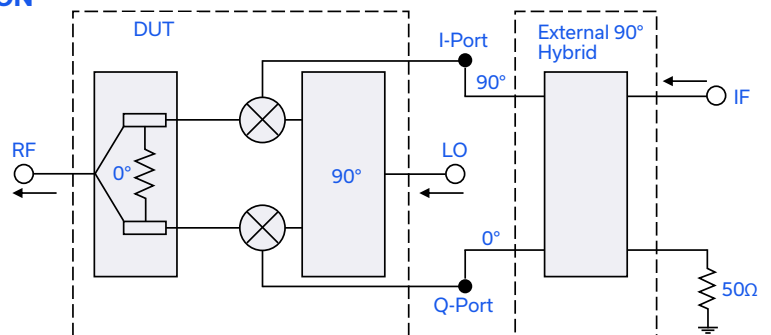


Figure 9. Block Diagram of Single Side Band Mixer

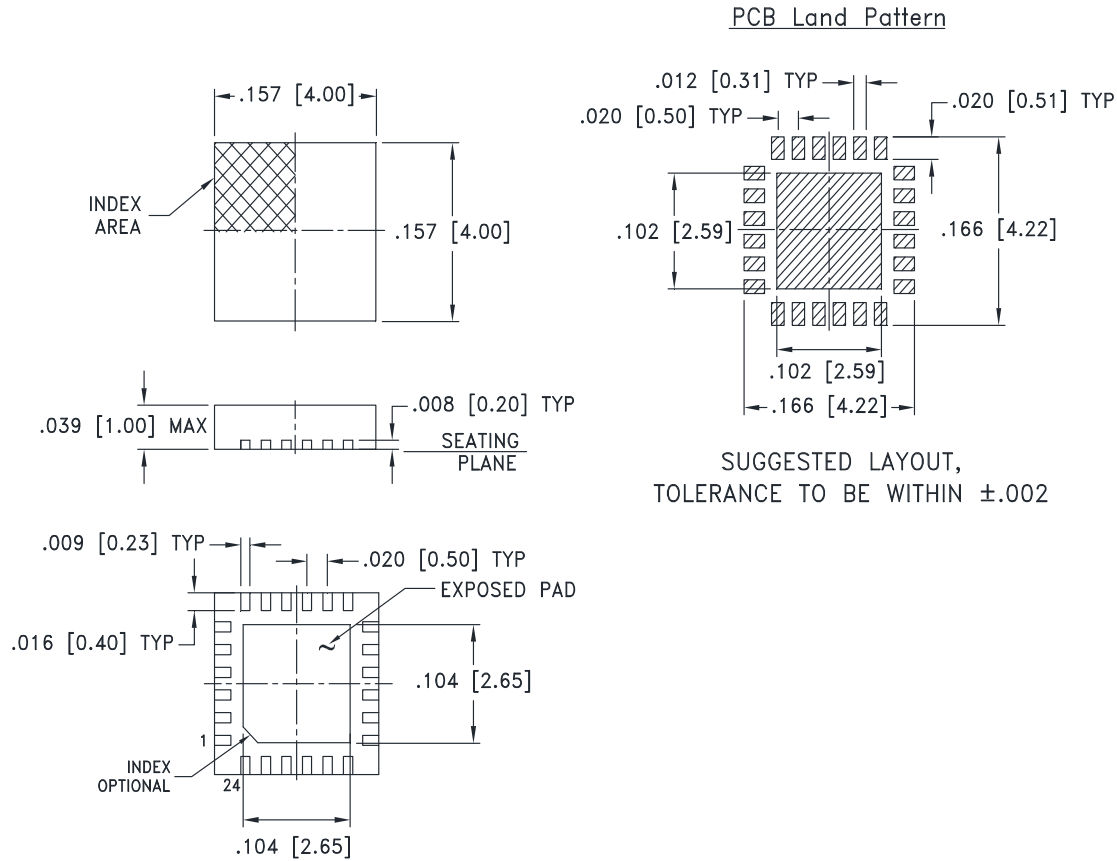
For upper sideband selection connect the I port to the 90° port of the external 90° hybrid and the Q port to the 0° port of the external hybrid. This will cause cancellation of the lower sideband signal in the 0° RF splitter of the DUT and the upper sideband signal will be present at the RF output port.

For lower sideband selection connect the I port to the 0° port of the external 90° hybrid and the Q port to the 90° port of the external hybrid. This will cause cancellation of the upper sideband signal in the 0° RF splitter of the DUT and the lower sideband signal will be present at the RF output port.

Refer to Mini-Circuits blog, I&Q Mixers, Image Reject Down-Conversion & Single Sideband (SSB) Up-Conversion for a detailed explanation.



### CASE STYLE DRAWING

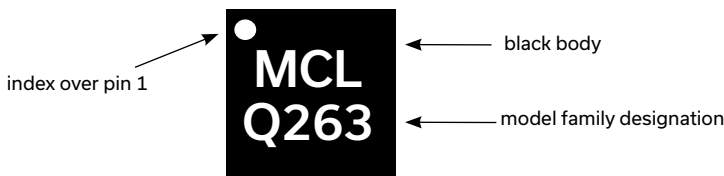


SUGGESTED LAYOUT,  
TOLERANCE TO BE WITHIN ±.002

Weight: .04 Grams

Dimensions are in inches [mm]. Tolerances in inches: 2 Pl. ± .01; 3 Pl. ± .005 inches

### PRODUCT MARKING



Marking may contain other features or characters for internal lot control



MMIC SURFACE MOUNT

# IQ Mixer

## SMIQ-263H+

50Ω Level 18 (LO Power +18 dBm) 2000 to 6000 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD [CLICK HERE](#)

|   |   |
|---|---|
| <b>Performance Data and Graphs</b>                              | Data<br>Graphs<br>Data Set (.zip file)  |
| <b>Case Style</b>   | DG1847 Plastic package, exposed paddle, lead finish: Matte-Tin                                    |
| <b>RoHS Status</b>  | Compliant   |
| <b>Tape &amp; Reel</b><br>Standard quantities available on reel | F68<br>7" reels with 20, 50, 100, 200, 500, or 1K devices<br>13" reels with 2K, 3K, or 4K devices |
| <b>Suggested Layout for PCB Design</b>                          | PL-805  |
| <b>Evaluation Board</b>   | TB-SMIQ-263HC+  |
| <b>Environmental Ratings</b>                                    | ENV08T1   |

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained there in. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)
- D. Mini-Circuits does not warrant the accuracy or completeness of the information, text, graphics and other items contained within this document and same are provided as an accommodation and on an As is basis, with all faults.
- E. Purchasers of this part are solely responsible for proper storing, handling, assembly and processing of known good die (KGD) (including, without limitation, proper ESD preventative measures, die preparation, die attach, wire bonding and related assembly and test activities), and Mini-Circuits assumes no responsibility therefor or for environmental effects on KGD.
- F. Mini-Circuits and the Mini-Circuits logo are registered trademarks of Scientific Components Corporation d/b/a Mini-Circuits. All other third-party trademarks are the property of their respective owners. A reference to any third-party trademark does not constitute or imply any endorsement, affiliation, sponsorship, or recommendation by any such third-party of Mini-Circuits or its products.



# Frequency Mixer

SMIQ-263H+

## Typical Performance Data

| RF (MHz) | LO (MHz) | CONVERSION LOSS (I+Q) VS. RF FREQUENCY @IF = 200 MHz |      |      | RF (MHz) | LO (MHz) | CONVERSION LOSS (I+Q) VS. RF FREQUENCY @IF = 1000 MHz |       |      | RF (MHz) | LO (MHz) | CONVERSION LOSS (I+Q) VS. RF FREQUENCY @IF = 2000 MHz |       |      | RF (MHz) | LO (MHz) | CONVERSION LOSS (I+Q) VS. RF FREQUENCY @IF = 3000 MHz |       |       |
|----------|----------|--|------|------|----------|----------|---|-------|------|----------|----------|---|-------|------|----------|----------|---|-------|-------|
|          |          | @LO (dBm)  |      |      |          |          | @LO (dBm)   |       |      |          |          | @LO (dBm)   |       |      |          |          | @LO (dBm)   |       |       |
|          |          | +17  | +18  | +19  |          |          | +17   | +18   | +19  |          |          | +17   | +18   | +19  |          |          | +17   | +18   | +19   |
|          |          |  |      |      |          |          |   |       |      |          |          |   |       |      |          |          |   |       |       |
| 2000     | 2200     | 5.28   | 5.25 | 5.14 | 2000     | 3000     | 6.62  | 6.63  | 6.55 | 2000     | 4000     | 7.09  | 6.96  | 6.85 | 2000     | 5000     | 7.46  | 7.64  | 7.85  |
| 2100     | 2300     | 5.17   | 5.17 | 5.09 | 2100     | 3100     | 6.83  | 6.83  | 6.74 | 2100     | 4100     | 7.17  | 7.06  | 6.96 | 2100     | 5100     | 7.37  | 7.55  | 7.78  |
| 2200     | 2400     | 5.21   | 5.24 | 5.20 | 2200     | 3200     | 7.03  | 7.02  | 6.93 | 2200     | 4200     | 7.15  | 7.06  | 7.00 | 2200     | 5200     | 7.47  | 7.69  | 7.95  |
| 2300     | 2500     | 5.59   | 5.65 | 5.62 | 2300     | 3300     | 7.46  | 7.43  | 7.33 | 2300     | 4300     | 7.40  | 7.31  | 7.25 | 2300     | 5300     | 7.64  | 7.85  | 8.10  |
| 2400     | 2600     | 5.91   | 5.97 | 5.96 | 2400     | 3400     | 7.83  | 7.78  | 7.66 | 2400     | 4400     | 7.51  | 7.41  | 7.36 | 2400     | 5400     | 7.86  | 8.05  | 8.29  |
| 2500     | 2700     | 6.36   | 6.42 | 6.40 | 2500     | 3500     | 8.21  | 8.11  | 7.96 | 2500     | 4500     | 7.77  | 7.66  | 7.60 | 2500     | 5500     | 8.01  | 8.14  | 8.35  |
| 2600     | 2800     | 6.77   | 6.81 | 6.79 | 2600     | 3600     | 8.59  | 8.45  | 8.24 | 2600     | 4600     | 7.94  | 7.80  | 7.74 | 2600     | 5600     | 8.39  | 8.41  | 8.54  |
| 2700     | 2900     | 7.21   | 7.24 | 7.20 | 2700     | 3700     | 9.02  | 8.84  | 8.58 | 2700     | 4700     | 8.13  | 7.97  | 7.89 | 2700     | 5700     | 8.93  | 8.94  | 9.03  |
| 2800     | 3000     | 7.53   | 7.55 | 7.49 | 2800     | 3800     | 9.32  | 9.11  | 8.82 | 2800     | 4800     | 8.26  | 8.09  | 7.99 | 2800     | 5800     | 9.34  | 9.19  | 9.24  |
| 2900     | 3100     | 7.66   | 7.67 | 7.62 | 2900     | 3900     | 9.49  | 9.26  | 8.93 | 2900     | 4900     | 8.19  | 8.04  | 7.96 | 2900     | 5900     | 9.65  | 9.42  | 9.45  |
| 3000     | 3200     | 7.92   | 7.94 | 7.89 | 3000     | 4000     | 9.74  | 9.49  | 9.14 | 3000     | 5000     | 8.25  | 8.07  | 7.99 | 3000     | 6000     | 10.11   | 9.74  | 9.76  |
| 3100     | 3300     | 8.20   | 8.19 | 8.12 | 3100     | 4100     | 9.91  | 9.65  | 9.30 | 3100     | 5100     | 8.25  | 8.00  | 7.87 | 3100     | 6100     | 11.41   | 10.36 | 10.22 |
| 3200     | 3400     | 8.36   | 8.33 | 8.23 | 3200     | 4200     | 9.98  | 9.71  | 9.36 | 3200     | 5200     | 8.35  | 8.05  | 7.87 | 3200     | 6200     | 11.75   | 10.66 | 10.51 |
| 3300     | 3500     | 8.18   | 8.13 | 8.02 | 3300     | 4300     | 9.64  | 9.42  | 9.12 | 3300     | 5300     | 8.33  | 8.01  | 7.81 | 3300     | 6300     | 11.52   | 10.47 | 10.34 |
| 3400     | 3600     | 8.52   | 8.46 | 8.33 | 3400     | 4400     | 9.76  | 9.57  | 9.32 | 3400     | 5400     | 8.78  | 8.43  | 8.20 | 3400     | 6400     | 12.02   | 11.01 | 10.87 |
| 3500     | 3700     | 8.49   | 8.42 | 8.28 | 3500     | 4500     | 9.49  | 9.30  | 9.09 | 3500     | 5500     | 8.86  | 8.49  | 8.25 | 3500     | 6500     | 12.17   | 11.08 | 10.86 |
| 3600     | 3800     | 8.24   | 8.15 | 8.00 | 3600     | 4600     | 8.99  | 8.78  | 8.57 | 3600     | 5600     | 8.55  | 8.20  | 7.97 | 3600     | 6600     | 11.93   | 11.00 | 10.56 |
| 3700     | 3900     | 8.53   | 8.41 | 8.24 | 3700     | 4700     | 8.94  | 8.70  | 8.48 | 3700     | 5700     | 8.76  | 8.36  | 8.14 | 3700     | 6700     | 12.18   | 11.59 | 10.88 |
| 3800     | 4000     | 9.03   | 8.86 | 8.65 | 3800     | 4800     | 9.18  | 8.91  | 8.66 | 3800     | 5800     | 9.44  | 8.82  | 8.56 | 3800     | 6800     | 12.63   | 12.11 | 11.37 |
| 3900     | 4100     | 8.92   | 8.71 | 8.45 | 3900     | 4900     | 9.01  | 8.70  | 8.38 | 3900     | 5900     | 9.61  | 8.70  | 8.39 | 3900     | 6900     | 12.43   | 11.63 | 11.12 |
| 4000     | 4200     | 9.00   | 8.74 | 8.45 | 4000     | 5000     | 9.19  | 8.87  | 8.51 | 4000     | 6000     | 10.13   | 8.86  | 8.45 | 4000     | 7000     | 12.44   | 11.47 | 11.19 |
| 4100     | 4300     | 8.58   | 8.26 | 7.93 | 4100     | 5100     | 8.82  | 8.54  | 8.20 | 4100     | 6100     | 9.90  | 8.49  | 8.07 | 4100     | 7100     | 11.72   | 10.83 | 10.74 |
| 4200     | 4400     | 9.18   | 8.75 | 8.34 | 4200     | 5200     | 9.44  | 9.12  | 8.77 | 4200     | 6200     | 10.55   | 8.97  | 8.53 | 4200     | 7200     | 12.42   | 11.52 | 11.44 |
| 4300     | 4500     | 9.19   | 8.69 | 8.22 | 4300     | 5300     | 9.43  | 9.11  | 8.76 | 4300     | 6300     | 10.66   | 8.91  | 8.45 | 4300     | 7300     | 12.58   | 11.55 | 11.44 |
| 4400     | 4600     | 9.39   | 8.84 | 8.35 | 4400     | 5400     | 9.58  | 9.25  | 8.90 | 4400     | 6400     | 11.21   | 9.10  | 8.58 | 4400     | 7400     | 12.97   | 11.82 | 11.67 |
| 4500     | 4700     | 9.08   | 8.52 | 8.04 | 4500     | 5500     | 9.29  | 8.97  | 8.65 | 4500     | 6500     | 11.87   | 9.16  | 8.42 | 4500     | 7500     | 12.76   | 11.62 | 11.49 |
| 4600     | 4800     | 9.29   | 8.72 | 8.20 | 4600     | 5600     | 9.53  | 9.17  | 8.84 | 4600     | 6600     | 13.35   | 10.07 | 8.71 | 4600     | 7600     | 12.71   | 11.88 | 11.86 |
| 4700     | 4900     | 9.53   | 9.00 | 8.46 | 4700     | 5700     | 9.89  | 9.44  | 9.09 | 4700     | 6700     | 14.42   | 11.24 | 9.10 | 4700     | 7700     | 12.40   | 12.08 | 12.12 |
| 4800     | 5000     | 9.22   | 8.75 | 8.24 | 4800     | 5800     | 9.98  | 9.24  | 8.85 | 4800     | 6800     | 14.07   | 11.09 | 8.83 | 4800     | 7800     | 11.79   | 11.67 | 11.74 |
| 4900     | 5100     | 9.10   | 8.69 | 8.22 | 4900     | 5900     | 10.37   | 9.25  | 8.78 | 4900     | 6900     | 13.34   | 10.20 | 8.60 | 4900     | 7900     | 11.61   | 11.55 | 11.62 |
| 5000     | 5200     | 9.23   | 8.85 | 8.40 | 5000     | 6000     | 11.16   | 9.58  | 8.97 | 5000     | 7000     | 12.73   | 9.67  | 8.65 | 5000     | 8000     | 11.83   | 11.74 | 11.78 |
| 5100     | 5300     | 9.15   | 8.81 | 8.42 | 5100     | 6100     | 11.32   | 9.66  | 9.00 | 5100     | 7100     | 11.81   | 9.25  | 8.64 | 5100     | 8100     | 11.86   | 11.75 | 11.77 |
| 5200     | 5400     | 8.72   | 8.42 | 8.06 | 5200     | 6200     | 10.96   | 9.33  | 8.69 | 5200     | 7200     | 11.23   | 8.95  | 8.44 | 5200     | 8200     | 11.57   | 11.49 | 11.52 |
| 5300     | 5500     | 7.99   | 7.73 | 7.43 | 5300     | 6300     | 10.25   | 8.74  | 8.15 | 5300     | 7300     | 10.72   | 8.58  | 8.03 | 5300     | 8300     | 10.88   | 10.86 | 10.91 |
| 5400     | 5600     | 8.25   | 7.98 | 7.69 | 5400     | 6400     | 10.69   | 9.14  | 8.49 | 5400     | 7400     | 11.05   | 9.00  | 8.35 | 5400     | 8400     | 11.24   | 11.25 | 11.31 |
| 5500     | 5700     | 8.19   | 7.88 | 7.63 | 5500     | 6500     | 10.85   | 9.33  | 8.53 | 5500     | 7500     | 10.80   | 9.00  | 8.40 | 5500     | 8500     | 11.18   | 11.22 | 11.30 |
| 5600     | 5800     | 8.37   | 7.89 | 7.62 | 5600     | 6600     | 10.90   | 9.69  | 8.53 | 5600     | 7600     | 10.20   | 8.76  | 8.37 | 5600     | 8600     | 11.21   | 11.26 | 11.35 |
| 5700     | 5900     | 8.71   | 7.97 | 7.64 | 5700     | 6700     | 10.83   | 10.09 | 8.59 | 5700     | 7700     | 9.37  | 8.57  | 8.36 | 5700     | 8700     | 11.30   | 11.34 | 11.43 |
| 5800     | 6000     | 8.80   | 7.75 | 7.36 | 5800     | 6800     | 10.37   | 9.78  | 8.28 | 5800     | 7800     | 8.68  | 8.24  | 8.10 | 5800     | 8800     | 11.02   | 11.05 | 11.14 |
| 5900     | 6100     | 8.66   | 7.55 | 7.16 | 5900     | 6900     | 9.96  | 9.14  | 8.02 | 5900     | 7900     | 8.44  | 8.15  | 8.06 | 5900     | 8900     | 10.74   | 10.76 | 10.88 |
| 6000     | 6200     | 8.50   | 7.39 | 7.03 | 6000     | 7000     | 9.69  | 8.58  | 7.84 | 6000     | 8000     | 8.37  | 8.10  | 8.01 | 6000     | 9000     | 10.63   | 10.64 | 10.79 |



# Frequency Mixer

# SMIQ-263H+

## Typical Performance Data

| RF<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS (I+Q) VS. RF FREQUENCY<br>@IF = 200 MHz<br>@LO = +18 dBm |       |        |
|-------------|-------------|--|-------|--------|
|             |             | @ TEMPERATURE  |       |        |
|             |             | -55°C  | +25°C | +100°C |
| 2000        | 2200        | 5.03   | 5.25  | 5.40   |
| 2100        | 2300        | 4.81   | 5.16  | 5.41   |
| 2200        | 2400        | 4.80   | 5.24  | 5.53   |
| 2300        | 2500        | 5.15   | 5.64  | 5.97   |
| 2400        | 2600        | 5.46   | 5.96  | 6.30   |
| 2500        | 2700        | 5.92   | 6.42  | 6.76   |
| 2600        | 2800        | 6.31   | 6.81  | 7.15   |
| 2700        | 2900        | 6.74   | 7.25  | 7.58   |
| 2800        | 3000        | 7.10   | 7.56  | 7.85   |
| 2900        | 3100        | 7.24   | 7.69  | 7.97   |
| 3000        | 3200        | 7.53   | 7.96  | 8.23   |
| 3100        | 3300        | 7.79   | 8.21  | 8.47   |
| 3200        | 3400        | 7.93   | 8.35  | 8.58   |
| 3300        | 3500        | 7.78   | 8.15  | 8.36   |
| 3400        | 3600        | 8.17   | 8.48  | 8.66   |
| 3500        | 3700        | 8.15   | 8.44  | 8.61   |
| 3600        | 3800        | 7.83   | 8.17  | 8.34   |
| 3700        | 3900        | 8.14   | 8.43  | 8.54   |
| 3800        | 4000        | 8.63   | 8.86  | 8.94   |
| 3900        | 4100        | 8.54   | 8.71  | 8.72   |
| 4000        | 4200        | 8.67   | 8.74  | 8.70   |
| 4100        | 4300        | 8.22   | 8.25  | 8.21   |
| 4200        | 4400        | 8.79   | 8.74  | 8.64   |
| 4300        | 4500        | 8.77   | 8.68  | 8.55   |
| 4400        | 4600        | 8.96   | 8.82  | 8.67   |
| 4500        | 4700        | 8.63   | 8.49  | 8.38   |
| 4600        | 4800        | 8.85   | 8.68  | 8.55   |
| 4700        | 4900        | 9.19   | 8.96  | 8.80   |
| 4800        | 5000        | 8.95   | 8.73  | 8.55   |
| 4900        | 5100        | 8.85   | 8.66  | 8.51   |
| 5000        | 5200        | 8.98   | 8.82  | 8.69   |
| 5100        | 5300        | 8.88   | 8.78  | 8.70   |
| 5200        | 5400        | 8.41   | 8.39  | 8.37   |
| 5300        | 5500        | 7.61   | 7.71  | 7.77   |
| 5400        | 5600        | 7.85   | 7.96  | 8.03   |
| 5500        | 5700        | 7.70   | 7.87  | 7.98   |
| 5600        | 5800        | 7.76   | 7.88  | 8.00   |
| 5700        | 5900        | 7.98   | 7.97  | 8.06   |
| 5800        | 6000        | 7.95   | 7.75  | 7.82   |
| 5900        | 6100        | 7.75   | 7.55  | 7.68   |
| 6000        | 6200        | 7.61   | 7.39  | 7.58   |

*Typical Performance Data*

| IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 2000 MHz |       |       | IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 3000 MHz |       |       | IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 5000 MHz |       |       | IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 6000 MHz |       |      |
|-------------|-------------|--|-------|-------|-------------|-------------|--|-------|-------|-------------|-------------|--|-------|-------|-------------|-------------|--|-------|------|
|             |             | @LO (dBm)  |       |       |             |             | @LO (dBm)  |       |       |             |             | @LO (dBm)  |       |       |             |             | @LO (dBm)  |       |      |
|             |             | +17  | +18   | +19   |             |             | -55  | +25   | +100  |             |             | +17  | +18   | +19   |             |             | +17  | +18   | +19  |
| 3000        | 5000        | 13.25  | 13.65 | 13.58 | 3000        | 6000        | 11.71  | 11.83 | 11.96 | 3000        | 8000        | 14.48  | 14.49 | 14.49 | 10          | 5990        | 8.26   | 7.28  | 7.02 |
| 2950        | 4950        | 13.65  | 13.66 | 13.69 | 2950        | 5950        | 11.08  | 11.17 | 11.28 | 2950        | 7950        | 14.70  | 14.69 | 14.68 | 20          | 5980        | 8.48   | 7.46  | 7.20 |
| 2900        | 4900        | 12.68  | 12.69 | 12.73 | 2900        | 5900        | 10.78  | 10.85 | 10.94 | 2900        | 7900        | 14.44  | 14.42 | 14.40 | 30          | 5970        | 8.58   | 7.59  | 7.32 |
| 2850        | 4850        | 12.46  | 12.46 | 12.49 | 2850        | 5850        | 10.81  | 10.87 | 10.95 | 2850        | 7850        | 14.39  | 14.37 | 14.35 | 40          | 5960        | 8.62   | 7.61  | 7.32 |
| 2800        | 4800        | 11.65  | 11.66 | 11.68 | 2800        | 5800        | 10.25  | 10.29 | 10.34 | 2800        | 7800        | 14.42  | 14.38 | 14.35 | 50          | 5950        | 8.66   | 7.64  | 7.35 |
| 2750        | 4750        | 12.12  | 12.12 | 12.14 | 2750        | 5750        | 9.63   | 9.65  | 9.68  | 2750        | 7750        | 14.42  | 14.35 | 14.29 | 60          | 5940        | 8.81   | 7.78  | 7.48 |
| 2700        | 4700        | 10.82  | 10.80 | 10.81 | 2700        | 5700        | 10.22  | 10.21 | 10.23 | 2700        | 7700        | 15.30  | 15.22 | 15.15 | 70          | 5930        | 8.86   | 7.81  | 7.50 |
| 2650        | 4650        | 10.99  | 10.95 | 10.94 | 2650        | 5650        | 9.74   | 9.73  | 9.73  | 2650        | 7650        | 16.00  | 15.95 | 15.92 | 80          | 5920        | 8.66   | 7.59  | 7.27 |
| 2600        | 4600        | 10.88  | 10.81 | 10.77 | 2600        | 5600        | 9.50   | 9.47  | 9.45  | 2600        | 7600        | 16.84  | 16.78 | 16.75 | 90          | 5910        | 8.43   | 7.38  | 7.08 |
| 2550        | 4550        | 10.82  | 10.73 | 10.68 | 2550        | 5550        | 9.63   | 9.57  | 9.53  | 2550        | 7550        | 17.15  | 17.10 | 17.09 | 100         | 5900        | 8.50   | 7.48  | 7.19 |
| 2500        | 4500        | 10.87  | 10.76 | 10.68 | 2500        | 5500        | 9.46   | 9.39  | 9.35  | 2500        | 7500        | 17.74  | 15.08 | 17.04 | 150         | 5850        | 8.73   | 7.68  | 7.39 |
| 2450        | 4450        | 10.06  | 9.93  | 9.83  | 2450        | 5450        | 9.57   | 9.49  | 9.42  | 2450        | 7450        | 15.34  | 15.26 | 15.22 | 200         | 5800        | 8.87   | 7.78  | 7.45 |
| 2400        | 4400        | 10.21  | 10.06 | 9.95  | 2400        | 5400        | 8.98   | 8.88  | 8.81  | 2400        | 7400        | 14.48  | 14.38 | 14.32 | 250         | 5750        | 8.62   | 7.56  | 7.27 |
| 2350        | 4350        | 9.81   | 9.67  | 9.57  | 2350        | 5350        | 9.23   | 9.12  | 9.04  | 2350        | 7350        | 13.56  | 13.46 | 13.39 | 300         | 5700        | 9.31   | 8.16  | 7.82 |
| 2300        | 4300        | 9.87   | 9.72  | 9.61  | 2300        | 5300        | 8.55   | 8.43  | 8.35  | 2300        | 7300        | 13.02  | 12.91 | 12.84 | 350         | 5650        | 9.07   | 7.95  | 7.63 |
| 2250        | 4250        | 9.52   | 9.35  | 9.22  | 2250        | 5250        | 8.73   | 8.62  | 8.53  | 2250        | 7250        | 12.31  | 12.19 | 12.10 | 400         | 5600        | 9.41   | 8.24  | 7.90 |
| 2200        | 4200        | 9.38   | 9.22  | 9.10  | 2200        | 5200        | 8.76   | 8.64  | 8.53  | 2200        | 7200        | 11.98  | 11.85 | 11.76 | 450         | 5550        | 9.57   | 8.40  | 8.05 |
| 2150        | 4150        | 9.60   | 9.43  | 9.30  | 2150        | 5150        | 8.80   | 8.68  | 8.58  | 2150        | 7150        | 11.48  | 11.36 | 11.28 | 500         | 5500        | 9.55   | 8.34  | 7.98 |
| 2100        | 4100        | 9.66   | 9.49  | 9.36  | 2100        | 5100        | 8.96   | 8.84  | 8.74  | 2100        | 7100        | 11.16  | 11.03 | 10.93 | 550         | 5450        | 10.16  | 8.89  | 8.49 |
| 2050        | 4050        | 9.19   | 9.01  | 8.87  | 2050        | 5050        | 8.61   | 8.49  | 8.39  | 2050        | 7050        | 11.00  | 10.87 | 10.77 | 600         | 5400        | 9.98   | 8.67  | 8.28 |
| 1950        | 3950        | 9.10   | 8.95  | 8.83  | 2000        | 5000        | 8.88   | 8.77  | 8.68  | 2000        | 7000        | 10.61  | 10.49 | 10.40 | 650         | 5350        | 10.19  | 8.86  | 8.46 |
| 1900        | 3900        | 9.59   | 9.41  | 9.26  | 1950        | 4950        | 8.56   | 8.45  | 8.37  | 1950        | 6950        | 10.70  | 10.58 | 10.49 | 700         | 5300        | 9.56   | 8.24  | 7.86 |
| 1850        | 3850        | 9.20   | 9.04  | 8.90  | 1900        | 4900        | 8.96   | 8.86  | 8.78  | 1900        | 6900        | 10.55  | 10.44 | 10.36 | 750         | 5250        | 10.14  | 8.78  | 8.38 |
| 1800        | 3800        | 9.31   | 9.14  | 9.01  | 1850        | 4850        | 8.98   | 8.88  | 8.80  | 1850        | 6850        | 10.40  | 10.30 | 10.21 | 800         | 5200        | 10.55  | 9.10  | 8.66 |
| 1750        | 3750        | 9.59   | 9.41  | 9.28  | 1800        | 4800        | 9.51   | 9.42  | 9.34  | 1800        | 6800        | 10.40  | 10.31 | 10.23 | 850         | 5150        | 10.54  | 9.07  | 8.62 |
| 1700        | 3700        | 10.01  | 9.81  | 9.65  | 1750        | 4750        | 9.81   | 9.71  | 9.64  | 1750        | 6750        | 9.93   | 9.83  | 9.74  | 900         | 5100        | 10.94  | 9.40  | 8.92 |
| 1650        | 3650        | 10.17  | 9.98  | 9.82  | 1700        | 4700        | 10.35  | 10.24 | 10.13 | 1700        | 6700        | 10.22  | 10.13 | 10.05 | 950         | 5050        | 10.94  | 9.32  | 8.83 |
| 1600        | 3600        | 10.20  | 9.99  | 9.82  | 1650        | 4650        | 10.51  | 10.38 | 10.25 | 1650        | 6650        | 9.97   | 9.86  | 9.76  | 1000        | 5000        | 11.17  | 9.54  | 9.03 |
| 1550        | 3550        | 10.30  | 10.06 | 9.87  | 1600        | 4600        | 10.54  | 10.40 | 10.26 | 1600        | 6600        | 10.15  | 10.05 | 9.95  | 1050        | 4950        | 11.57  | 9.85  | 9.45 |
| 1500        | 3500        | 10.33  | 10.07 | 9.85  | 1550        | 4550        | 10.22  | 10.08 | 9.95  | 1550        | 6550        | 10.27  | 10.15 | 10.05 | 1100        | 4900        | 10.22  | 9.50  | 8.86 |
| 1450        | 3450        | 10.41  | 10.10 | 9.86  | 1450        | 4450        | 10.28  | 10.14 | 10.02 | 1500        | 6500        | 10.49  | 10.31 | 10.14 | 1150        | 4850        | 11.41  | 9.61  | 9.05 |
| 1400        | 3400        | 11.03  | 10.69 | 10.42 | 1400        | 4400        | 10.45  | 10.32 | 10.20 | 1450        | 6450        | 10.72  | 10.51 | 10.33 | 1200        | 4800        | 11.66  | 9.86  | 9.29 |
| 1350        | 3350        | 10.87  | 10.50 | 10.19 | 1350        | 4350        | 10.62  | 10.48 | 10.36 | 1400        | 6400        | 10.45  | 10.22 | 10.02 | 1250        | 4750        | 11.81  | 9.91  | 9.30 |
| 1300        | 3300        | 10.21  | 9.86  | 9.58  | 1300        | 4300        | 10.20  | 10.07 | 9.95  | 1350        | 6350        | 10.27  | 10.04 | 9.85  | 1300        | 4700        | 12.50  | 10.51 | 9.88 |
| 1250        | 3250        | 9.94   | 9.59  | 9.31  | 1250        | 4250        | 10.01  | 9.90  | 9.80  | 1300        | 6300        | 9.95   | 9.74  | 9.56  | 1350        | 4650        | 12.36  | 10.46 | 9.82 |
| 1200        | 3200        | 9.74   | 9.39  | 9.10  | 1200        | 4200        | 9.67   | 9.56  | 9.47  | 1250        | 6250        | 9.42   | 9.22  | 9.06  | 1400        | 4600        | 12.11  | 10.30 | 9.71 |
| 1150        | 3150        | 9.65   | 9.31  | 9.04  | 1150        | 4150        | 9.64   | 9.52  | 9.42  | 1200        | 6200        | 9.44   | 9.26  | 9.10  | 1450        | 4550        | 11.61  | 9.96  | 9.43 |
| 1100        | 3100        | 9.23   | 8.89  | 8.62  | 1100        | 4100        | 8.64   | 8.54  | 8.45  | 1150        | 6150        | 9.23   | 9.01  | 8.81  | 1500        | 4500        | 11.42  | 9.93  | 9.46 |
| 1050        | 3050        | 9.20   | 8.86  | 8.59  | 1050        | 4050        | 8.89   | 8.78  | 8.70  | 1100        | 6100        | 9.14   | 8.95  | 8.77  | 1550        | 4450        | 10.88  | 9.49  | 9.08 |
| 950         | 2950        | 8.98   | 8.68  | 8.43  | 1000        | 4000        | 8.75   | 8.64  | 8.57  | 1050        | 6050        | 9.04   | 8.84  | 8.66  | 1600        | 4400        | 11.11  | 9.67  | 9.25 |
| 900         | 2900        | 8.92   | 8.62  | 8.38  | 950         | 3950        | 8.75   | 8.63  | 8.54  | 1000        | 6000        | 8.98   | 8.78  | 8.57  | 1650        | 4350        | 11.03  | 9.60  | 9.20 |
| 850         | 2850        | 8.88   | 8.61  | 8.39  | 900         | 3900        | 8.39   | 8.29  | 8.22  | 950         | 5950        | 9.35   | 9.11  | 8.89  | 1700        | 4300        | 10.59  | 9.20  | 8.80 |
| 800         | 2800        | 9.00   | 8.76  | 8.55  | 850         | 3850        | 8.36   | 8.27  | 8.19  | 900         | 5900        | 9.08   | 8.82  | 8.57  | 1750        | 4250        | 10.86  | 9.46  | 9.06 |
| 750         | 2750        | 8.84   | 8.60  | 8.41  | 800         | 3800        | 8.63   | 8.53  | 8.46  | 850         | 5850        | 9.17   | 8.89  | 8.62  | 1800        | 4200        | 10.57  | 9.19  | 8.80 |
| 700         | 2700        | 9.01   | 8.80  | 8.62  | 750         | 3750        | 8.34   | 8.25  | 8.19  | 800         | 5800        | 9.42   | 9.09  | 8.77  | 1850        | 4150        | 10.60  | 9.21  | 8.82 |
| 650         | 2650        | 8.88   | 8.69  | 8.52  | 700         | 3700        | 7.82   | 7.73  | 7.68  | 750         | 5750        | 9.15   | 8.82  | 8.50  | 1900        | 4100        | 9.82   | 8.54  | 8.17 |
| 600         | 2600        | 8.71   | 8.51  | 8.35  | 650         | 3650        | 7.78   | 7.70  | 7.65  | 700         | 5700        | 9.60   | 9.20  | 8.82  | 1950        | 4050        | 10.44  | 9.07  | 8.66 |
| 550         | 2550        | 8.15   | 7.96  | 7.81  | 600         | 3600        | 7.72   | 7.63  | 7.57  | 650         | 5650        | 9.37   | 8.97  | 8.59  | 2000        | 4000        | 10.25  | 8.95  | 8.56 |
| 500         | 2500        | 7.49   | 7.31  | 7.18  | 550         | 3550        | 7.88   | 7.80  | 7.75  | 600         | 5600        | 9.79   | 9.32  | 8.90  | 2050        | 3950        | 10.12  | 8.87  | 8.47 |
| 450         | 2450        | 6.87   | 6.70  | 6.57  | 500         | 3500        | 7.77   | 7.70  | 7.65  | 550         | 5550        | 9.62   | 9.14  | 8.69  | 2100        | 3900        | 10.18  | 8.89  | 8.49 |
| 400         | 2400        | 6.55   | 6.38  | 6.26  | 450         | 3450        | 7.93   | 7.85  | 7.80  | 500         | 5500        | 9.61   | 9.09  | 8.62  | 2150        | 3850        | 10.12  | 8.93  | 8.54 |
| 350         | 2350        | 6.23   | 6.07  | 5.94  | 400         | 3400        | 7.81   | 7.74  | 7.70  | 450         | 5450        | 10.19  | 9.62  | 9.10  | 2200        | 3800        | 10.39  | 9.17  | 8.77 |
| 300         | 2300        | 5.89   | 5.72  | 5.59  | 350         | 3350        | 7.42   | 7.36  | 7.32  | 400         | 5400        | 9.64   | 9.06  | 8.55  | 2250        | 3750        | 10.22  | 9.03  | 8.64 |
| 250         | 2250        | 5.78   | 5.61  | 5.49  | 300         | 3300        | 7.40   | 7.34  | 7.29  | 350         | 5350        | 9.84   | 9.23  | 8.70  | 2300        | 3700        | 9.95   | 8.80  | 8.41 |
| 200         | 2200        | 5.67   | 5.49  | 5.35  | 250         | 3250        | 7.36   | 7.30  | 7.26  | 300         | 5300        | 9.16   | 8.57  | 8.05  | 2350        | 3650        | 10.04  | 8.86  | 8.47 |
| 150         | 2150        | 5.46   | 5.29  | 5.16  | 200         | 3200        | 7.73   | 7.66  | 7.62  | 250         | 5250        | 9.39   | 8.80  | 8.28  | 2400        | 3600        | 9.96   | 8.79  | 8.41 |
| 100         | 2100        | 5.21   | 5.05  | 4.91  | 150         | 3150        | 7.56   | 7.49  | 7.45  | 200         | 5200        | 9.52   | 8.91  | 8.36  | 2450        | 3550        | 10.47  | 9.25  | 8.87 |
| 90          | 2090        | 5.26   | 5.09  | 4.96  | 100         | 3100        | 7.76   | 7.69  | 7.66  | 150         | 5150        | 9.49   | 8.89  | 8.34  | 2500        | 3500        | 10.55  | 9.30  | 8.92 |
| 80          | 2080        | 5.36   | 5.18  | 5.04  | 89          | 3089        | 7.72   | 7.66  | 7.62  | 100         | 5100        | 9.58   | 8.97  | 8.43  | 2550        | 3450        | 10.87  | 9.55  | 9.17 |
| 70          | 2070        | 5.38   | 5.21  | 5.07  | 78          | 3078        | 7.60   | 7.53  | 7.49  | 89          | 5089        | 9.68   | 9.07  | 8.52  | 2600        | 3400        | 10.79  | 9.52  | 9.16 |
| 60          | 2060        | 5.43   | 5.25  | 5.11  | 66          | 3066        | 7.62   | 7.55  | 7.51  | 78          | 5078        | 9.38   | 8.78  | 8.25  | 2650        | 3350        | 10.48  | 9.20  | 8.87 |
| 50          | 2050        | 5.47   | 5.29  | 5.14  | 55          | 3055        | 7.69   | 7.63  | 7.59  | 66          | 5066        | 9.11   | 8.53  | 8.01  | 2700        | 3300        | 10.81  | 9.46  | 9.14 |
| 40          | 2040        | 5.40   | 5.22  | 5.07  | 44          | 3044        | 7.64   | 7.57  | 7.52  | 55          | 5055        | 9.18   | 8.61  | 8.08  | 2750        | 3250        | 10.63  | 9.28  | 8.98 |
| 30          | 2           |  |       |       |             |             |  |       |       |             |             |  |       |       |             |             |  |       |      |

Typical Performance Data

| IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 2000 MHz |       |       | IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 3000 MHz |       |       | IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 5000 MHz |       |       | IF<br>(MHz) | RF<br>(MHz) | CONVERSION LOSS (I+Q)<br>VS. IF FREQUENCY<br>@ Fixed LO = 6000 MHz |       |       |     |     |      |
|-------------|-------------|--|-------|-------|-------------|-------------|--|-------|-------|-------------|-------------|--|-------|-------|-------------|-------------|--|-------|-------|-----|-----|------|
|             |             | @TEMPERATURE (°C)  |       |       |             |             | @TEMPERATURE (°C)  |       |       |             |             | @TEMPERATURE (°C)  |       |       |             |             | @TEMPERATURE (°C)  |       |       |     |     |      |
|             |             | -55  | +25   | +100  |             |             | -55  | +25   | +100  |             |             | -55  | +25   | +100  |             |             | -55  | +25   | +100  | -55 | +25 | +100 |
|             |             |  |       |       |             |             |  |       |       |             |             |  |       |       |             |             |  |       |       |     |     |      |
| 3000        | 5000        | 13.14  | 13.65 | 13.92 | 3000        | 6000        | 10.92  | 11.83 | 12.50 | 3000        | 8000        | 13.21  | 14.49 | 15.22 | 10          | 5990        | 7.07   | 7.28  | 7.58  |     |     |      |
| 2950        | 4950        | 13.15  | 13.66 | 14.14 | 2950        | 5950        | 10.37  | 11.17 | 11.76 | 2950        | 7950        | 13.54  | 14.69 | 15.31 | 20          | 5980        | 7.30   | 7.46  | 7.74  |     |     |      |
| 2900        | 4900        | 12.16  | 12.69 | 13.21 | 2900        | 5900        | 10.05  | 10.85 | 11.43 | 2900        | 7900        | 13.38  | 14.42 | 15.02 | 30          | 5970        | 7.46   | 7.59  | 7.85  |     |     |      |
| 2850        | 4850        | 11.94  | 12.46 | 12.97 | 2850        | 5850        | 10.11  | 10.87 | 11.43 | 2850        | 7850        | 13.69  | 14.37 | 14.79 | 40          | 5960        | 7.49   | 7.61  | 7.85  |     |     |      |
| 2800        | 4800        | 11.10  | 11.66 | 12.18 | 2800        | 5800        | 9.60   | 10.29 | 10.81 | 2800        | 7800        | 13.97  | 14.38 | 14.70 | 50          | 5950        | 7.52   | 7.64  | 7.88  |     |     |      |
| 2750        | 4750        | 11.60  | 12.12 | 12.61 | 2750        | 5750        | 8.92   | 9.65  | 10.16 | 2750        | 7750        | 14.56  | 14.35 | 14.39 | 60          | 5940        | 7.70   | 7.78  | 8.00  |     |     |      |
| 2700        | 4700        | 10.25  | 10.80 | 11.31 | 2700        | 5700        | 9.58   | 10.21 | 10.68 | 2700        | 7700        | 16.01  | 15.22 | 14.91 | 70          | 5930        | 7.80   | 7.81  | 8.00  |     |     |      |
| 2650        | 4650        | 10.41  | 10.95 | 11.46 | 2650        | 5650        | 9.05   | 9.73  | 10.21 | 2650        | 7650        | 16.92  | 15.95 | 15.24 | 80          | 5920        | 7.58   | 7.59  | 7.77  |     |     |      |
| 2600        | 4600        | 10.28  | 10.81 | 11.27 | 2600        | 5600        | 8.84   | 9.47  | 9.91  | 2600        | 7600        | 16.45  | 16.78 | 16.11 | 90          | 5910        | 7.30   | 7.38  | 7.60  |     |     |      |
| 2550        | 4550        | 10.23  | 10.73 | 11.16 | 2550        | 5550        | 8.94   | 9.57  | 9.99  | 2550        | 7550        | 15.56  | 17.10 | 16.89 | 100         | 5900        | 7.37   | 7.48  | 7.71  |     |     |      |
| 2500        | 4500        | 10.29  | 10.76 | 11.19 | 2500        | 5500        | 8.78   | 9.39  | 9.82  | 2500        | 7500        | 12.70  | 15.08 | 15.64 | 150         | 5850        | 7.62   | 7.68  | 7.88  |     |     |      |
| 2450        | 4450        | 9.46   | 9.93  | 10.36 | 2450        | 5450        | 8.93   | 9.49  | 9.87  | 2450        | 7450        | 12.86  | 15.26 | 16.53 | 200         | 5800        | 7.80   | 7.78  | 7.92  |     |     |      |
| 2400        | 4400        | 9.62   | 10.06 | 10.45 | 2400        | 5400        | 8.33   | 8.88  | 9.25  | 2400        | 7400        | 12.12  | 14.38 | 15.79 | 250         | 5750        | 7.49   | 7.56  | 7.75  |     |     |      |
| 2350        | 4350        | 9.21   | 9.67  | 10.09 | 2350        | 5350        | 8.61   | 9.12  | 9.47  | 2350        | 7350        | 11.32  | 13.46 | 14.85 | 300         | 5700        | 8.24   | 8.16  | 8.27  |     |     |      |
| 2300        | 4300        | 9.28   | 9.72  | 10.12 | 2300        | 5300        | 7.88   | 8.43  | 8.81  | 2300        | 7300        | 10.89  | 12.91 | 14.23 | 350         | 5650        | 7.95   | 7.95  | 8.09  |     |     |      |
| 2250        | 4250        | 8.92   | 9.35  | 9.74  | 2250        | 5250        | 8.10   | 8.62  | 8.97  | 2250        | 7250        | 10.26  | 12.19 | 13.44 | 400         | 5600        | 8.32   | 8.24  | 8.35  |     |     |      |
| 2200        | 4200        | 8.79   | 9.22  | 9.58  | 2200        | 5200        | 8.17   | 8.64  | 8.96  | 2200        | 7200        | 9.99   | 11.85 | 13.02 | 450         | 5550        | 8.46   | 8.40  | 8.49  |     |     |      |
| 2150        | 4150        | 9.01   | 9.43  | 9.80  | 2150        | 5150        | 8.20   | 8.68  | 8.99  | 2150        | 7150        | 9.53   | 11.36 | 12.50 | 500         | 5500        | 8.43   | 8.34  | 8.42  |     |     |      |
| 2100        | 4100        | 9.11   | 9.49  | 9.83  | 2100        | 5100        | 8.39   | 8.84  | 9.14  | 2100        | 7100        | 9.24   | 11.03 | 12.07 | 550         | 5450        | 9.07   | 8.89  | 8.92  |     |     |      |
| 2050        | 4050        | 8.63   | 9.01  | 9.35  | 2050        | 5050        | 8.05   | 8.49  | 8.79  | 2050        | 7050        | 9.11   | 10.87 | 11.89 | 600         | 5400        | 8.82   | 8.67  | 8.71  |     |     |      |
| 1950        | 3950        | 8.57   | 8.95  | 9.30  | 2000        | 5000        | 8.35   | 8.77  | 9.06  | 2000        | 7000        | 8.76   | 10.49 | 11.49 | 650         | 5350        | 9.06   | 8.86  | 8.88  |     |     |      |
| 1900        | 3900        | 9.10   | 9.41  | 9.66  | 1950        | 4950        | 8.00   | 8.45  | 8.79  | 1950        | 6950        | 8.85   | 10.58 | 11.55 | 700         | 5300        | 8.37   | 8.24  | 8.30  |     |     |      |
| 1850        | 3850        | 8.72   | 9.04  | 9.32  | 1900        | 4900        | 8.39   | 8.86  | 9.17  | 1900        | 6900        | 8.72   | 10.44 | 11.41 | 750         | 5250        | 8.96   | 8.78  | 8.81  |     |     |      |
| 1800        | 3800        | 8.84   | 9.14  | 9.38  | 1850        | 4850        | 8.44   | 8.88  | 9.19  | 1850        | 6850        | 8.62   | 10.30 | 11.22 | 800         | 5200        | 9.35   | 9.10  | 9.09  |     |     |      |
| 1750        | 3750        | 9.16   | 9.41  | 9.62  | 1800        | 4800        | 8.99   | 9.42  | 9.69  | 1800        | 6800        | 8.64   | 10.31 | 11.23 | 850         | 5150        | 9.33   | 9.07  | 9.04  |     |     |      |
| 1700        | 3700        | 9.62   | 9.81  | 9.97  | 1750        | 4750        | 9.30   | 9.71  | 9.98  | 1750        | 6750        | 8.26   | 9.83  | 10.68 | 900         | 5100        | 9.72   | 9.40  | 9.34  |     |     |      |
| 1650        | 3650        | 9.77   | 9.98  | 10.16 | 1700        | 4700        | 9.92   | 10.24 | 10.42 | 1700        | 6700        | 8.52   | 10.13 | 10.99 | 950         | 5050        | 9.66   | 9.32  | 9.26  |     |     |      |
| 1600        | 3600        | 9.82   | 9.99  | 10.11 | 1650        | 4650        | 10.15  | 10.38 | 10.49 | 1650        | 6650        | 8.39   | 9.86  | 10.65 | 1000        | 5000        | 9.91   | 9.54  | 9.45  |     |     |      |
| 1550        | 3550        | 9.97   | 10.06 | 10.11 | 1600        | 4600        | 10.24  | 10.40 | 10.48 | 1600        | 6600        | 8.57   | 10.05 | 10.82 | 1050        | 4950        | 9.30   | 8.95  | 8.91  |     |     |      |
| 1500        | 3500        | 10.03  | 10.07 | 10.10 | 1550        | 4550        | 9.93   | 10.08 | 10.15 | 1550        | 6550        | 8.79   | 10.15 | 10.86 | 1100        | 4900        | 9.92   | 9.50  | 9.40  |     |     |      |
| 1450        | 3450        | 10.13  | 10.10 | 10.09 | 1450        | 4450        | 10.05  | 10.14 | 10.17 | 1500        | 6500        | 9.13   | 10.31 | 10.90 | 1150        | 4850        | 10.07  | 9.61  | 9.50  |     |     |      |
| 1400        | 3400        | 10.74  | 10.69 | 10.62 | 1400        | 4400        | 10.24  | 10.32 | 10.34 | 1450        | 6450        | 9.39   | 10.51 | 11.08 | 1200        | 4800        | 10.36  | 9.86  | 9.71  |     |     |      |
| 1350        | 3350        | 10.37  | 10.50 | 10.50 | 1350        | 4350        | 10.41  | 10.48 | 10.51 | 1400        | 6400        | 9.09   | 10.22 | 10.75 | 1250        | 4750        | 10.49  | 9.91  | 9.75  |     |     |      |
| 1300        | 3300        | 9.63   | 9.86  | 9.97  | 1300        | 4300        | 9.88   | 10.07 | 10.16 | 1350        | 6350        | 8.73   | 10.04 | 10.65 | 1300        | 4700        | 11.18  | 10.51 | 10.30 |     |     |      |
| 1250        | 3250        | 9.35   | 9.59  | 9.72  | 1250        | 4250        | 9.66   | 9.90  | 10.04 | 1300        | 6300        | 8.32   | 9.74  | 10.45 | 1350        | 4650        | 11.10  | 10.46 | 10.22 |     |     |      |
| 1200        | 3200        | 9.12   | 9.39  | 9.55  | 1200        | 4200        | 9.27   | 9.56  | 9.75  | 1250        | 6250        | 7.82   | 9.22  | 9.92  | 1400        | 4600        | 10.90  | 10.30 | 10.09 |     |     |      |
| 1150        | 3150        | 9.06   | 9.31  | 9.47  | 1150        | 4150        | 9.20   | 9.52  | 9.72  | 1200        | 6200        | 7.90   | 9.26  | 9.95  | 1450        | 4550        | 10.41  | 9.96  | 9.78  |     |     |      |
| 1100        | 3100        | 8.61   | 8.89  | 9.06  | 1100        | 4100        | 8.15   | 8.54  | 8.79  | 1150        | 6150        | 7.75   | 9.01  | 9.63  | 1500        | 4500        | 10.25  | 9.93  | 9.80  |     |     |      |
| 1050        | 3050        | 8.56   | 8.86  | 9.05  | 1050        | 4050        | 8.43   | 8.78  | 9.00  | 1100        | 6100        | 7.67   | 8.95  | 9.56  | 1550        | 4450        | 9.69   | 9.49  | 9.43  |     |     |      |
| 950         | 2950        | 8.32   | 8.68  | 8.91  | 1000        | 4000        | 8.30   | 8.64  | 8.88  | 1050        | 6050        | 7.65   | 8.84  | 9.40  | 1600        | 4400        | 9.88   | 9.67  | 9.60  |     |     |      |
| 900         | 2900        | 8.25   | 8.62  | 8.88  | 950         | 3950        | 8.28   | 8.63  | 8.87  | 1000        | 6000        | 7.61   | 8.78  | 9.29  | 1650        | 4350        | 9.79   | 9.60  | 9.57  |     |     |      |
| 850         | 2850        | 8.20   | 8.61  | 8.90  | 900         | 3900        | 7.94   | 8.29  | 8.54  | 950         | 5950        | 8.00   | 9.11  | 9.58  | 1700        | 4300        | 9.35   | 9.20  | 9.19  |     |     |      |
| 800         | 2800        | 8.33   | 8.76  | 9.06  | 850         | 3850        | 7.92   | 8.27  | 8.51  | 900         | 5900        | 7.78   | 8.82  | 9.23  | 1750        | 4250        | 9.63   | 9.46  | 9.45  |     |     |      |
| 750         | 2750        | 8.19   | 8.60  | 8.89  | 800         | 3800        | 8.19   | 8.53  | 8.78  | 850         | 5850        | 7.95   | 8.89  | 9.22  | 1800        | 4200        | 9.35   | 9.19  | 9.20  |     |     |      |
| 700         | 2700        | 8.48   | 8.80  | 8.99  | 750         | 3750        | 7.90   | 8.25  | 8.52  | 800         | 5800        | 8.31   | 9.09  | 9.32  | 1850        | 4150        | 9.40   | 9.21  | 9.22  |     |     |      |
| 650         | 2650        | 8.52   | 8.69  | 8.79  | 700         | 3700        | 7.39   | 7.73  | 7.99  | 750         | 5750        | 8.04   | 8.82  | 9.04  | 1900        | 4100        | 8.64   | 8.54  | 8.60  |     |     |      |
| 600         | 2600        | 8.49   | 8.51  | 8.55  | 650         | 3650        | 7.35   | 7.70  | 7.96  | 700         | 5700        | 8.59   | 9.20  | 9.30  | 1950        | 4050        | 9.27   | 9.07  | 9.07  |     |     |      |
| 550         | 2550        | 7.88   | 7.96  | 8.05  | 600         | 3600        | 7.28   | 7.63  | 7.90  | 650         | 5650        | 8.35   | 8.97  | 9.07  | 2000        | 4000        | 9.11   | 8.95  | 8.97  |     |     |      |
| 500         | 2500        | 7.12   | 7.31  | 7.47  | 550         | 3550        | 7.46   | 7.80  | 8.08  | 600         | 5600        | 8.84   | 9.32  | 9.34  | 2050        | 3950        | 9.02   | 8.87  | 8.88  |     |     |      |
| 450         | 2450        | 6.45   | 6.70  | 6.91  | 500         | 3500        | 7.34   | 7.70  | 7.97  | 550         | 5550        | 8.70   | 9.14  | 9.11  | 2100        | 3900        | 9.08   | 8.89  | 8.90  |     |     |      |
| 400         | 2400        | 6.12   | 6.38  | 6.60  | 450         | 3450        | 7.51   | 7.85  | 8.12  | 500         | 5500        | 8.76   | 9.09  | 9.01  | 2150        | 3850        | 9.08   | 8.93  | 8.97  |     |     |      |
| 350         | 2350        | 5.81   | 6.07  | 6.28  | 400         | 3400        | 7.38   | 7.74  | 8.02  | 450         | 5450        | 9.45   | 9.62  | 9.44  | 2200        | 3800        | 9.35   | 9.17  | 9.20  |     |     |      |
| 300         | 2300        | 5.47   | 5.72  | 5.94  | 350         | 3350        | 6.97   | 7.36  | 7.65  | 400         | 5400        | 8.91   | 9.06  | 8.89  | 2250        | 3750        | 9.19   | 9.03  | 9.08  |     |     |      |
| 250         | 2250        | 5.39   | 5.61  | 5.81  | 300         | 3300        | 6.95   | 7.34  | 7.64  | 350         | 5350        | 9.16   | 9.23  | 9.02  | 2300        | 3700        | 8.94   | 8.80  | 8.85  |     |     |      |
| 200         | 2200        | 5.29   | 5.49  | 5.67  | 250         | 3250        | 6.90   | 7.30  | 7.59  | 300         | 5300        | 8.47   | 8.57  | 8.39  | 2350        | 3650        | 9.02   | 8.86  | 8.91  |     |     |      |
| 150         | 2150        | 5.11   | 5.29  | 5.46  | 200         | 3200        | 7.26   | 7.66  | 7.96  | 250         | 5250        | 8.77   | 8.80  | 8.60  | 2400        | 3600        | 8.94   | 8.79  | 8.86  |     |     |      |
| 100         | 2100        | 4.84   | 5.05  | 5.23  | 150         | 3150        | 7.08   | 7.49  | 7.78  | 200         | 5200        | 8.95   | 8.91  | 8.67  | 2450        | 3550        | 9.44   | 9.25  | 9.32  |     |     |      |
| 90          | 2090        | 4.92   | 5.09  | 5.25  | 100         | 3100        | 7.29   | 7.69  | 7.98  | 150         | 5150        | 9.03   | 8.89  | 8.65  | 2500        | 3500        | 9.50   | 9.30  | 9.37  |     |     |      |
| 80          | 2080        | 5.04   | 5.18  | 5.31  | 89          | 3089        | 7.25   | 7.66  | 7.95  | 100         | 5100        | 9.04   | 8.97  | 8.73  | 2550        | 3450        | 9.77   | 9.55  | 9.63  |     |     |      |
| 70          | 2070        | 5.08   | 5.21  | 5.33  | 78          | 3078        | 7.12   | 7.53  | 7.83  | 89          | 5089        | 9.16   | 9.07  | 8.82  | 2600        | 3400        | 9.68   | 9.52  | 9.63  |     |     |      |
| 60          | 2060        | 5.12   | 5.25  | 5.37  | 66          | 3066        | 7.14   | 7.55  | 7.83  | 78          | 5078        | 8.86   | 8.78  | 8.56  | 2650        | 3350        | 9.33   | 9.20  | 9.35  |     |     |      |
| 50          | 2050        | 5.17   | 5.29  | 5.39  | 55          | 3055        | 7.23   | 7.63  | 7.91  | 66          | 5066        | 8.56   | 8.53  | 8.34  | 2700        | 3300        | 9.58   | 9.46  | 9.63  |     |     |      |
| 40          | 2040        | 5.10   | 5.22  | 5.32  | 44          | 3044        | 7.16   | 7.57  | 7.86  | 55          | 5055        | 8.63   | 8.61  | 8.40  | 2750        |             |  |       |       |     |     |      |

# Frequency Mixer

**SMIQ-263H+**

## Typical Performance Data

| RF (MHz) | LO (MHz) | AMP UNBALANCE VS. RF FREQUENCY @IF = 200 MHz |       |       | PHASE UNBALANCE VS. RF FREQUENCY @IF = 200 MHz |        |        | RF (MHz) | LO (MHz) | AMP UNBALANCE VS. RF FREQUENCY @IF = 1000 MHz |       |       | PHASE UNBALANCE VS. RF FREQUENCY @IF = 1000 MHz |        |        |
|----------|----------|--|-------|-------|--|--------|--------|----------|----------|---|-------|-------|---|--------|--------|
|          |          | @LO (dBm)                                    |       |       | @LO (dBm)                                      |        |        |          |          | @LO (dBm)                                     |       |       | @LO (dBm)                                       |        |        |
|          |          | +17  | +18   | +19   | +17  | +18    | +19    |          |          | +17   | +18   | +19   | +17   | +18    | +19    |
| 2000     | 2200     | 1.65   | 1.59  | 1.53  | 7.52   | 9.02   | 10.74  | 2000     | 3000     | -0.26   | -0.19 | -0.10 | 12.03   | 10.80  | 9.93   |
| 2100     | 2300     | 1.76   | 1.69  | 1.62  | 9.52   | 10.70  | 12.04  | 2100     | 3100     | -0.33   | -0.26 | -0.16 | 15.19   | 14.05  | 12.92  |
| 2200     | 2400     | 1.79   | 1.72  | 1.66  | 10.53  | 11.38  | 12.32  | 2200     | 3200     | -0.38   | -0.31 | -0.22 | 18.22   | 17.02  | 15.82  |
| 2300     | 2500     | 1.83   | 1.76  | 1.69  | 10.77  | 11.12  | 11.59  | 2300     | 3300     | -0.44   | -0.38 | -0.32 | 19.03   | 17.67  | 16.35  |
| 2400     | 2600     | 1.61   | 1.54  | 1.47  | 12.81  | 12.92  | 13.11  | 2400     | 3400     | -0.25   | -0.24 | -0.21 | 21.32   | 19.84  | 18.33  |
| 2500     | 2700     | 0.99   | 0.94  | 0.88  | 11.73  | 11.51  | 11.36  | 2500     | 3500     | -0.41   | -0.44 | -0.45 | 21.14   | 19.40  | 17.67  |
| 2600     | 2800     | 0.26   | 0.25  | 0.23  | 11.29  | 10.93  | 10.67  | 2600     | 3600     | -0.51   | -0.52 | -0.53 | 18.13   | 15.99  | 13.92  |
| 2700     | 2900     | -0.42  | -0.40 | -0.38 | 11.19  | 10.68  | 10.32  | 2700     | 3700     | -0.42   | -0.43 | -0.44 | 13.89   | 11.60  | 9.46   |
| 2800     | 3000     | -0.99  | -0.97 | -0.92 | 11.33  | 10.69  | 10.13  | 2800     | 3800     | -0.53   | -0.57 | -0.57 | 11.34   | 9.23   | 7.22   |
| 2900     | 3100     | -1.13  | -1.07 | -1.00 | 9.94   | 9.38   | 8.90   | 2900     | 3900     | -0.40   | -0.47 | -0.49 | 7.20  | 5.49   | 3.76   |
| 3000     | 3200     | -0.97  | -0.90 | -0.81 | 9.75   | 9.17   | 8.63   | 3000     | 4000     | -0.16   | -0.23 | -0.26 | 3.01  | 1.76   | 0.51   |
| 3100     | 3300     | -0.73  | -0.67 | -0.60 | 10.10  | 9.57   | 9.07   | 3100     | 4100     | 0.09  | -0.02 | -0.09 | 2.13  | 0.98   | 0.02   |
| 3200     | 3400     | -0.35  | -0.34 | -0.31 | 10.18  | 9.64   | 9.10   | 3200     | 4200     | 0.13  | 0.03  | -0.02 | -0.25   | -1.55  | -2.54  |
| 3300     | 3500     | -0.17  | -0.18 | -0.17 | 10.51  | 9.94   | 9.27   | 3300     | 4300     | 0.02  | -0.10 | -0.15 | -0.59   | -1.95  | -3.05  |
| 3400     | 3600     | -0.11  | -0.11 | -0.10 | 8.46   | 7.67   | 6.76   | 3400     | 4400     | -0.25   | -0.33 | -0.36 | -2.84   | -4.31  | -5.53  |
| 3500     | 3700     | 0.07   | 0.06  | 0.06  | 8.59   | 7.67   | 6.62   | 3500     | 4500     | -0.32   | -0.38 | -0.38 | -4.06   | -5.43  | -6.59  |
| 3600     | 3800     | 0.16   | 0.15  | 0.15  | 7.80   | 6.85   | 5.76   | 3600     | 4600     | -0.49   | -0.49 | -0.46 | -6.41   | -7.66  | -8.65  |
| 3700     | 3900     | -0.04  | -0.08 | -0.10 | 7.56   | 6.72   | 5.68   | 3700     | 4700     | -0.82   | -0.77 | -0.69 | -7.64   | -8.99  | -9.97  |
| 3800     | 4000     | 0.16   | 0.11  | 0.08  | 6.14   | 5.46   | 4.60   | 3800     | 4800     | -0.79   | -0.70 | -0.58 | -8.46   | -9.60  | -10.48 |
| 3900     | 4100     | 0.20   | 0.15  | 0.11  | 3.64   | 2.86   | 2.14   | 3900     | 4900     | -1.07   | -0.94 | -0.77 | -9.75   | -10.61 | -11.39 |
| 4000     | 4200     | 0.12   | 0.07  | 0.03  | 2.00   | 1.00   | 0.17   | 4000     | 5000     | -1.22   | -1.06 | -0.88 | -10.73  | -11.31 | -11.85 |
| 4100     | 4300     | 0.04   | -0.02 | -0.05 | -0.35  | -1.41  | -2.18  | 4100     | 5100     | -1.39   | -1.19 | -0.99 | -11.52  | -11.83 | -12.14 |
| 4200     | 4400     | -0.06  | -0.12 | -0.15 | -3.31  | -4.34  | -5.07  | 4200     | 5200     | -1.72   | -1.46 | -1.21 | -13.24  | -13.25 | -13.25 |
| 4300     | 4500     | -0.06  | -0.11 | -0.14 | -5.47  | -6.26  | -6.82  | 4300     | 5300     | -1.66   | -1.37 | -1.12 | -14.08  | -13.66 | -13.34 |
| 4400     | 4600     | -0.08  | -0.10 | -0.10 | -7.86  | -8.38  | -8.70  | 4400     | 5400     | -1.53   | -1.26 | -1.03 | -13.35  | -12.66 | -12.19 |
| 4500     | 4700     | -0.16  | -0.14 | -0.11 | -10.09   | -10.45 | -10.60 | 4500     | 5500     | -1.52   | -1.21 | -0.99 | -13.59  | -12.65 | -11.94 |
| 4600     | 4800     | -0.09  | -0.06 | -0.01 | -12.03   | -12.06 | -12.07 | 4600     | 5600     | -1.28   | -1.00 | -0.82 | -12.11  | -10.93 | -10.08 |
| 4700     | 4900     | -0.08  | 0.00  | 0.06  | -13.31   | -12.84 | -12.63 | 4700     | 5700     | -1.37   | -1.02 | -0.85 | -10.35  | -9.41  | -8.44  |
| 4800     | 5000     | -0.14  | -0.02 | 0.09  | -14.63   | -13.83 | -13.26 | 4800     | 5800     | -1.78   | -0.99 | -0.80 | -8.67   | -8.50  | -7.12  |
| 4900     | 5100     | -0.23  | -0.10 | 0.03  | -15.54   | -14.73 | -13.99 | 4900     | 5900     | -2.66   | -1.14 | -0.90 | -4.80   | -6.60  | -5.45  |
| 5000     | 5200     | -0.34  | -0.15 | 0.01  | -15.60   | -14.76 | -14.02 | 5000     | 6000     | -4.15   | -1.40 | -0.95 | 1.13  | -5.19  | -4.63  |
| 5100     | 5300     | -0.41  | -0.17 | 0.01  | -15.30   | -14.47 | -13.77 | 5100     | 6100     | -4.94   | -1.45 | -0.91 | 6.34  | -3.09  | -3.07  |
| 5200     | 5400     | -0.55  | -0.24 | -0.01 | -14.38   | -13.59 | -12.96 | 5200     | 6200     | -5.35   | -1.52 | -0.99 | 10.01   | -1.12  | -1.99  |
| 5300     | 5500     | -0.61  | -0.23 | 0.03  | -13.72   | -12.91 | -12.15 | 5300     | 6300     | -5.53   | -1.46 | -0.91 | 12.32   | 0.44   | -1.04  |
| 5400     | 5600     | -0.77  | -0.37 | -0.09 | -12.48   | -11.64 | -10.81 | 5400     | 6400     | -6.50   | -1.60 | -0.88 | 17.30   | 2.47   | 0.08   |
| 5500     | 5700     | -1.05  | -0.56 | -0.26 | -11.16   | -10.77 | -9.90  | 5500     | 6500     | -8.96   | -2.18 | -0.91 | 28.49   | 5.16   | 1.02   |
| 5600     | 5800     | -1.72  | -0.81 | -0.47 | -9.81  | -9.88  | -8.94  | 5600     | 6600     | -12.42  | -3.68 | -1.01 | 52.88   | 10.91  | 2.71   |
| 5700     | 5900     | -2.67  | -1.03 | -0.61 | -7.94  | -8.93  | -8.36  | 5700     | 6700     | -14.14  | -6.07 | -1.31 | 78.46   | 20.54  | 5.88   |
| 5800     | 6000     | -4.23  | -1.36 | -0.75 | -5.52  | -7.54  | -7.97  | 5800     | 6800     | -14.39  | -6.79 | -1.45 | 85.69   | 25.95  | 9.21   |
| 5900     | 6100     | -5.00  | -1.43 | -0.69 | -3.64  | -5.96  | -6.95  | 5900     | 6900     | -13.70  | -4.86 | -1.28 | 72.69   | 21.84  | 10.65  |
| 6000     | 6200     | -5.33  | -1.44 | -0.64 | -2.09  | -4.06  | -5.22  | 6000     | 7000     | -11.93  | -3.23 | -1.14 | 55.19   | 18.52  | 11.28  |





# Frequency Mixer

**SMIQ-263H+**

## Typical Performance Data

| RF (MHz) | LO (MHz) | AMP UNBALANCE VS. RF FREQUENCY @IF = 2000 MHz |       |       | PHASE UNBALANCE VS. RF FREQUENCY @IF = 2000 MHz |        |        | RF (MHz) | LO (MHz) | AMP UNBALANCE VS. RF FREQUENCY @IF = 3000 MHz |       |       | PHASE UNBALANCE VS. RF FREQUENCY @IF = 3000 MHz |        |        |
|----------|----------|---|-------|-------|---|--------|--------|----------|----------|---|-------|-------|---|--------|--------|
|          |          | @LO (dBm)                                     |       |       | @LO (dBm)                                       |        |        |          |          | @LO (dBm)                                     |       |       | @LO (dBm)                                       |        |        |
|          |          | +17   | +18   | +19   | +17   | +18    | +19    |          |          | +17   | +18   | +19   | +17   | +18    | +19    |
| 2000     | 4000     | 0.92  | 0.75  | 0.61  | 4.57  | 4.08   | 3.55   | 2000     | 5000     | -1.13   | -1.08 | -1.01 | -6.98   | -6.20  | -6.12  |
| 2100     | 4100     | 0.85  | 0.69  | 0.56  | 3.63  | 3.07   | 2.56   | 2100     | 5100     | -1.24   | -1.18 | -1.11 | -8.07   | -7.18  | -6.85  |
| 2200     | 4200     | 0.65  | 0.48  | 0.35  | 2.14  | 1.34   | 0.70   | 2200     | 5200     | -1.36   | -1.30 | -1.23 | -10.88  | -10.10 | -9.75  |
| 2300     | 4300     | 0.46  | 0.30  | 0.18  | 0.38  | -0.68  | -1.60  | 2300     | 5300     | -1.36   | -1.28 | -1.19 | -13.09  | -12.47 | -12.17 |
| 2400     | 4400     | 0.22  | 0.06  | -0.04 | -0.39   | -1.59  | -2.75  | 2400     | 5400     | -1.35   | -1.24 | -1.15 | -15.54  | -14.84 | -14.63 |
| 2500     | 4500     | 0.02  | -0.09 | -0.15 | -2.48   | -3.78  | -5.04  | 2500     | 5500     | -1.45   | -1.26 | -1.13 | -17.71  | -16.71 | -16.32 |
| 2600     | 4600     | -0.25   | -0.31 | -0.32 | -3.88   | -5.24  | -6.43  | 2600     | 5600     | -1.46   | -1.15 | -0.98 | -20.54  | -19.33 | -18.43 |
| 2700     | 4700     | -0.31   | -0.28 | -0.21 | -7.26   | -8.77  | -9.98  | 2700     | 5700     | -1.51   | -1.06 | -0.87 | -21.96  | -20.92 | -19.73 |
| 2800     | 4800     | -0.20   | -0.16 | -0.07 | -7.24   | -8.47  | -9.56  | 2800     | 5800     | -1.26   | -0.78 | -0.59 | -22.32  | -21.65 | -20.17 |
| 2900     | 4900     | -0.29   | -0.23 | -0.13 | -8.62   | -9.50  | -10.54 | 2900     | 5900     | -1.04   | -0.51 | -0.30 | -21.37  | -21.07 | -19.54 |
| 3000     | 5000     | -0.30   | -0.24 | -0.14 | -9.73   | -10.16 | -10.88 | 3000     | 6000     | -0.93   | -0.32 | -0.11 | -20.07  | -20.21 | -18.49 |
| 3100     | 5100     | -0.31   | -0.24 | -0.15 | -10.62  | -10.75 | -11.01 | 3100     | 6100     | -1.35   | -0.21 | 0.12  | -7.37   | -18.08 | -17.56 |
| 3200     | 5200     | -0.35   | -0.25 | -0.16 | -11.20  | -11.20 | -11.50 | 3200     | 6200     | -1.42   | -0.14 | 0.19  | -2.02   | -15.78 | -15.77 |
| 3300     | 5300     | -0.44   | -0.30 | -0.18 | -13.03  | -12.63 | -12.80 | 3300     | 6300     | -1.73   | -0.19 | 0.15  | 1.32  | -13.37 | -13.53 |
| 3400     | 5400     | -0.52   | -0.35 | -0.21 | -14.87  | -13.98 | -13.87 | 3400     | 6400     | -2.35   | -0.28 | 0.14  | 7.57  | -11.15 | -12.11 |
| 3500     | 5500     | -0.57   | -0.35 | -0.20 | -16.42  | -14.91 | -14.27 | 3500     | 6500     | -3.62   | -0.53 | 0.13  | 19.48   | -6.97  | -10.20 |
| 3600     | 5600     | -0.63   | -0.33 | -0.15 | -17.57  | -15.72 | -14.73 | 3600     | 6600     | -5.39   | -1.16 | 0.08  | 32.48   | -0.67  | -8.77  |
| 3700     | 5700     | -1.06   | -0.60 | -0.37 | -18.09  | -15.89 | -14.53 | 3700     | 6700     | -6.68   | -2.28 | -0.18 | 46.40   | 8.26   | -6.14  |
| 3800     | 5800     | -1.42   | -0.58 | -0.27 | -19.43  | -16.64 | -14.44 | 3800     | 6800     | -6.45   | -2.32 | 0.06  | 49.90   | 12.06  | -3.26  |
| 3900     | 5900     | -2.17   | -0.73 | -0.30 | -19.71  | -17.75 | -15.10 | 3900     | 6900     | -5.62   | -1.37 | 0.33  | 42.66   | 8.67   | -1.40  |
| 4000     | 6000     | -3.18   | -0.88 | -0.28 | -17.85  | -18.41 | -15.57 | 4000     | 7000     | -4.64   | -0.61 | 0.48  | 33.85   | 6.31   | 0.57   |
| 4100     | 6100     | -3.46   | -0.83 | -0.18 | -16.40  | -17.76 | -15.01 | 4100     | 7100     | -3.26   | 0.00  | 0.67  | 24.29   | 5.12   | 2.25   |
| 4200     | 6200     | -3.38   | -0.68 | -0.02 | -16.20  | -18.27 | -15.28 | 4200     | 7200     | -2.88   | 0.14  | 0.75  | 22.15   | 5.67   | 3.55   |
| 4300     | 6300     | -2.90   | -0.32 | 0.24  | -14.12  | -16.62 | -13.51 | 4300     | 7300     | -2.96   | 0.08  | 0.79  | 26.43   | 8.50   | 6.03   |
| 4400     | 6400     | -2.93   | -0.10 | 0.45  | -10.16  | -15.16 | -12.12 | 4400     | 7400     | -2.87   | -0.04 | 0.71  | 30.74   | 11.17  | 8.37   |
| 4500     | 6500     | -3.76   | -0.09 | 0.60  | -1.20   | -13.04 | -10.89 | 4500     | 7500     | -2.37   | -0.02 | 0.60  | 31.64   | 12.63  | 10.01  |
| 4600     | 6600     | -5.11   | -0.42 | 0.81  | 16.71   | -7.96  | -8.90  | 4600     | 7600     | -1.27   | 0.30  | 0.62  | 24.98   | 12.44  | 10.84  |
| 4700     | 6700     | -6.26   | -1.13 | 0.97  | 38.50   | 1.56   | -5.62  | 4700     | 7700     | -0.18   | 0.44  | 0.57  | 18.57   | 12.69  | 11.66  |
| 4800     | 6800     | -6.82   | -1.30 | 1.09  | 50.18   | 9.25   | -1.21  | 4800     | 7800     | 0.13  | 0.38  | 0.46  | 16.94   | 13.03  | 11.83  |
| 4900     | 6900     | -6.42   | -0.40 | 1.21  | 48.17   | 9.97   | 2.65   | 4900     | 7900     | 0.06  | 0.20  | 0.26  | 16.78   | 13.21  | 11.61  |
| 5000     | 7000     | -5.45   | 0.37  | 1.27  | 41.90   | 10.95  | 6.63   | 5000     | 8000     | -0.14   | 0.00  | 0.04  | 17.97   | 14.01  | 11.92  |
| 5100     | 7100     | -3.80   | 0.83  | 1.25  | 33.62   | 12.21  | 9.75   | 5100     | 8100     | -0.35   | -0.16 | -0.13 | 18.42   | 14.17  | 11.74  |
| 5200     | 7200     | -3.67   | 0.80  | 1.18  | 33.80   | 14.75  | 12.42  | 5200     | 8200     | -0.47   | -0.30 | -0.27 | 17.12   | 13.32  | 10.88  |
| 5300     | 7300     | -4.73   | 0.50  | 1.07  | 38.21   | 17.43  | 14.41  | 5300     | 8300     | -0.49   | -0.39 | -0.36 | 14.15   | 11.32  | 9.08   |
| 5400     | 7400     | -5.77   | 0.15  | 0.96  | 42.16   | 19.67  | 15.86  | 5400     | 8400     | -0.43   | -0.37 | -0.33 | 10.67   | 8.63   | 6.68   |
| 5500     | 7500     | -5.68   | 0.01  | 0.85  | 40.48   | 20.33  | 16.40  | 5500     | 8500     | -0.45   | -0.39 | -0.34 | 7.19  | 5.64   | 3.91   |
| 5600     | 7600     | -3.49   | 0.30  | 0.76  | 31.65   | 18.98  | 16.12  | 5600     | 8600     | -0.47   | -0.41 | -0.36 | 4.23  | 3.17   | 1.70   |
| 5700     | 7700     | -1.07   | 0.47  | 0.67  | 23.53   | 17.51  | 15.68  | 5700     | 8700     | -0.50   | -0.44 | -0.37 | 1.30  | 1.13   | 0.06   |
| 5800     | 7800     | -0.26   | 0.41  | 0.53  | 20.20   | 16.38  | 14.80  | 5800     | 8800     | -0.48   | -0.47 | -0.41 | -2.54   | -1.14  | -1.46  |
| 5900     | 7900     | -0.08   | 0.34  | 0.42  | 18.70   | 15.29  | 13.54  | 5900     | 8900     | -0.34   | -0.47 | -0.41 | -7.74   | -4.19  | -3.55  |
| 6000     | 8000     | -0.18   | 0.25  | 0.33  | 18.40   | 14.66  | 12.47  | 6000     | 9000     | -0.19   | -0.46 | -0.44 | -12.66  | -7.22  | -5.73  |

# Frequency Mixer

# SMIQ-263H+

## Typical Performance Data

| RF<br>(MHz) | LO<br>(MHz) | AMPLITUDE UNBALANCE<br>VS. RF FREQUENCY<br>@IF = 200 MHz<br>@LO = +18 dBm |       |        | PHASE UNBALANCE<br>VS. RF FREQUENCY<br>@IF = 200 MHz<br>@LO = +18 dBm |        |        |
|-------------|-------------|---|-------|--------|---|--------|--------|
|             |             | @ TEMPERATURE   |       |        | @ TEMPERATURE   |        |        |
|             |             | -55°C   | +25°C | +100°C | -55°C   | +25°C  | +100°C |
| 2000        | 2200        | 1.66  | 1.59  | 1.50   | 8.17  | 9.28   | 10.13  |
| 2100        | 2300        | 1.78  | 1.69  | 1.57   | 10.35   | 10.92  | 11.41  |
| 2200        | 2400        | 1.91  | 1.72  | 1.53   | 11.23   | 11.57  | 11.84  |
| 2300        | 2500        | 2.08  | 1.77  | 1.48   | 11.46   | 11.32  | 11.09  |
| 2400        | 2600        | 2.04  | 1.57  | 1.21   | 13.86   | 13.12  | 12.69  |
| 2500        | 2700        | 1.55  | 0.97  | 0.62   | 12.77   | 11.73  | 11.27  |
| 2600        | 2800        | 0.72  | 0.28  | 0.06   | 12.04   | 11.21  | 10.75  |
| 2700        | 2900        | -0.21   | -0.38 | -0.42  | 11.39   | 10.97  | 10.62  |
| 2800        | 3000        | -0.96   | -0.95 | -0.88  | 11.75   | 11.07  | 10.41  |
| 2900        | 3100        | -1.26   | -1.07 | -0.89  | 10.42   | 9.79   | 9.18   |
| 3000        | 3200        | -1.15   | -0.91 | -0.70  | 10.10   | 9.51   | 8.97   |
| 3100        | 3300        | -0.92   | -0.68 | -0.50  | 10.52   | 9.87   | 9.31   |
| 3200        | 3400        | -0.57   | -0.35 | -0.20  | 10.83   | 9.92   | 8.98   |
| 3300        | 3500        | -0.40   | -0.19 | -0.07  | 11.69   | 10.18  | 8.76   |
| 3400        | 3600        | -0.21   | -0.11 | -0.05  | 9.67  | 7.91   | 6.54   |
| 3500        | 3700        | 0.03  | 0.08  | 0.11   | 9.60  | 7.95   | 6.44   |
| 3600        | 3800        | 0.10  | 0.17  | 0.21   | 9.26  | 7.14   | 5.47   |
| 3700        | 3900        | -0.12   | -0.06 | -0.04  | 9.47  | 7.05   | 5.05   |
| 3800        | 4000        | 0.12  | 0.14  | 0.13   | 8.80  | 5.79   | 3.64   |
| 3900        | 4100        | 0.21  | 0.18  | 0.15   | 6.29  | 3.16   | 1.12   |
| 4000        | 4200        | 0.16  | 0.10  | 0.06   | 4.66  | 1.30   | -0.73  |
| 4100        | 4300        | 0.08  | 0.01  | -0.02  | 2.25  | -1.12  | -2.92  |
| 4200        | 4400        | -0.07   | -0.10 | -0.10  | -0.78   | -4.05  | -5.59  |
| 4300        | 4500        | -0.06   | -0.10 | -0.09  | -3.16   | -6.03  | -7.22  |
| 4400        | 4600        | -0.05   | -0.09 | -0.06  | -5.72   | -8.17  | -8.99  |
| 4500        | 4700        | -0.15   | -0.14 | -0.08  | -8.71   | -10.31 | -10.62 |
| 4600        | 4800        | -0.09   | -0.05 | 0.01   | -11.30  | -12.00 | -11.84 |
| 4700        | 4900        | -0.05   | 0.00  | 0.06   | -12.69  | -12.85 | -12.37 |
| 4800        | 5000        | -0.09   | -0.02 | 0.06   | -14.36  | -13.88 | -13.03 |
| 4900        | 5100        | -0.19   | -0.09 | -0.01  | -15.91  | -14.85 | -13.70 |
| 5000        | 5200        | -0.25   | -0.14 | -0.05  | -16.24  | -14.92 | -13.65 |
| 5100        | 5300        | -0.27   | -0.16 | -0.06  | -16.20  | -14.68 | -13.34 |
| 5200        | 5400        | -0.33   | -0.23 | -0.12  | -15.34  | -13.84 | -12.61 |
| 5300        | 5500        | -0.35   | -0.23 | -0.11  | -14.66  | -13.19 | -11.95 |
| 5400        | 5600        | -0.52   | -0.37 | -0.22  | -13.36  | -11.91 | -10.79 |
| 5500        | 5700        | -0.74   | -0.55 | -0.37  | -12.44  | -11.07 | -10.00 |
| 5600        | 5800        | -1.17   | -0.80 | -0.57  | -11.47  | -10.18 | -9.19  |
| 5700        | 5900        | -1.76   | -1.02 | -0.71  | -10.43  | -9.22  | -8.48  |
| 5800        | 6000        | -2.84   | -1.36 | -0.86  | -8.75   | -7.82  | -7.49  |
| 5900        | 6100        | -3.56   | -1.44 | -0.84  | -6.69   | -6.22  | -6.14  |
| 6000        | 6200        | -3.95   | -1.46 | -0.84  | -4.37   | -4.31  | -4.52  |

*Typical Performance Data*

| LO<br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF (I) ISOLATION<br>(dB) |       |       | LO-IF (Q) ISOLATION<br>(dB) |       |       |
|-------------|-------------------------|-------|-------|-----------------------------|-------|-------|-----------------------------|-------|-------|
|             | @LO (dBm)               |       |       | @LO (dBm)                   |       |       | @LO (dBm)                   |       |       |
|             | +17                     | +18   | +19   | +17                         | +18   | +19   | +17                         | +18   | +19   |
| 2000        | 40.03                   | 40.35 | 40.75 | 32.06                       | 31.03 | 29.99 | 28.32                       | 28.11 | 27.82 |
| 2100        | 37.74                   | 37.58 | 37.44 | 31.34                       | 30.28 | 29.23 | 27.98                       | 27.72 | 27.40 |
| 2200        | 36.67                   | 36.23 | 35.76 | 31.27                       | 30.20 | 29.12 | 28.05                       | 27.77 | 27.43 |
| 2300        | 36.19                   | 35.67 | 35.08 | 31.12                       | 30.11 | 29.05 | 28.35                       | 28.05 | 27.69 |
| 2400        | 36.41                   | 35.82 | 35.16 | 31.62                       | 30.62 | 29.56 | 28.90                       | 28.58 | 28.19 |
| 2500        | 35.64                   | 35.01 | 34.31 | 31.77                       | 30.78 | 29.71 | 29.37                       | 29.02 | 28.58 |
| 2600        | 35.77                   | 35.03 | 34.21 | 32.23                       | 31.20 | 30.10 | 29.75                       | 29.34 | 28.84 |
| 2700        | 35.73                   | 34.92 | 34.04 | 32.80                       | 31.71 | 30.54 | 30.21                       | 29.72 | 29.13 |
| 2800        | 36.08                   | 35.26 | 34.39 | 32.53                       | 31.40 | 30.22 | 30.43                       | 29.85 | 29.17 |
| 2900        | 35.57                   | 34.77 | 33.91 | 32.19                       | 31.06 | 29.88 | 30.60                       | 29.99 | 29.27 |
| 3000        | 35.53                   | 34.71 | 33.83 | 31.71                       | 30.58 | 29.39 | 30.73                       | 30.10 | 29.36 |
| 3100        | 35.79                   | 34.97 | 34.08 | 31.65                       | 30.54 | 29.37 | 30.07                       | 29.41 | 28.66 |
| 3200        | 36.43                   | 35.62 | 34.74 | 31.29                       | 30.17 | 29.02 | 30.34                       | 29.65 | 28.87 |
| 3300        | 36.38                   | 35.59 | 34.72 | 31.16                       | 30.04 | 28.88 | 30.64                       | 29.92 | 29.10 |
| 3400        | 37.29                   | 36.50 | 35.62 | 30.71                       | 29.59 | 28.42 | 30.76                       | 29.99 | 29.12 |
| 3500        | 37.29                   | 36.48 | 35.59 | 30.77                       | 29.64 | 28.48 | 30.52                       | 29.72 | 28.83 |
| 3600        | 37.84                   | 37.04 | 36.14 | 30.84                       | 29.70 | 28.52 | 31.22                       | 30.39 | 29.45 |
| 3700        | 39.40                   | 38.61 | 37.71 | 31.11                       | 29.95 | 28.76 | 30.91                       | 30.03 | 29.05 |
| 3800        | 39.70                   | 38.91 | 38.04 | 30.96                       | 29.79 | 28.63 | 31.24                       | 30.32 | 29.33 |
| 3900        | 40.16                   | 39.36 | 38.47 | 30.84                       | 29.67 | 28.50 | 31.34                       | 30.39 | 29.37 |
| 4000        | 41.51                   | 40.76 | 39.90 | 31.38                       | 30.21 | 29.04 | 31.79                       | 30.78 | 29.72 |
| 4100        | 41.53                   | 40.81 | 39.99 | 31.49                       | 30.34 | 29.18 | 32.10                       | 31.06 | 29.95 |
| 4200        | 43.92                   | 43.21 | 42.43 | 31.47                       | 30.33 | 29.18 | 32.89                       | 31.81 | 30.67 |
| 4300        | 44.52                   | 43.80 | 43.01 | 31.86                       | 30.71 | 29.54 | 33.21                       | 32.10 | 30.90 |
| 4400        | 45.06                   | 44.34 | 43.58 | 31.88                       | 30.73 | 29.56 | 33.58                       | 32.44 | 31.21 |
| 4500        | 46.13                   | 45.49 | 44.81 | 32.41                       | 31.28 | 30.11 | 34.17                       | 32.99 | 31.73 |
| 4600        | 47.33                   | 46.73 | 46.06 | 32.42                       | 31.31 | 30.14 | 34.98                       | 33.77 | 32.47 |
| 4700        | 49.04                   | 48.49 | 47.89 | 32.19                       | 31.07 | 29.91 | 35.16                       | 33.91 | 32.57 |
| 4800        | 49.66                   | 49.15 | 48.57 | 32.20                       | 31.09 | 29.94 | 35.50                       | 34.23 | 32.85 |
| 4900        | 52.17                   | 51.75 | 51.24 | 32.40                       | 31.31 | 30.17 | 36.00                       | 34.70 | 33.29 |
| 5000        | 54.89                   | 54.54 | 54.24 | 33.07                       | 32.02 | 30.91 | 36.66                       | 35.34 | 33.91 |
| 5100        | 58.94                   | 58.31 | 57.91 | 33.16                       | 32.15 | 31.06 | 37.65                       | 36.28 | 34.80 |
| 5200        | 63.47                   | 62.07 | 61.44 | 33.62                       | 32.64 | 31.58 | 38.56                       | 37.11 | 35.55 |
| 5300        | 80.68                   | 71.89 | 69.13 | 34.14                       | 33.18 | 32.13 | 40.19                       | 38.63 | 36.96 |
| 5400        | 68.05                   | 70.27 | 71.39 | 34.16                       | 33.22 | 32.18 | 40.83                       | 39.11 | 37.29 |
| 5500        | 61.95                   | 62.69 | 63.39 | 33.66                       | 32.72 | 31.69 | 41.42                       | 39.49 | 37.51 |
| 5600        | 58.37                   | 58.58 | 58.69 | 33.51                       | 32.57 | 31.53 | 42.09                       | 39.90 | 37.74 |
| 5700        | 56.77                   | 56.80 | 56.53 | 33.84                       | 32.91 | 31.88 | 43.20                       | 40.75 | 38.37 |
| 5800        | 54.77                   | 55.18 | 54.94 | 34.51                       | 33.60 | 32.59 | 44.52                       | 41.81 | 39.15 |
| 5900        | 53.52                   | 54.16 | 53.94 | 34.17                       | 33.25 | 32.27 | 46.71                       | 43.86 | 40.94 |
| 6000        | 52.47                   | 53.15 | 53.02 | 33.55                       | 32.60 | 31.63 | 48.07                       | 45.23 | 42.16 |

# Frequency Mixer

**SMIQ-263H+**

## Typical Performance Data

| RF<br>(MHz) | LO<br>(MHz) | RF-IF (I) ISOLATION<br>(dB) |       |       | RF-IF (Q) ISOLATION<br>(dB) |       |       |
|-------------|-------------|-----------------------------|-------|-------|-----------------------------|-------|-------|
|             |             | @LO (dBm)                   |       |       | @LO (dBm)                   |       |       |
|             |             | +17                         | +18   | +19   | +17                         | +18   | +19   |
| 2000        | 2200        | 22.37                       | 21.60 | 20.81 | 38.47                       | 34.77 | 32.03 |
| 2100        | 2300        | 18.94                       | 18.47 | 17.96 | 23.27                       | 22.48 | 21.72 |
| 2200        | 2400        | 17.14                       | 16.82 | 16.45 | 18.36                       | 17.89 | 17.42 |
| 2300        | 2500        | 16.71                       | 16.47 | 16.17 | 15.70                       | 15.36 | 15.03 |
| 2400        | 2600        | 16.76                       | 16.51 | 16.22 | 13.52                       | 13.25 | 12.97 |
| 2500        | 2700        | 16.43                       | 16.20 | 15.93 | 12.36                       | 12.15 | 11.92 |
| 2600        | 2800        | 15.82                       | 15.58 | 15.31 | 11.43                       | 11.25 | 11.06 |
| 2700        | 2900        | 14.97                       | 14.75 | 14.50 | 11.00                       | 10.85 | 10.69 |
| 2800        | 3000        | 13.88                       | 13.69 | 13.49 | 10.97                       | 10.85 | 10.72 |
| 2900        | 3100        | 13.12                       | 12.97 | 12.80 | 11.35                       | 11.25 | 11.14 |
| 3000        | 3200        | 12.41                       | 12.30 | 12.17 | 11.61                       | 11.54 | 11.45 |
| 3100        | 3300        | 12.16                       | 12.10 | 12.02 | 11.68                       | 11.63 | 11.55 |
| 3200        | 3400        | 11.89                       | 11.88 | 11.86 | 12.29                       | 12.25 | 12.19 |
| 3300        | 3500        | 11.59                       | 11.61 | 11.62 | 12.27                       | 12.26 | 12.22 |
| 3400        | 3600        | 11.59                       | 11.63 | 11.65 | 12.71                       | 12.71 | 12.69 |
| 3500        | 3700        | 11.97                       | 12.04 | 12.08 | 12.87                       | 12.89 | 12.89 |
| 3600        | 3800        | 12.05                       | 12.14 | 12.20 | 13.25                       | 13.32 | 13.35 |
| 3700        | 3900        | 13.16                       | 13.25 | 13.33 | 13.35                       | 13.42 | 13.47 |
| 3800        | 4000        | 13.56                       | 13.67 | 13.75 | 13.97                       | 14.05 | 14.10 |
| 3900        | 4100        | 13.68                       | 13.80 | 13.89 | 14.32                       | 14.41 | 14.47 |
| 4000        | 4200        | 14.78                       | 14.91 | 15.01 | 15.08                       | 15.19 | 15.25 |
| 4100        | 4300        | 15.18                       | 15.34 | 15.47 | 15.35                       | 15.49 | 15.57 |
| 4200        | 4400        | 15.88                       | 16.05 | 16.19 | 16.49                       | 16.63 | 16.74 |
| 4300        | 4500        | 16.63                       | 16.77 | 16.89 | 16.90                       | 17.02 | 17.12 |
| 4400        | 4600        | 17.29                       | 17.40 | 17.50 | 17.48                       | 17.57 | 17.64 |
| 4500        | 4700        | 18.64                       | 18.71 | 18.76 | 18.26                       | 18.33 | 18.38 |
| 4600        | 4800        | 19.40                       | 19.43 | 19.43 | 19.26                       | 19.32 | 19.35 |
| 4700        | 4900        | 20.26                       | 20.25 | 20.20 | 20.10                       | 20.11 | 20.11 |
| 4800        | 5000        | 20.73                       | 20.71 | 20.65 | 20.42                       | 20.42 | 20.39 |
| 4900        | 5100        | 21.83                       | 21.76 | 21.66 | 21.20                       | 21.19 | 21.12 |
| 5000        | 5200        | 22.95                       | 22.84 | 22.69 | 21.69                       | 21.66 | 21.58 |
| 5100        | 5300        | 23.35                       | 23.20 | 23.00 | 22.33                       | 22.26 | 22.17 |
| 5200        | 5400        | 23.87                       | 23.68 | 23.46 | 22.56                       | 22.44 | 22.30 |
| 5300        | 5500        | 24.21                       | 24.00 | 23.77 | 23.31                       | 23.15 | 22.97 |
| 5400        | 5600        | 24.58                       | 24.33 | 24.09 | 23.70                       | 23.48 | 23.26 |
| 5500        | 5700        | 24.14                       | 23.86 | 23.60 | 23.77                       | 23.52 | 23.25 |
| 5600        | 5800        | 24.06                       | 23.76 | 23.47 | 23.92                       | 23.58 | 23.28 |
| 5700        | 5900        | 24.25                       | 24.00 | 23.69 | 24.15                       | 23.70 | 23.36 |
| 5800        | 6000        | 24.02                       | 23.92 | 23.64 | 23.50                       | 23.00 | 22.62 |
| 5900        | 6100        | 22.88                       | 22.90 | 22.68 | 23.86                       | 23.41 | 23.04 |
| 6000        | 6200        | 21.53                       | 21.61 | 21.43 | 23.72                       | 23.38 | 23.03 |

Typical Performance Data

| LO (MHz) | LO-RF ISOLATION (dB) |       |       | LO-IF (I) ISOLATION (dB) |       |       | LO-IF (Q) ISOLATION (dB) |       |       |
|----------|----------------------|-------|-------|--------------------------|-------|-------|--------------------------|-------|-------|
|          | @TEMPERATURE (°C)    |       |       | @TEMPERATURE (°C)        |       |       | @TEMPERATURE (°C)        |       |       |
|          | -55                  | +25   | +100  | -55                      | +25   | +100  | -55                      | +25   | +100  |
| 2000     | 38.93                | 40.35 | 41.57 | 30.82                    | 31.03 | 31.17 | 27.52                    | 28.11 | 28.62 |
| 2100     | 36.58                | 37.58 | 38.40 | 29.84                    | 30.28 | 30.56 | 26.92                    | 27.72 | 28.39 |
| 2200     | 35.20                | 36.23 | 36.99 | 29.64                    | 30.20 | 30.55 | 26.78                    | 27.77 | 28.53 |
| 2300     | 34.67                | 35.67 | 36.33 | 29.49                    | 30.11 | 30.52 | 26.98                    | 28.05 | 28.85 |
| 2400     | 34.96                | 35.82 | 36.32 | 29.97                    | 30.62 | 31.03 | 27.53                    | 28.58 | 29.29 |
| 2500     | 34.42                | 35.01 | 35.36 | 30.04                    | 30.78 | 31.22 | 28.07                    | 29.02 | 29.64 |
| 2600     | 34.50                | 35.03 | 35.25 | 30.45                    | 31.20 | 31.52 | 28.45                    | 29.34 | 29.84 |
| 2700     | 34.88                | 34.92 | 34.89 | 31.26                    | 31.71 | 31.79 | 29.07                    | 29.72 | 30.05 |
| 2800     | 35.36                | 35.26 | 35.24 | 31.20                    | 31.40 | 31.35 | 29.41                    | 29.85 | 30.06 |
| 2900     | 34.71                | 34.77 | 34.87 | 30.92                    | 31.06 | 31.00 | 29.64                    | 29.99 | 30.17 |
| 3000     | 34.49                | 34.71 | 34.88 | 30.46                    | 30.58 | 30.50 | 29.71                    | 30.10 | 30.28 |
| 3100     | 34.60                | 34.97 | 35.21 | 30.37                    | 30.54 | 30.49 | 28.89                    | 29.41 | 29.68 |
| 3200     | 35.24                | 35.62 | 35.90 | 29.93                    | 30.17 | 30.18 | 29.10                    | 29.65 | 29.89 |
| 3300     | 35.16                | 35.59 | 35.89 | 29.76                    | 30.04 | 30.06 | 29.37                    | 29.92 | 30.14 |
| 3400     | 35.97                | 36.50 | 36.87 | 29.28                    | 29.59 | 29.62 | 29.44                    | 29.99 | 30.20 |
| 3500     | 35.81                | 36.48 | 36.94 | 29.29                    | 29.64 | 29.72 | 29.11                    | 29.72 | 29.96 |
| 3600     | 36.30                | 37.04 | 37.49 | 29.33                    | 29.70 | 29.80 | 29.81                    | 30.39 | 30.59 |
| 3700     | 37.95                | 38.61 | 39.00 | 29.57                    | 29.95 | 30.01 | 29.47                    | 30.03 | 30.22 |
| 3800     | 38.12                | 38.91 | 39.40 | 29.37                    | 29.79 | 29.93 | 29.76                    | 30.32 | 30.51 |
| 3900     | 38.61                | 39.36 | 39.78 | 29.26                    | 29.67 | 29.80 | 29.84                    | 30.39 | 30.57 |
| 4000     | 40.02                | 40.76 | 41.20 | 29.84                    | 30.21 | 30.33 | 30.27                    | 30.78 | 30.92 |
| 4100     | 40.03                | 40.81 | 41.30 | 29.98                    | 30.34 | 30.47 | 30.56                    | 31.06 | 31.19 |
| 4200     | 42.55                | 43.21 | 43.65 | 29.95                    | 30.33 | 30.43 | 31.33                    | 31.81 | 31.92 |
| 4300     | 43.14                | 43.80 | 44.23 | 30.35                    | 30.71 | 30.81 | 31.63                    | 32.10 | 32.18 |
| 4400     | 43.60                | 44.34 | 44.85 | 30.36                    | 30.73 | 30.83 | 32.00                    | 32.44 | 32.48 |
| 4500     | 44.52                | 45.49 | 46.18 | 30.91                    | 31.28 | 31.36 | 32.63                    | 32.99 | 33.00 |
| 4600     | 45.51                | 46.73 | 47.54 | 30.94                    | 31.31 | 31.40 | 33.46                    | 33.77 | 33.76 |
| 4700     | 47.15                | 48.49 | 49.31 | 30.71                    | 31.07 | 31.16 | 33.61                    | 33.91 | 33.85 |
| 4800     | 47.62                | 49.15 | 50.02 | 30.73                    | 31.09 | 31.20 | 33.92                    | 34.23 | 34.14 |
| 4900     | 50.13                | 51.75 | 52.52 | 30.94                    | 31.31 | 31.40 | 34.37                    | 34.70 | 34.60 |
| 5000     | 53.14                | 54.54 | 54.99 | 31.64                    | 32.02 | 32.13 | 34.95                    | 35.34 | 35.21 |
| 5100     | 57.59                | 58.31 | 57.90 | 31.73                    | 32.15 | 32.28 | 35.84                    | 36.28 | 36.14 |
| 5200     | 62.92                | 62.07 | 60.38 | 32.18                    | 32.64 | 32.80 | 36.69                    | 37.11 | 36.91 |
| 5300     | 74.46                | 71.89 | 64.69 | 32.71                    | 33.18 | 33.37 | 38.31                    | 38.63 | 38.33 |
| 5400     | 64.54                | 70.27 | 65.96 | 32.74                    | 33.22 | 33.40 | 38.94                    | 39.11 | 38.65 |
| 5500     | 58.76                | 62.69 | 63.22 | 32.24                    | 32.72 | 32.89 | 39.48                    | 39.49 | 38.88 |
| 5600     | 55.31                | 58.58 | 59.66 | 32.10                    | 32.57 | 32.71 | 40.11                    | 39.90 | 39.07 |
| 5700     | 53.75                | 56.80 | 58.07 | 32.46                    | 32.91 | 33.03 | 41.21                    | 40.75 | 39.66 |
| 5800     | 51.80                | 55.18 | 57.06 | 33.15                    | 33.60 | 33.70 | 42.65                    | 41.81 | 40.39 |
| 5900     | 50.55                | 54.16 | 56.52 | 32.81                    | 33.25 | 33.39 | 45.16                    | 43.86 | 42.11 |
| 6000     | 48.94                | 53.15 | 56.08 | 32.16                    | 32.60 | 32.75 | 47.12                    | 45.23 | 43.18 |

# Frequency Mixer

# SMIQ-263H+

## Typical Performance Data

| RF<br>(MHz) | LO<br>(MHz) | RF-IF (I) ISOLATION<br>(dB) |       |       | RF-IF (Q) ISOLATION<br>(dB) |       |       |
|-------------|-------------|-----------------------------|-------|-------|-----------------------------|-------|-------|
|             |             | @TEMPERATURE (°C)           |       |       | @TEMPERATURE (°C)           |       |       |
|             |             | -55                         | +25   | +100  | -55                         | +25   | +100  |
| 2000        | 2200        | 22.50                       | 21.60 | 20.80 | 43.85                       | 34.77 | 28.54 |
| 2100        | 2300        | 18.47                       | 18.47 | 18.26 | 25.14                       | 22.48 | 20.75 |
| 2200        | 2400        | 16.43                       | 16.82 | 16.80 | 19.25                       | 17.89 | 16.91 |
| 2300        | 2500        | 15.95                       | 16.47 | 16.46 | 16.21                       | 15.36 | 14.72 |
| 2400        | 2600        | 16.34                       | 16.51 | 16.23 | 13.67                       | 13.25 | 12.87 |
| 2500        | 2700        | 16.61                       | 16.20 | 15.65 | 12.36                       | 12.15 | 11.93 |
| 2600        | 2800        | 16.34                       | 15.58 | 14.93 | 11.25                       | 11.25 | 11.17 |
| 2700        | 2900        | 15.51                       | 14.75 | 14.17 | 10.72                       | 10.85 | 10.86 |
| 2800        | 3000        | 14.34                       | 13.69 | 13.22 | 10.65                       | 10.85 | 10.93 |
| 2900        | 3100        | 13.44                       | 12.97 | 12.61 | 10.96                       | 11.25 | 11.38 |
| 3000        | 3200        | 12.52                       | 12.30 | 12.09 | 11.20                       | 11.54 | 11.68 |
| 3100        | 3300        | 12.19                       | 12.10 | 11.99 | 11.37                       | 11.63 | 11.70 |
| 3200        | 3400        | 11.91                       | 11.88 | 11.86 | 12.08                       | 12.25 | 12.27 |
| 3300        | 3500        | 11.49                       | 11.61 | 11.71 | 12.10                       | 12.26 | 12.32 |
| 3400        | 3600        | 11.37                       | 11.63 | 11.80 | 12.49                       | 12.71 | 12.82 |
| 3500        | 3700        | 11.71                       | 12.04 | 12.28 | 12.68                       | 12.89 | 13.02 |
| 3600        | 3800        | 11.64                       | 12.14 | 12.47 | 13.07                       | 13.32 | 13.45 |
| 3700        | 3900        | 12.86                       | 13.25 | 13.49 | 13.12                       | 13.42 | 13.62 |
| 3800        | 4000        | 13.27                       | 13.67 | 13.96 | 13.68                       | 14.05 | 14.28 |
| 3900        | 4100        | 13.35                       | 13.80 | 14.12 | 14.03                       | 14.41 | 14.64 |
| 4000        | 4200        | 14.44                       | 14.91 | 15.21 | 14.81                       | 15.19 | 15.39 |
| 4100        | 4300        | 14.85                       | 15.34 | 15.66 | 15.11                       | 15.49 | 15.70 |
| 4200        | 4400        | 15.59                       | 16.05 | 16.33 | 16.34                       | 16.63 | 16.82 |
| 4300        | 4500        | 16.33                       | 16.77 | 17.03 | 16.74                       | 17.02 | 17.19 |
| 4400        | 4600        | 16.96                       | 17.40 | 17.66 | 17.30                       | 17.57 | 17.74 |
| 4500        | 4700        | 18.27                       | 18.71 | 18.90 | 18.07                       | 18.33 | 18.47 |
| 4600        | 4800        | 19.03                       | 19.43 | 19.57 | 19.09                       | 19.32 | 19.42 |
| 4700        | 4900        | 19.97                       | 20.25 | 20.28 | 19.94                       | 20.11 | 20.14 |
| 4800        | 5000        | 20.50                       | 20.71 | 20.68 | 20.25                       | 20.42 | 20.42 |
| 4900        | 5100        | 21.66                       | 21.76 | 21.61 | 21.08                       | 21.19 | 21.15 |
| 5000        | 5200        | 22.89                       | 22.84 | 22.58 | 21.60                       | 21.66 | 21.53 |
| 5100        | 5300        | 23.42                       | 23.20 | 22.83 | 22.31                       | 22.26 | 22.06 |
| 5200        | 5400        | 24.09                       | 23.68 | 23.22 | 22.59                       | 22.44 | 22.16 |
| 5300        | 5500        | 24.53                       | 24.00 | 23.49 | 23.41                       | 23.15 | 22.78 |
| 5400        | 5600        | 25.01                       | 24.33 | 23.73 | 23.92                       | 23.48 | 22.98 |
| 5500        | 5700        | 24.65                       | 23.86 | 23.21 | 24.10                       | 23.52 | 22.94 |
| 5600        | 5800        | 24.62                       | 23.76 | 23.07 | 24.35                       | 23.58 | 22.91 |
| 5700        | 5900        | 24.95                       | 24.00 | 23.28 | 24.68                       | 23.70 | 22.94 |
| 5800        | 6000        | 24.79                       | 23.92 | 23.24 | 24.07                       | 23.00 | 22.20 |
| 5900        | 6100        | 23.63                       | 22.90 | 22.34 | 24.50                       | 23.41 | 22.67 |
| 6000        | 6200        | 22.16                       | 21.61 | 21.13 | 24.37                       | 23.38 | 22.71 |

Typical Performance Data

| RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = LO-RF<br>IF Fixed @IF=200 MHz (dB) |       |       | RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = LO-RF<br>IF Fixed @IF=1000 MHz (dB) |       |       | RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = LO-RF<br>IF Fixed @IF=2000 MHz (dB) |       |       | RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = LO-RF<br>IF Fixed @IF=3000 MHz (dB) |       |       |  |
|----------|----------|---|-------|-------|----------|----------|--|-------|-------|----------|----------|--|-------|-------|----------|----------|--|-------|-------|--|
|          |          | @LO (dBm)   |       |       |          |          | @LO (dBm)  |       |       |          |          | @LO (dBm)  |       |       |          |          | @LO (dBm)  |       |       |  |
|          |          | +17   | +18   | +19   |          |          | +17  | +18   | +19   |          |          | +17  | +18   | +19   |          |          | +17  | +18   | +19   |  |
| 1800     | 2000     | 23.52   | 24.47 | 24.89 | 2000     | 3000     | 17.57  | 18.72 | 20.07 | 2000     | 4000     | 20.64  | 22.28 | 23.76 | 2000     | 5000     | 10.51  | 11.64 | 12.43 |  |
| 1900     | 2100     | 23.53   | 23.27 | 22.78 | 2100     | 3100     | 16.05  | 16.93 | 17.90 | 2100     | 4100     | 21.80  | 24.00 | 25.87 | 2100     | 5100     | 8.74   | 9.83  | 10.59 |  |
| 2000     | 2200     | 20.87   | 20.36 | 19.83 | 2200     | 3200     | 15.42  | 16.40 | 17.45 | 2200     | 4200     | 23.44  | 25.78 | 27.49 | 2200     | 5200     | 7.74   | 8.68  | 9.34  |  |
| 2100     | 2300     | 18.24   | 17.93 | 17.65 | 2300     | 3300     | 14.28  | 14.95 | 15.59 | 2300     | 4300     | 26.02  | 28.25 | 28.94 | 2300     | 5300     | 6.98   | 7.86  | 8.41  |  |
| 2200     | 2400     | 17.44   | 17.28 | 17.17 | 2400     | 3400     | 14.45  | 15.27 | 16.10 | 2400     | 4400     | 27.30  | 27.71 | 26.57 | 2400     | 5400     | 6.40   | 7.18  | 7.73  |  |
| 2300     | 2500     | 16.96   | 17.09 | 17.26 | 2500     | 3500     | 15.21  | 16.01 | 16.82 | 2500     | 4500     | 27.59  | 26.20 | 24.34 | 2500     | 5500     | 5.94   | 6.75  | 7.25  |  |
| 2400     | 2600     | 17.02   | 17.36 | 17.75 | 2600     | 3600     | 15.98  | 16.68 | 17.48 | 2600     | 4600     | 24.89  | 23.26 | 21.76 | 2600     | 5600     | 5.55   | 6.14  | 6.76  |  |
| 2500     | 2700     | 19.10   | 19.69 | 20.33 | 2700     | 3700     | 17.87  | 19.05 | 20.34 | 2700     | 4700     | 21.02  | 19.87 | 18.80 | 2700     | 5700     | 5.09   | 5.36  | 6.10  |  |
| 2600     | 2800     | 21.45   | 22.29 | 23.14 | 2800     | 3800     | 19.18  | 20.28 | 21.29 | 2800     | 4800     | 19.52  | 18.95 | 18.13 | 2800     | 5800     | 5.52   | 5.28  | 5.91  |  |
| 2700     | 2900     | 21.37   | 22.35 | 23.32 | 2900     | 3900     | 23.10  | 24.25 | 25.58 | 2900     | 4900     | 17.54  | 17.38 | 16.87 | 2900     | 5900     | 6.69   | 5.12  | 5.56  |  |
| 2800     | 3000     | 19.83   | 20.54 | 21.31 | 3000     | 4000     | 28.19  | 29.24 | 29.91 | 3000     | 5000     | 15.85  | 15.93 | 15.79 | 3000     | 6000     | 6.69   | 5.12  | 5.56  |  |
| 2900     | 3100     | 19.50   | 20.16 | 20.84 | 3100     | 4100     | 33.21  | 34.01 | 33.50 | 3100     | 5100     | 14.69  | 14.84 | 14.81 |          |          |  |       |       |  |
| 3000     | 3200     | 20.69   | 21.61 | 22.59 | 3200     | 4200     | 39.69  | 35.72 | 36.00 | 3200     | 5200     | 13.09  | 13.40 | 13.32 |          |          |  |       |       |  |
| 3100     | 3300     | 20.74   | 21.28 | 21.91 | 3300     | 4300     | 37.69  | 34.38 | 31.33 | 3300     | 5300     | 10.76  | 11.36 | 11.48 |          |          |  |       |       |  |
| 3200     | 3400     | 22.84   | 23.47 | 24.26 | 3400     | 4400     | 33.31  | 29.29 | 26.83 | 3400     | 5400     | 7.89   | 8.93  | 9.27  |          |          |  |       |       |  |
| 3300     | 3500     | 23.57   | 24.24 | 25.12 | 3500     | 4500     | 29.04  | 26.64 | 24.78 | 3500     | 5500     | 5.14   | 6.41  | 6.92  |          |          |  |       |       |  |
| 3400     | 3600     | 23.62   | 24.43 | 25.48 | 3600     | 4600     | 26.92  | 24.92 | 23.35 | 3600     | 5600     | 3.46   | 5.27  | 6.16  |          |          |  |       |       |  |
| 3500     | 3700     | 23.01   | 24.25 | 25.84 | 3700     | 4700     | 23.10  | 22.10 | 21.19 | 3700     | 5700     | 4.18   | 6.48  | 7.72  |          |          |  |       |       |  |
| 3600     | 3800     | 22.49   | 23.44 | 24.78 | 3800     | 4800     | 20.92  | 20.46 | 19.76 | 3800     | 5800     | 4.63   | 7.45  | 9.04  |          |          |  |       |       |  |
| 3700     | 3900     | 23.84   | 24.83 | 26.20 | 3900     | 4900     | 19.16  | 18.94 | 18.63 | 3900     | 5900     | 5.00   | 8.01  | 9.68  |          |          |  |       |       |  |
| 3800     | 4000     | 25.44   | 26.61 | 28.03 | 4000     | 5000     | 18.09  | 18.11 | 18.05 | 4000     | 6000     | 4.20   | 7.91  | 9.63  |          |          |  |       |       |  |
| 3900     | 4100     | 28.00   | 30.11 | 32.47 | 4100     | 5100     | 16.49  | 16.80 | 16.94 |          |          |  |       |       |          |          |  |       |       |  |
| 4000     | 4200     | 28.99   | 32.43 | 36.80 | 4200     | 5200     | 15.13  | 15.79 | 16.17 |          |          |  |       |       |          |          |  |       |       |  |
| 4100     | 4300     | 35.39   | 40.32 | 37.79 | 4300     | 5300     | 14.83  | 15.66 | 16.25 |          |          |  |       |       |          |          |  |       |       |  |
| 4200     | 4400     | 36.53   | 32.49 | 29.44 | 4400     | 5400     | 14.45  | 15.68 | 16.53 |          |          |  |       |       |          |          |  |       |       |  |
| 4300     | 4500     | 30.22   | 27.43 | 25.58 | 4500     | 5500     | 13.51  | 14.95 | 16.01 |          |          |  |       |       |          |          |  |       |       |  |
| 4400     | 4600     | 25.40   | 24.23 | 23.24 | 4600     | 5600     | 12.80  | 14.86 | 16.07 |          |          |  |       |       |          |          |  |       |       |  |
| 4500     | 4700     | 22.13   | 21.60 | 21.06 | 4700     | 5700     | 12.26  | 15.40 | 16.87 |          |          |  |       |       |          |          |  |       |       |  |
| 4600     | 4800     | 19.49   | 19.68 | 19.49 | 4800     | 5800     | 10.60  | 15.29 | 17.16 |          |          |  |       |       |          |          |  |       |       |  |
| 4700     | 4900     | 18.35   | 18.98 | 19.20 | 4900     | 5900     | 9.74   | 16.03 | 18.34 |          |          |  |       |       |          |          |  |       |       |  |
| 4800     | 5000     | 17.10   | 17.86 | 18.39 | 5000     | 6000     | 7.35   | 16.07 | 19.46 |          |          |  |       |       |          |          |  |       |       |  |
| 4900     | 5100     | 16.41   | 17.24 | 17.86 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5000     | 5200     | 16.14   | 17.03 | 17.65 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5100     | 5300     | 16.20   | 17.13 | 17.79 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5200     | 5400     | 16.77   | 17.94 | 18.73 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5300     | 5500     | 16.86   | 18.23 | 19.12 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5400     | 5600     | 16.04   | 18.38 | 19.56 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5500     | 5700     | 14.54   | 18.31 | 19.73 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5600     | 5800     | 12.53   | 17.96 | 20.01 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5700     | 5900     | 11.15   | 18.12 | 20.33 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |
| 5800     | 6000     | 8.81  | 17.57 | 20.43 |          |          |  |       |       |          |          |  |       |       |          |          |  |       |       |  |

Typical Performance Data

| RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = RF-LO<br>IF Fixed @IF=200 MHz (dB) |       |       |
|----------|----------|---|-------|-------|
|          |          | @LO (dBm)   |       |       |
|          |          | +17   | +18   | +19   |
| 2000     | 1800     | 17.05   | 19.16 | 20.68 |
| 2100     | 1900     | 20.90   | 22.39 | 23.38 |
| 2200     | 2000     | 23.49   | 24.46 | 24.90 |
| 2300     | 2100     | 23.50   | 23.26 | 22.78 |
| 2400     | 2200     | 20.84   | 20.33 | 19.82 |
| 2500     | 2300     | 18.21   | 17.91 | 17.63 |
| 2600     | 2400     | 17.41   | 17.24 | 17.15 |
| 2700     | 2500     | 16.91   | 17.06 | 17.24 |
| 2800     | 2600     | 16.96   | 17.31 | 17.70 |
| 2900     | 2700     | 19.03   | 19.63 | 20.27 |
| 3000     | 2800     | 21.34   | 22.23 | 23.07 |
| 3100     | 2900     | 21.25   | 22.27 | 23.26 |
| 3200     | 3000     | 19.71   | 20.47 | 21.25 |
| 3300     | 3100     | 19.40   | 20.10 | 20.78 |
| 3400     | 3200     | 20.59   | 21.54 | 22.52 |
| 3500     | 3300     | 20.64   | 21.19 | 21.83 |
| 3600     | 3400     | 22.73   | 23.39 | 24.15 |
| 3700     | 3500     | 23.46   | 24.20 | 25.06 |
| 3800     | 3600     | 23.50   | 24.36 | 25.41 |
| 3900     | 3700     | 22.92   | 24.20 | 25.78 |
| 4000     | 3800     | 22.43   | 23.39 | 24.77 |
| 4100     | 3900     | 23.78   | 24.80 | 26.22 |
| 4200     | 4000     | 25.42   | 26.64 | 28.10 |
| 4300     | 4100     | 28.00   | 30.19 | 32.63 |
| 4400     | 4200     | 29.02   | 32.61 | 37.26 |
| 4500     | 4300     | 35.61   | 40.73 | 37.50 |
| 4600     | 4400     | 36.88   | 32.38 | 29.22 |
| 4700     | 4500     | 29.87   | 27.29 | 25.43 |
| 4800     | 4600     | 25.16   | 24.08 | 23.08 |
| 4900     | 4700     | 21.87   | 21.44 | 20.89 |
| 5000     | 4800     | 19.25   | 19.53 | 19.32 |
| 5100     | 4900     | 18.13   | 18.83 | 19.01 |
| 5200     | 5000     | 16.91   | 17.73 | 18.22 |
| 5300     | 5100     | 16.22   | 17.11 | 17.71 |
| 5400     | 5200     | 15.98   | 16.89 | 17.49 |
| 5500     | 5300     | 16.04   | 17.00 | 17.63 |
| 5600     | 5400     | 16.60   | 17.81 | 18.57 |
| 5700     | 5500     | 16.67   | 18.13 | 18.98 |
| 5800     | 5600     | 15.82   | 18.30 | 19.44 |
| 5900     | 5700     | 14.28   | 18.23 | 19.63 |
| 6000     | 5800     | 12.23   | 17.94 | 19.93 |

| RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = RF-LO<br>IF Fixed @IF=1000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 3000     | 2000     | 24.63  | 25.65 | 26.27 |
| 3100     | 2100     | 21.92  | 22.61 | 23.06 |
| 3200     | 2200     | 19.74  | 19.88 | 19.96 |
| 3300     | 2300     | 17.84  | 17.82 | 17.83 |
| 3400     | 2400     | 20.28  | 20.40 | 20.59 |
| 3500     | 2500     | 23.05  | 23.47 | 24.07 |
| 3600     | 2600     | 22.02  | 22.61 | 23.33 |
| 3700     | 2700     | 22.80  | 24.23 | 25.59 |
| 3800     | 2800     | 21.31  | 23.14 | 25.01 |
| 3900     | 2900     | 18.50  | 20.05 | 21.67 |
| 4000     | 3000     | 17.69  | 18.98 | 20.33 |
| 4100     | 3100     | 15.65  | 16.56 | 17.49 |
| 4200     | 3200     | 15.91  | 16.85 | 17.76 |
| 4300     | 3300     | 13.98  | 14.65 | 15.30 |
| 4400     | 3400     | 14.27  | 15.09 | 15.88 |
| 4500     | 3500     | 15.15  | 15.95 | 16.74 |
| 4600     | 3600     | 15.98  | 16.75 | 17.53 |
| 4700     | 3700     | 17.76  | 19.03 | 20.31 |
| 4800     | 3800     | 19.34  | 20.41 | 21.57 |
| 4900     | 3900     | 22.83  | 23.91 | 25.18 |
| 5000     | 4000     | 28.21  | 29.21 | 30.03 |
| 5100     | 4100     | 33.16  | 33.79 | 33.71 |
| 5200     | 4200     | 40.91  | 35.95 | 34.95 |
| 5300     | 4300     | 39.12  | 34.79 | 31.38 |
| 5400     | 4400     | 33.10  | 29.24 | 26.86 |
| 5500     | 4500     | 29.22  | 26.59 | 24.84 |
| 5600     | 4600     | 26.96  | 24.84 | 23.39 |
| 5700     | 4700     | 23.08  | 22.05 | 21.19 |
| 5800     | 4800     | 20.96  | 20.40 | 19.80 |
| 5900     | 4900     | 19.09  | 18.92 | 18.61 |
| 6000     | 5000     | 18.08  | 18.14 | 18.04 |

| RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = RF-LO<br>IF Fixed @IF=2000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 4000     | 2000     | 65.72  | 69.01 | 67.17 |
| 4100     | 2100     | 50.79  | 50.43 | 49.58 |
| 4200     | 2200     | 46.20  | 44.61 | 43.07 |
| 4300     | 2300     | 35.76  | 34.63 | 33.52 |
| 4400     | 2400     | 31.04  | 30.27 | 29.42 |
| 4500     | 2500     | 26.35  | 25.87 | 25.42 |
| 4600     | 2600     | 23.05  | 22.71 | 22.42 |
| 4700     | 2700     | 21.96  | 21.77 | 21.59 |
| 4800     | 2800     | 21.93  | 22.05 | 22.12 |
| 4900     | 2900     | 21.83  | 22.24 | 22.61 |
| 5000     | 3000     | 20.87  | 21.45 | 22.08 |
| 5100     | 3100     | 20.19  | 20.85 | 21.54 |
| 5200     | 3200     | 22.91  | 24.58 | 26.30 |
| 5300     | 3300     | 22.12  | 23.73 | 25.45 |
| 5400     | 3400     | 18.62  | 19.51 | 20.27 |
| 5500     | 3500     | 16.02  | 16.79 | 17.49 |
| 5600     | 3600     | 15.67  | 16.44 | 17.20 |
| 5700     | 3700     | 16.84  | 17.92 | 18.99 |
| 5800     | 3800     | 17.73  | 18.91 | 20.11 |
| 5900     | 3900     | 19.12  | 20.48 | 21.88 |
| 6000     | 4000     | 20.64  | 22.28 | 23.76 |

| RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = RF-LO<br>IF Fixed @IF=3000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 5000     | 2000     | 11.76  | 10.36 | 11.85 |
| 5100     | 2100     | 12.93  | 12.56 | 12.33 |
| 5200     | 2200     | 16.44  | 15.84 | 15.50 |
| 5300     | 2300     | 17.56  | 17.13 | 16.86 |
| 5400     | 2400     | 16.89  | 16.83 | 16.60 |
| 5500     | 2500     | 16.98  | 16.67 | 16.16 |
| 5600     | 2600     | 19.96  | 19.59 | 19.13 |
| 5700     | 2700     | 22.98  | 22.44 | 22.12 |
| 5800     | 2800     | 24.02  | 23.83 | 23.40 |
| 5900     | 2900     | 31.15  | 30.26 | 30.14 |
| 6000     | 3000     | 49.69  | 47.51 | 50.11 |



# Frequency Mixer

# SMIQ-263H+

## Typical Performance Data

| RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = LO-RF<br>IF Fixed @IF=200 MHz (dB) |       |        | RF (MHz) | LO (MHz) | Image Rejection (Downconverter Mode)<br>IF = RF-LO<br>IF Fixed @IF=200 MHz (dB) |       |        |
|----------|----------|---|-------|--------|----------|----------|---|-------|--------|
|          |          | @LO (dBm)   |       |        |          |          | @LO (dBm)   |       |        |
|          |          | -55°C   | +25°C | +100°C |          |          | -55°C   | +25°C | +100°C |
| 1800     | 2000     | 24.47   | 23.56 | 24.65  | 2000     | 1800     | 18.55   | 17.32 | 21.03  |
| 1900     | 2100     | 23.27   | 24.11 | 22.97  | 2100     | 1900     | 25.66   | 20.64 | 23.58  |
| 2000     | 2200     | 20.36   | 20.63 | 22.61  | 2200     | 2000     | 26.55   | 23.49 | 24.74  |
| 2100     | 2300     | 17.93   | 17.70 | 20.57  | 2300     | 2100     | 23.41   | 24.07 | 22.85  |
| 2200     | 2400     | 17.28   | 16.57 | 19.18  | 2400     | 2200     | 21.38   | 20.58 | 20.16  |
| 2300     | 2500     | 17.09   | 16.01 | 18.43  | 2500     | 2300     | 19.94   | 17.65 | 18.17  |
| 2400     | 2600     | 17.36   | 15.58 | 18.85  | 2600     | 2400     | 19.09   | 16.52 | 18.15  |
| 2500     | 2700     | 19.69   | 17.25 | 20.16  | 2700     | 2500     | 18.72   | 15.97 | 18.58  |
| 2600     | 2800     | 22.29   | 20.72 | 21.37  | 2800     | 2600     | 19.95   | 15.55 | 19.40  |
| 2700     | 2900     | 22.35   | 22.64 | 22.24  | 2900     | 2700     | 21.96   | 17.20 | 21.54  |
| 2800     | 3000     | 20.54   | 20.00 | 22.02  | 3000     | 2800     | 23.30   | 20.68 | 23.02  |
| 2900     | 3100     | 20.16   | 19.73 | 21.93  | 3100     | 2900     | 25.23   | 22.59 | 22.71  |
| 3000     | 3200     | 21.61   | 21.31 | 21.95  | 3200     | 3000     | 21.64   | 19.97 | 20.91  |
| 3100     | 3300     | 21.28   | 20.36 | 21.62  | 3300     | 3100     | 21.95   | 19.68 | 21.00  |
| 3200     | 3400     | 23.47   | 22.46 | 24.00  | 3400     | 3200     | 22.15   | 21.27 | 22.80  |
| 3300     | 3500     | 24.24   | 23.79 | 24.00  | 3500     | 3300     | 21.37   | 20.31 | 22.09  |
| 3400     | 3600     | 24.43   | 23.76 | 25.60  | 3600     | 3400     | 23.29   | 22.41 | 25.03  |
| 3500     | 3700     | 24.25   | 23.41 | 25.69  | 3700     | 3500     | 24.69   | 23.75 | 25.87  |
| 3600     | 3800     | 23.44   | 22.69 | 26.36  | 3800     | 3600     | 24.63   | 23.71 | 26.21  |
| 3700     | 3900     | 24.83   | 23.89 | 26.74  | 3900     | 3700     | 26.27   | 23.38 | 25.63  |
| 3800     | 4000     | 26.61   | 24.73 | 29.37  | 4000     | 3800     | 25.26   | 22.64 | 26.45  |
| 3900     | 4100     | 30.11   | 26.63 | 33.00  | 4100     | 3900     | 27.33   | 23.87 | 27.89  |
| 4000     | 4200     | 32.43   | 26.85 | 38.88  | 4200     | 4000     | 31.47   | 24.67 | 32.25  |
| 4100     | 4300     | 40.32   | 32.08 | 34.23  | 4300     | 4100     | 32.05   | 26.56 | 38.13  |
| 4200     | 4400     | 32.49   | 34.85 | 35.47  | 4400     | 4200     | 31.27   | 26.79 | 45.45  |
| 4300     | 4500     | 27.43   | 31.26 | 27.96  | 4500     | 4300     | 37.31   | 32.09 | 31.79  |
| 4400     | 4600     | 24.23   | 26.55 | 24.27  | 4600     | 4400     | 31.48   | 34.87 | 26.41  |
| 4500     | 4700     | 21.60   | 23.07 | 22.12  | 4700     | 4500     | 26.98   | 31.30 | 23.59  |
| 4600     | 4800     | 19.68   | 20.35 | 20.64  | 4800     | 4600     | 24.16   | 26.51 | 21.87  |
| 4700     | 4900     | 18.98   | 19.20 | 19.73  | 4900     | 4700     | 21.80   | 23.04 | 20.36  |
| 4800     | 5000     | 17.86   | 17.85 | 18.75  | 5000     | 4800     | 19.76   | 20.30 | 19.13  |
| 4900     | 5100     | 17.24   | 16.77 | 18.33  | 5100     | 4900     | 18.94   | 19.15 | 18.84  |
| 5000     | 5200     | 17.03   | 16.30 | 17.95  | 5200     | 5000     | 17.84   | 17.81 | 18.17  |
| 5100     | 5300     | 17.13   | 16.51 | 17.85  | 5300     | 5100     | 17.12   | 16.71 | 17.71  |
| 5200     | 5400     | 17.94   | 17.36 | 18.11  | 5400     | 5200     | 16.59   | 16.25 | 17.57  |
| 5300     | 5500     | 18.23   | 17.48 | 18.34  | 5500     | 5300     | 16.39   | 16.45 | 17.86  |
| 5400     | 5600     | 18.38   | 17.95 | 18.90  | 5600     | 5400     | 16.85   | 17.32 | 18.50  |
| 5500     | 5700     | 18.31   | 17.66 | 18.97  | 5700     | 5500     | 16.92   | 17.42 | 18.70  |
| 5600     | 5800     | 17.96   | 17.13 | 19.29  | 5800     | 5600     | 16.87   | 17.91 | 19.20  |
| 5700     | 5900     | 18.12   | 17.49 | 19.59  | 5900     | 5700     | 16.69   | 17.60 | 19.20  |
| 5800     | 6000     | 17.57   | 16.42 | 19.64  | 6000     | 5800     | 16.36   | 17.07 | 19.42  |

Typical Performance Data

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO - IF<br>IF Fixed @IF=200 MHz (dB) |       |       |
|----------|----------|---|-------|-------|
|          |          | @LO (dBm)   |       |       |
|          |          | +17   | +18   | +19   |
| 1800     | 2000     | 34.67   | 35.75 | 30.13 |
| 1900     | 2100     | 28.47   | 25.24 | 23.09 |
| 2000     | 2200     | 26.02   | 24.14 | 22.95 |
| 2100     | 2300     | 25.34   | 24.33 | 23.55 |
| 2200     | 2400     | 23.27   | 22.74 | 22.30 |
| 2300     | 2500     | 21.80   | 21.50 | 21.31 |
| 2400     | 2600     | 23.87   | 23.83 | 23.96 |
| 2500     | 2700     | 24.41   | 24.88 | 25.58 |
| 2600     | 2800     | 24.06   | 24.59 | 25.36 |
| 2700     | 2900     | 29.54   | 30.45 | 31.75 |
| 2800     | 3000     | 23.28   | 23.70 | 24.22 |
| 2900     | 3100     | 26.26   | 26.64 | 26.83 |
| 3000     | 3200     | 23.44   | 23.92 | 24.36 |
| 3100     | 3300     | 21.23   | 21.50 | 21.79 |
| 3200     | 3400     | 22.25   | 22.66 | 23.29 |
| 3300     | 3500     | 24.54   | 24.96 | 25.61 |
| 3400     | 3600     | 23.73   | 24.28 | 25.04 |
| 3500     | 3700     | 27.33   | 28.52 | 29.86 |
| 3600     | 3800     | 27.50   | 28.35 | 29.60 |
| 3700     | 3900     | 29.79   | 29.89 | 31.18 |
| 3800     | 4000     | 36.94   | 35.66 | 36.21 |
| 3900     | 4100     | 42.79   | 39.02 | 38.14 |
| 4000     | 4200     | 35.69   | 32.29 | 30.30 |
| 4100     | 4300     | 33.13   | 30.23 | 28.12 |
| 4200     | 4400     | 30.82   | 29.03 | 27.24 |
| 4300     | 4500     | 27.56   | 26.58 | 25.23 |
| 4400     | 4600     | 25.18   | 24.99 | 24.16 |
| 4500     | 4700     | 22.99   | 23.14 | 22.68 |
| 4600     | 4800     | 19.87   | 20.60 | 20.30 |
| 4700     | 4900     | 18.00   | 18.93 | 19.30 |
| 4800     | 5000     | 16.60   | 17.73 | 18.49 |
| 4900     | 5100     | 15.21   | 16.49 | 17.48 |
| 5000     | 5200     | 13.55   | 14.90 | 16.08 |
| 5100     | 5300     | 12.80   | 14.15 | 15.46 |
| 5200     | 5400     | 12.39   | 13.76 | 15.17 |
| 5300     | 5500     | 11.68   | 13.03 | 14.58 |
| 5400     | 5600     | 11.94   | 12.83 | 14.41 |
| 5500     | 5700     | 12.30   | 12.16 | 13.76 |
| 5600     | 5800     | 12.69   | 11.68 | 13.26 |
| 5700     | 5900     | 13.99   | 12.03 | 13.39 |
| 5800     | 6000     | 14.75   | 12.45 | 13.31 |

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO - IF<br>IF Fixed @IF=1000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 2000     | 3000     | 21.46  | 21.65 | 21.98 |
| 2100     | 3100     | 19.73  | 20.04 | 20.28 |
| 2200     | 3200     | 19.20  | 19.48 | 19.72 |
| 2300     | 3300     | 17.82  | 18.07 | 18.31 |
| 2400     | 3400     | 17.86  | 18.20 | 18.48 |
| 2500     | 3500     | 17.43  | 17.69 | 18.05 |
| 2600     | 3600     | 17.99  | 18.42 | 18.85 |
| 2700     | 3700     | 17.52  | 18.02 | 18.63 |
| 2800     | 3800     | 17.69  | 18.32 | 19.05 |
| 2900     | 3900     | 17.79  | 18.54 | 19.41 |
| 3000     | 4000     | 17.71  | 18.40 | 19.32 |
| 3100     | 4100     | 18.33  | 18.83 | 19.59 |
| 3200     | 4200     | 19.52  | 19.88 | 20.42 |
| 3300     | 4300     | 21.28  | 21.63 | 21.80 |
| 3400     | 4400     | 22.14  | 22.30 | 22.07 |
| 3500     | 4500     | 21.90  | 21.93 | 21.63 |
| 3600     | 4600     | 21.52  | 21.50 | 21.20 |
| 3700     | 4700     | 20.65  | 20.94 | 20.77 |
| 3800     | 4800     | 18.99  | 19.61 | 19.73 |
| 3900     | 4900     | 17.13  | 18.10 | 18.52 |
| 4000     | 5000     | 15.01  | 16.18 | 17.06 |
| 4100     | 5100     | 13.96  | 15.27 | 16.31 |
| 4200     | 5200     | 12.88  | 14.27 | 15.48 |
| 4300     | 5300     | 11.34  | 12.92 | 14.30 |
| 4400     | 5400     | 10.60  | 12.25 | 13.81 |
| 4500     | 5500     | 10.50  | 12.17 | 13.79 |
| 4600     | 5600     | 9.68   | 11.21 | 13.07 |
| 4700     | 5700     | 10.07  | 10.95 | 12.90 |
| 4800     | 5800     | 10.37  | 10.64 | 12.56 |
| 4900     | 5900     | 11.16  | 10.80 | 12.53 |
| 5000     | 6000     | 12.47  | 11.86 | 13.24 |

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO - IF<br>IF Fixed @IF=2000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 2000     | 4000     | 27.98  | 29.82 | 31.11 |
| 2100     | 4100     | 26.30  | 28.13 | 29.52 |
| 2200     | 4200     | 25.02  | 26.02 | 27.55 |
| 2300     | 4300     | 24.92  | 25.66 | 26.16 |
| 2400     | 4400     | 25.78  | 26.05 | 26.06 |
| 2500     | 4500     | 26.23  | 26.48 | 26.18 |
| 2600     | 4600     | 26.04  | 26.08 | 25.59 |
| 2700     | 4700     | 25.78  | 25.55 | 25.06 |
| 2800     | 4800     | 24.50  | 24.17 | 23.60 |
| 2900     | 4900     | 23.80  | 24.09 | 23.41 |
| 3000     | 5000     | 23.47  | 24.02 | 23.97 |
| 3100     | 5100     | 22.99  | 23.97 | 24.30 |
| 3200     | 5200     | 22.45  | 23.65 | 24.58 |
| 3300     | 5300     | 21.99  | 23.35 | 24.62 |
| 3400     | 5400     | 23.38  | 25.13 | 26.78 |
| 3500     | 5500     | 23.74  | 25.38 | 27.20 |
| 3600     | 5600     | 23.17  | 24.83 | 26.94 |
| 3700     | 5700     | 20.69  | 21.62 | 23.52 |
| 3800     | 5800     | 18.12  | 18.46 | 20.25 |
| 3900     | 5900     | 16.80  | 16.72 | 18.39 |
| 4000     | 6000     | 16.52  | 16.08 | 17.65 |

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO - IF<br>IF Fixed @IF=3000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 2000     | 5000     | 24.84  | 26.77 | 27.83 |
| 2100     | 5100     | 23.77  | 25.48 | 27.10 |
| 2200     | 5200     | 22.59  | 24.29 | 25.88 |
| 2300     | 5300     | 22.13  | 23.99 | 25.95 |
| 2400     | 5400     | 21.36  | 23.21 | 25.43 |
| 2500     | 5500     | 20.96  | 22.68 | 25.13 |
| 2600     | 5600     | 21.47  | 22.25 | 24.50 |
| 2700     | 5700     | 23.22  | 22.37 | 24.21 |
| 2800     | 5800     | 25.53  | 22.75 | 24.48 |
| 2900     | 5900     | 29.44  | 24.01 | 24.94 |
| 3000     | 6000     | 34.66  | 25.88 | 31.32 |

# Frequency Mixer

SMIQ-263H+

## Typical Performance Data

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO + IF<br>IF Fixed @IF=200 MHz (dB) |       |       |
|----------|----------|---|-------|-------|
|          |          | @LO (dBm)   |       |       |
|          |          | +17   | +18   | +19   |
| 2000     | 1800     | 10.65   | 13.27 | 15.86 |
| 2100     | 1900     | 19.32   | 23.48 | 28.03 |
| 2200     | 2000     | 33.63   | 35.22 | 29.71 |
| 2300     | 2100     | 28.61   | 25.10 | 22.93 |
| 2400     | 2200     | 25.93   | 23.99 | 23.06 |
| 2500     | 2300     | 25.32   | 24.18 | 23.48 |
| 2600     | 2400     | 23.19   | 22.63 | 22.14 |
| 2700     | 2500     | 21.70   | 21.44 | 21.31 |
| 2800     | 2600     | 23.61   | 23.72 | 23.93 |
| 2900     | 2700     | 24.17   | 24.85 | 25.55 |
| 3000     | 2800     | 23.91   | 24.59 | 25.28 |
| 3100     | 2900     | 29.26   | 30.21 | 31.50 |
| 3200     | 3000     | 23.15   | 23.61 | 24.18 |
| 3300     | 3100     | 26.14   | 26.57 | 26.66 |
| 3400     | 3200     | 23.38   | 23.84 | 24.20 |
| 3500     | 3300     | 21.06   | 21.39 | 21.72 |
| 3600     | 3400     | 22.05   | 22.59 | 23.14 |
| 3700     | 3500     | 24.21   | 24.82 | 25.35 |
| 3800     | 3600     | 23.41   | 24.02 | 24.76 |
| 3900     | 3700     | 26.89   | 28.20 | 29.43 |
| 4000     | 3800     | 27.07   | 27.96 | 29.31 |
| 4100     | 3900     | 29.10   | 29.67 | 30.70 |
| 4200     | 4000     | 35.71   | 34.65 | 35.30 |
| 4300     | 4100     | 42.54   | 38.81 | 37.87 |
| 4400     | 4200     | 36.69   | 32.57 | 30.47 |
| 4500     | 4300     | 33.98   | 30.65 | 28.44 |
| 4600     | 4400     | 31.89   | 29.44 | 27.45 |
| 4700     | 4500     | 28.33   | 27.02 | 25.61 |
| 4800     | 4600     | 25.84   | 25.27 | 24.45 |
| 4900     | 4700     | 23.49   | 23.42 | 22.88 |
| 5000     | 4800     | 20.27   | 20.80 | 20.49 |
| 5100     | 4900     | 18.22   | 19.06 | 19.45 |
| 5200     | 5000     | 16.72   | 17.86 | 18.65 |
| 5300     | 5100     | 15.32   | 16.66 | 17.60 |
| 5400     | 5200     | 13.59   | 15.02 | 16.17 |
| 5500     | 5300     | 12.80   | 14.22 | 15.54 |
| 5600     | 5400     | 12.39   | 13.83 | 15.23 |
| 5700     | 5500     | 11.64   | 13.10 | 14.66 |
| 5800     | 5600     | 11.93   | 12.85 | 14.49 |
| 5900     | 5700     | 12.37   | 12.20 | 13.78 |
| 6000     | 5800     | 12.81   | 11.70 | 13.32 |

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO + IF<br>IF Fixed @IF=1000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 3000     | 2000     | 16.13  | 15.16 | 14.36 |
| 3100     | 2100     | 18.83  | 17.64 | 15.59 |
| 3200     | 2200     | 20.06  | 19.32 | 18.11 |
| 3300     | 2300     | 30.55  | 28.69 | 25.33 |
| 3400     | 2400     | 28.58  | 28.32 | 27.80 |
| 3500     | 2500     | 29.47  | 30.78 | 34.05 |
| 3600     | 2600     | 42.52  | 49.95 | 36.39 |
| 3700     | 2700     | 28.83  | 28.66 | 27.06 |
| 3800     | 2800     | 26.31  | 26.91 | 27.21 |
| 3900     | 2900     | 22.80  | 23.09 | 23.60 |
| 4000     | 3000     | 21.61  | 21.89 | 22.44 |
| 4100     | 3100     | 19.76  | 20.06 | 20.54 |
| 4200     | 3200     | 19.18  | 19.49 | 20.02 |
| 4300     | 3300     | 17.87  | 18.11 | 18.64 |
| 4400     | 3400     | 17.62  | 17.96 | 18.61 |
| 4500     | 3500     | 17.48  | 17.84 | 18.60 |
| 4600     | 3600     | 17.92  | 18.32 | 19.29 |
| 4700     | 3700     | 17.30  | 17.80 | 19.07 |
| 4800     | 3800     | 17.72  | 18.43 | 19.86 |
| 4900     | 3900     | 17.73  | 18.61 | 20.42 |
| 5000     | 4000     | 17.49  | 18.20 | 20.13 |
| 5100     | 4100     | 18.24  | 18.71 | 20.48 |
| 5200     | 4200     | 19.49  | 19.89 | 21.04 |
| 5300     | 4300     | 21.17  | 21.58 | 22.00 |
| 5400     | 4400     | 22.09  | 22.32 | 21.78 |
| 5500     | 4500     | 21.84  | 21.95 | 21.06 |
| 5600     | 4600     | 21.53  | 21.56 | 20.77 |
| 5700     | 4700     | 20.75  | 20.97 | 20.41 |
| 5800     | 4800     | 19.12  | 19.65 | 19.49 |
| 5900     | 4900     | 17.24  | 18.17 | 18.51 |
| 6000     | 5000     | 15.07  | 16.24 | 17.46 |

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO + IF<br>IF Fixed @IF=2000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 4000     | 2000     | 11.72  | 10.99 | 10.52 |
| 4100     | 2100     | 11.30  | 10.90 | 10.57 |
| 4200     | 2200     | 11.18  | 10.92 | 10.75 |
| 4300     | 2300     | 10.88  | 10.77 | 10.61 |
| 4400     | 2400     | 11.48  | 11.35 | 11.17 |
| 4500     | 2500     | 11.32  | 11.20 | 11.00 |
| 4600     | 2600     | 12.46  | 12.46 | 12.29 |
| 4700     | 2700     | 10.92  | 10.92 | 10.88 |
| 4800     | 2800     | 11.35  | 11.43 | 11.46 |
| 4900     | 2900     | 11.06  | 11.15 | 11.32 |
| 5000     | 3000     | 12.73  | 12.90 | 13.02 |
| 5100     | 3100     | 12.58  | 12.68 | 12.85 |
| 5200     | 3200     | 14.36  | 14.51 | 14.60 |
| 5300     | 3300     | 14.90  | 15.09 | 15.13 |
| 5400     | 3400     | 13.95  | 14.01 | 14.15 |
| 5500     | 3500     | 13.58  | 13.79 | 13.93 |
| 5600     | 3600     | 13.07  | 13.31 | 13.54 |
| 5700     | 3700     | 13.68  | 13.85 | 14.11 |
| 5800     | 3800     | 14.83  | 14.96 | 15.25 |
| 5900     | 3900     | 14.82  | 14.85 | 14.96 |
| 6000     | 4000     | 20.52  | 18.59 | 20.70 |

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO + IF<br>IF Fixed @IF=3000 MHz (dB) |       |       |
|----------|----------|--|-------|-------|
|          |          | @LO (dBm)  |       |       |
|          |          | +17  | +18   | +19   |
| 5000     | 2000     | 11.85  | 12.69 | 12.93 |
| 5100     | 2100     | 9.64   | 9.89  | 10.25 |
| 5200     | 2200     | 8.61   | 9.04  | 9.55  |
| 5300     | 2300     | 11.63  | 11.85 | 12.09 |
| 5400     | 2400     | 12.64  | 12.84 | 12.94 |
| 5500     | 2500     | 13.74  | 13.87 | 14.10 |
| 5600     | 2600     | 15.00  | 15.15 | 15.27 |
| 5700     | 2700     | 14.81  | 15.02 | 15.24 |
| 5800     | 2800     | 16.08  | 16.28 | 16.43 |
| 5900     | 2900     | 16.21  | 16.37 | 16.60 |
| 6000     | 3000     | 13.89  | 14.06 | 14.20 |

# Frequency Mixer

# SMIQ-263H+

## Typical Performance Data

| RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO-IF<br>IF Fixed @IF=200 MHz (dB) |       |        | RF (MHz) | LO (MHz) | Image Rejection (Upconverter Mode)<br>RF = LO+IF<br>IF Fixed @IF=200 MHz (dB) |       |        |
|----------|----------|---|-------|--------|----------|----------|---|-------|--------|
|          |          | @LO (dBm)   |       |        |          |          | @LO (dBm)   |       |        |
|          |          | -55°C   | +25°C | +100°C |          |          | -55°C   | +25°C | +100°C |
| 1800     | 2000     | 32.86   | 35.75 | 30.99  | 2000     | 1800     | 10.10   | 13.27 | 16.75  |
| 1900     | 2100     | 26.31   | 25.24 | 24.24  | 2100     | 1900     | 18.63   | 23.48 | 30.50  |
| 2000     | 2200     | 24.95   | 24.14 | 23.76  | 2200     | 2000     | 33.05   | 35.22 | 30.98  |
| 2100     | 2300     | 24.44   | 24.33 | 24.08  | 2300     | 2100     | 26.22   | 25.10 | 24.19  |
| 2200     | 2400     | 22.49   | 22.74 | 22.90  | 2400     | 2200     | 24.94   | 23.99 | 23.72  |
| 2300     | 2500     | 20.97   | 21.50 | 22.33  | 2500     | 2300     | 24.44   | 24.18 | 24.09  |
| 2400     | 2600     | 22.18   | 23.83 | 25.46  | 2600     | 2400     | 22.50   | 22.63 | 22.91  |
| 2500     | 2700     | 22.81   | 24.88 | 26.99  | 2700     | 2500     | 20.95   | 21.44 | 22.31  |
| 2600     | 2800     | 23.16   | 24.59 | 25.91  | 2800     | 2600     | 22.16   | 23.72 | 25.54  |
| 2700     | 2900     | 28.71   | 30.45 | 31.58  | 2900     | 2700     | 22.81   | 24.85 | 27.01  |
| 2800     | 3000     | 23.19   | 23.70 | 24.25  | 3000     | 2800     | 23.14   | 24.59 | 25.99  |
| 2900     | 3100     | 27.02   | 26.64 | 26.15  | 3100     | 2900     | 28.78   | 30.21 | 31.39  |
| 3000     | 3200     | 24.05   | 23.92 | 24.13  | 3200     | 3000     | 23.17   | 23.61 | 24.22  |
| 3100     | 3300     | 21.11   | 21.50 | 22.14  | 3300     | 3100     | 27.04   | 26.57 | 26.04  |
| 3200     | 3400     | 21.81   | 22.66 | 23.93  | 3400     | 3200     | 23.95   | 23.84 | 24.13  |
| 3300     | 3500     | 23.41   | 24.96 | 26.89  | 3500     | 3300     | 21.13   | 21.39 | 22.11  |
| 3400     | 3600     | 22.39   | 24.28 | 26.11  | 3600     | 3400     | 21.82   | 22.59 | 23.88  |
| 3500     | 3700     | 26.71   | 28.52 | 30.72  | 3700     | 3500     | 23.40   | 24.82 | 26.79  |
| 3600     | 3800     | 26.33   | 28.35 | 30.68  | 3800     | 3600     | 22.32   | 24.02 | 26.13  |
| 3700     | 3900     | 27.02   | 29.89 | 34.05  | 3900     | 3700     | 26.66   | 28.20 | 30.77  |
| 3800     | 4000     | 30.97   | 35.66 | 43.22  | 4000     | 3800     | 26.30   | 27.96 | 30.66  |
| 3900     | 4100     | 39.98   | 39.02 | 36.65  | 4100     | 3900     | 27.02   | 29.67 | 33.92  |
| 4000     | 4200     | 34.34   | 32.29 | 30.33  | 4200     | 4000     | 31.02   | 34.65 | 43.36  |
| 4100     | 4300     | 31.46   | 30.23 | 28.47  | 4300     | 4100     | 40.08   | 38.81 | 36.66  |
| 4200     | 4400     | 31.39   | 29.03 | 26.77  | 4400     | 4200     | 34.43   | 32.57 | 30.29  |
| 4300     | 4500     | 29.32   | 26.58 | 24.68  | 4500     | 4300     | 31.45   | 30.65 | 28.46  |
| 4400     | 4600     | 27.67   | 24.99 | 23.25  | 4600     | 4400     | 31.35   | 29.44 | 26.83  |
| 4500     | 4700     | 24.98   | 23.14 | 21.97  | 4700     | 4500     | 29.24   | 27.02 | 24.70  |
| 4600     | 4800     | 21.74   | 20.60 | 19.81  | 4800     | 4600     | 27.73   | 25.27 | 23.31  |
| 4700     | 4900     | 19.65   | 18.93 | 18.80  | 4900     | 4700     | 25.00   | 23.42 | 21.97  |
| 4800     | 5000     | 17.84   | 17.73 | 17.93  | 5000     | 4800     | 21.76   | 20.80 | 19.80  |
| 4900     | 5100     | 16.25   | 16.49 | 16.92  | 5100     | 4900     | 19.66   | 19.06 | 18.81  |
| 5000     | 5200     | 14.43   | 14.90 | 15.67  | 5200     | 5000     | 17.83   | 17.86 | 17.92  |
| 5100     | 5300     | 13.36   | 14.15 | 15.12  | 5300     | 5100     | 16.26   | 16.66 | 16.92  |
| 5200     | 5400     | 12.89   | 13.76 | 14.86  | 5400     | 5200     | 14.46   | 15.02 | 15.68  |
| 5300     | 5500     | 11.91   | 13.03 | 14.31  | 5500     | 5300     | 13.37   | 14.22 | 15.13  |
| 5400     | 5600     | 11.68   | 12.83 | 14.16  | 5600     | 5400     | 12.91   | 13.83 | 14.86  |
| 5500     | 5700     | 11.14   | 12.16 | 13.55  | 5700     | 5500     | 11.92   | 13.10 | 14.31  |
| 5600     | 5800     | 10.94   | 11.68 | 13.19  | 5800     | 5600     | 11.69   | 12.85 | 14.17  |
| 5700     | 5900     | 12.27   | 12.03 | 13.35  | 5900     | 5700     | 11.16   | 12.20 | 13.56  |
| 5800     | 6000     | 13.69   | 12.45 | 13.35  | 6000     | 5800     | 10.93   | 11.70 | 13.24  |

Typical Performance Data

| RF<br>(MHz) | GAIN COMPRESSION<br>(I) |       |       | GAIN COMPRESSION<br>(Q) |       |       | GAIN COMPRESSION<br>(I) |       |       | GAIN COMPRESSION<br>(Q) |       |       | GAIN COMPRESSION<br>(I) |       |       | GAIN COMPRESSION<br>(Q) |       |       |                       |  |  |  |  |  |  |  |  |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|-------------------------|-------|-------|-------------------------|-------|-------|-------------------------|-------|-------|-------------------------|-------|-------|-----------------------|--|--|--|--|--|--|--|--|
|             | IF = LO-RF = 200 MHz    |       |       |                         |       |       |                         |       |       | IF = LO-RF = 1000 MHz   |       |       |                         |       |       |                         |       |       | IF = LO-RF = 2000 MHz |  |  |  |  |  |  |  |  |
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       | @LO (dBm)               |       |       | @LO (dBm)               |       |       | @LO (dBm)               |       |       | @LO (dBm)               |       |       |                       |  |  |  |  |  |  |  |  |
|             | +17                     | +18   | +19   | +17                     | +18   | +19   | +17                     | +18   | +19   | +17                     | +18   | +19   | +17                     | +18   | +19   | +17                     | +18   | +19   |                       |  |  |  |  |  |  |  |  |
| 2000        | -4.69                   | -4.50 | -4.34 | -4.06                   | -3.87 | -3.72 | -2.25                   | -2.19 | -2.14 | -2.89                   | -2.73 | -2.59 | -3.69                   | -3.28 | -3.00 | -2.25                   | -2.00 | -1.83 |                       |  |  |  |  |  |  |  |  |
| 2100        | -4.84                   | -4.65 | -4.48 | -4.25                   | -4.06 | -3.90 | -2.25                   | -2.18 | -2.12 | -2.98                   | -2.81 | -2.65 | -3.57                   | -3.15 | -2.85 | -2.25                   | -1.99 | -1.81 |                       |  |  |  |  |  |  |  |  |
| 2200        | -4.93                   | -4.74 | -4.56 | -4.44                   | -4.23 | -4.07 | -2.23                   | -2.15 | -2.08 | -3.05                   | -2.87 | -2.70 | -3.41                   | -2.96 | -2.65 | -2.24                   | -1.98 | -1.80 |                       |  |  |  |  |  |  |  |  |
| 2300        | -4.91                   | -4.72 | -4.55 | -4.60                   | -4.39 | -4.21 | -2.11                   | -2.03 | -1.95 | -3.07                   | -2.88 | -2.71 | -3.18                   | -2.73 | -2.40 | -2.23                   | -1.96 | -1.77 |                       |  |  |  |  |  |  |  |  |
| 2400        | -4.79                   | -4.61 | -4.44 | -4.68                   | -4.46 | -4.27 | -1.93                   | -1.83 | -1.76 | -3.02                   | -2.82 | -2.65 | -2.88                   | -2.43 | -2.10 | -2.16                   | -1.90 | -1.70 |                       |  |  |  |  |  |  |  |  |
| 2500        | -4.28                   | -4.11 | -3.95 | -4.41                   | -4.19 | -4.00 | -1.53                   | -1.44 | -1.38 | -2.68                   | -2.48 | -2.32 | -2.58                   | -2.14 | -1.82 | -2.04                   | -1.79 | -1.61 |                       |  |  |  |  |  |  |  |  |
| 2600        | -3.77                   | -3.62 | -3.48 | -4.18                   | -3.95 | -3.76 | -1.24                   | -1.16 | -1.12 | -2.41                   | -2.23 | -2.09 | -2.30                   | -1.88 | -1.56 | -1.93                   | -1.69 | -1.51 |                       |  |  |  |  |  |  |  |  |
| 2700        | -3.23                   | -3.10 | -2.97 | -3.93                   | -3.70 | -3.51 | -0.86                   | -0.80 | -0.78 | -2.05                   | -1.89 | -1.78 | -2.01                   | -1.61 | -1.31 | -1.75                   | -1.53 | -1.37 |                       |  |  |  |  |  |  |  |  |
| 2800        | -2.69                   | -2.58 | -2.48 | -3.59                   | -3.37 | -3.17 | -0.60                   | -0.54 | -0.54 | -1.71                   | -1.58 | -1.49 | -1.75                   | -1.40 | -1.10 | -1.56                   | -1.37 | -1.23 |                       |  |  |  |  |  |  |  |  |
| 2900        | -2.13                   | -2.04 | -1.96 | -3.17                   | -2.96 | -2.77 | -0.31                   | -0.27 | -0.28 | -1.29                   | -1.18 | -1.12 | -1.68                   | -1.37 | -1.10 | -1.45                   | -1.27 | -1.15 |                       |  |  |  |  |  |  |  |  |
| 3000        | -1.79                   | -1.71 | -1.63 | -2.85                   | -2.64 | -2.46 | -0.29                   | -0.22 | -0.23 | -1.08                   | -0.97 | -0.92 | -1.67                   | -1.40 | -1.15 | -1.33                   | -1.16 | -1.07 |                       |  |  |  |  |  |  |  |  |
| 3100        | -1.53                   | -1.46 | -1.38 | -2.56                   | -2.37 | -2.20 | -0.33                   | -0.25 | -0.24 | -0.94                   | -0.84 | -0.80 | -1.68                   | -1.46 | -1.21 | -1.23                   | -1.07 | -1.00 |                       |  |  |  |  |  |  |  |  |
| 3200        | -1.41                   | -1.33 | -1.26 | -2.33                   | -2.14 | -1.98 | -0.46                   | -0.35 | -0.33 | -0.89                   | -0.80 | -0.76 | -1.70                   | -1.53 | -1.28 | -1.15                   | -0.99 | -0.94 |                       |  |  |  |  |  |  |  |  |
| 3300        | -1.27                   | -1.20 | -1.13 | -2.06                   | -1.88 | -1.72 | -0.55                   | -0.40 | -0.35 | -0.81                   | -0.72 | -0.68 | -1.66                   | -1.58 | -1.34 | -1.06                   | -0.90 | -0.86 |                       |  |  |  |  |  |  |  |  |
| 3400        | -1.20                   | -1.12 | -1.05 | -1.82                   | -1.64 | -1.50 | -0.75                   | -0.56 | -0.49 | -0.86                   | -0.75 | -0.71 | -1.68                   | -1.74 | -1.50 | -1.05                   | -0.88 | -0.85 |                       |  |  |  |  |  |  |  |  |
| 3500        | -1.16                   | -1.07 | -1.00 | -1.64                   | -1.47 | -1.34 | -0.87                   | -0.66 | -0.58 | -0.89                   | -0.78 | -0.74 | -1.64                   | -1.90 | -1.68 | -1.07                   | -0.89 | -0.85 |                       |  |  |  |  |  |  |  |  |
| 3600        | -1.16                   | -1.06 | -0.99 | -1.50                   | -1.33 | -1.21 | -1.03                   | -0.78 | -0.67 | -1.02                   | -0.87 | -0.82 | -1.41                   | -1.94 | -1.74 | -1.00                   | -0.82 | -0.79 |                       |  |  |  |  |  |  |  |  |
| 3700        | -1.06                   | -0.97 | -0.91 | -1.30                   | -1.14 | -1.04 | -1.03                   | -0.77 | -0.66 | -0.98                   | -0.83 | -0.78 | -1.10                   | -2.02 | -1.86 | -0.98                   | -0.80 | -0.76 |                       |  |  |  |  |  |  |  |  |
| 3800        | -1.00                   | -0.91 | -0.87 | -1.14                   | -1.01 | -0.92 | -1.03                   | -0.76 | -0.65 | -0.93                   | -0.77 | -0.73 | -0.66                   | -2.09 | -2.05 | -0.97                   | -0.78 | -0.75 |                       |  |  |  |  |  |  |  |  |
| 3900        | -0.89                   | -0.82 | -0.80 | -0.96                   | -0.86 | -0.80 | -1.03                   | -0.75 | -0.61 | -0.90                   | -0.70 | -0.65 | -0.05                   | -2.08 | -2.26 | -0.91                   | -0.74 | -0.73 |                       |  |  |  |  |  |  |  |  |
| 4000        | -0.76                   | -0.72 | -0.72 | -0.77                   | -0.72 | -0.70 | -1.01                   | -0.72 | -0.56 | -0.79                   | -0.60 | -0.54 | -0.35                   | -1.95 | -2.49 | -0.77                   | -0.65 | -0.69 |                       |  |  |  |  |  |  |  |  |
| 4100        | -0.60                   | -0.58 | -0.60 | -0.55                   | -0.54 | -0.57 | -0.99                   | -0.70 | -0.51 | -0.64                   | -0.47 | -0.41 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4200        | -0.47                   | -0.48 | -0.53 | -0.35                   | -0.39 | -0.45 | -1.01                   | -0.75 | -0.52 | -0.54                   | -0.37 | -0.31 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4300        | -0.41                   | -0.44 | -0.52 | -0.22                   | -0.30 | -0.40 | -1.07                   | -0.84 | -0.56 | -0.42                   | -0.29 | -0.24 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4400        | -0.28                   | -0.31 | -0.40 | -0.03                   | -0.12 | -0.24 | -1.08                   | -0.90 | -0.58 | -0.26                   | -0.17 | -0.13 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4500        | -0.17                   | -0.19 | -0.29 | 0.14                    | 0.05  | -0.09 | -0.83                   | -0.97 | -0.67 | -0.08                   | -0.04 | -0.02 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4600        | -0.12                   | -0.12 | -0.21 | 0.24                    | 0.16  | 0.03  | -0.75                   | -1.05 | -0.73 | -0.18                   | -0.14 | -0.12 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4700        | -0.18                   | -0.13 | -0.18 | 0.27                    | 0.23  | 0.12  | -0.22                   | -1.11 | -0.88 | -0.28                   | -0.24 | -0.22 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4800        | -0.32                   | -0.21 | -0.21 | 0.21                    | 0.21  | 0.14  | -0.52                   | -0.96 | -1.03 | -0.58                   | -0.54 | -0.52 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 4900        | -0.45                   | -0.29 | -0.24 | 0.13                    | 0.19  | 0.15  | -0.72                   | -0.97 | -1.14 | -0.78                   | -0.74 | -0.72 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5000        | -0.57                   | -0.36 | -0.26 | 0.05                    | 0.16  | 0.17  | -1.12                   | -0.65 | -1.25 | -1.18                   | -1.14 | -1.12 |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5100        | -0.74                   | -0.52 | -0.36 | -0.08                   | 0.06  | 0.10  |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5200        | -0.92                   | -0.69 | -0.48 | -0.23                   | -0.07 | 0.02  |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5300        | -0.95                   | -0.88 | -0.64 | -0.41                   | -0.22 | -0.10 |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5400        | -1.00                   | -1.00 | -0.74 | -0.53                   | -0.34 | -0.21 |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5500        | -0.77                   | -1.14 | -0.90 | -0.69                   | -0.49 | -0.34 |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5600        | -0.10                   | -1.16 | -1.08 | -0.86                   | -0.64 | -0.48 |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5700        | -0.15                   | -1.32 | -1.26 | -1.03                   | -0.79 | -0.61 |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |
| 5800        | -0.19                   | -1.46 | -1.43 | -1.19                   | -0.93 | -0.74 |                         |       |       |                         |       |       |                         |       |       |                         |       |       |                       |  |  |  |  |  |  |  |  |

# Frequency Mixer DiεSMIQ-263H+

## Typical Performance Data

| LO<br>(MHz) | GAIN COMPRESSION<br>(I) |       |       | GAIN COMPRESSION<br>(Q) |       |       |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|
|             | IF = LO-RF = 3000 MHz   |       |       |                         |       |       |
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       |
|             | +17                     | +18   | +19   | +17                     | +18   | +19   |
| 2000        | -5.77                   | -5.04 | -4.36 | -6.60                   | -5.95 | -5.37 |
| 2100        | -5.82                   | -5.12 | -4.43 | -6.77                   | -6.11 | -5.54 |
| 2200        | -5.82                   | -5.17 | -4.48 | -6.87                   | -6.22 | -5.66 |
| 2300        | -5.72                   | -5.13 | -4.45 | -6.83                   | -6.21 | -5.67 |
| 2400        | -5.53                   | -5.02 | -4.35 | -6.66                   | -6.08 | -5.57 |
| 2500        | -4.79                   | -4.58 | -4.01 | -6.07                   | -5.57 | -5.13 |
| 2600        | -4.20                   | -4.19 | -3.67 | -5.41                   | -5.01 | -4.63 |
| 2700        | -3.28                   | -3.33 | -2.92 | -3.25                   | -3.03 | -2.77 |
| 2800        | -2.38                   | -2.81 | -2.67 | -2.36                   | -2.34 | -2.22 |
| 2900        | -1.53                   | -2.33 | -2.30 | -1.48                   | -1.63 | -1.60 |
| 3000        | -0.66                   | -1.92 | -2.22 | -0.98                   | -1.16 | -1.23 |

# Frequency Mixer DiεSMIQ-263H+

## Typical Performance Data

| LO<br>(MHz) | GAIN COMPRESSION<br>(I) |       |        | GAIN COMPRESSION<br>(Q) |       |        |
|-------------|-------------------------|-------|--------|-------------------------|-------|--------|
|             | IF = LO-RF = 200 MHz    |       |        | IF = LO-RF = 200 MHz    |       |        |
|             | @ TEMPERATURE           |       |        | @ TEMPERATURE           |       |        |
|             | -55°C                   | +25°C | +100°C | -55°C                   | +25°C | +100°C |
| 2000        | -4.02                   | -4.50 | -4.10  | -3.29                   | -3.87 | -3.25  |
| 2100        | -4.21                   | -4.65 | -4.28  | -3.48                   | -4.06 | -3.45  |
| 2200        | -4.36                   | -4.74 | -4.42  | -3.67                   | -4.23 | -3.64  |
| 2300        | -4.42                   | -4.72 | -4.48  | -3.87                   | -4.39 | -3.83  |
| 2400        | -4.37                   | -4.61 | -4.43  | -3.99                   | -4.46 | -3.96  |
| 2500        | -3.94                   | -4.11 | -3.98  | -3.79                   | -4.19 | -3.77  |
| 2600        | -3.48                   | -3.62 | -3.53  | -3.62                   | -3.95 | -3.61  |
| 2700        | -2.98                   | -3.10 | -3.03  | -3.45                   | -3.70 | -3.44  |
| 2800        | -2.49                   | -2.58 | -2.53  | -3.18                   | -3.37 | -3.18  |
| 2900        | -1.96                   | -2.04 | -2.00  | -2.85                   | -2.96 | -2.85  |
| 3000        | -1.59                   | -1.71 | -1.64  | -2.56                   | -2.64 | -2.57  |
| 3100        | -1.29                   | -1.46 | -1.35  | -2.29                   | -2.37 | -2.30  |
| 3200        | -1.12                   | -1.33 | -1.19  | -2.07                   | -2.14 | -2.08  |
| 3300        | -0.96                   | -1.20 | -1.04  | -1.79                   | -1.88 | -1.80  |
| 3400        | -0.85                   | -1.12 | -0.94  | -1.52                   | -1.64 | -1.53  |
| 3500        | -0.76                   | -1.07 | -0.85  | -1.32                   | -1.47 | -1.32  |
| 3600        | -0.70                   | -1.06 | -0.79  | -1.13                   | -1.33 | -1.13  |
| 3700        | -0.58                   | -0.97 | -0.68  | -0.89                   | -1.14 | -0.89  |
| 3800        | -0.49                   | -0.91 | -0.58  | -0.70                   | -1.01 | -0.69  |
| 3900        | -0.36                   | -0.82 | -0.45  | -0.48                   | -0.86 | -0.48  |
| 4000        | -0.21                   | -0.72 | -0.31  | -0.27                   | -0.72 | -0.26  |
| 4100        | -0.19                   | -0.58 | -0.11  | -0.01                   | -0.54 | -0.10  |
| 4200        | -0.17                   | -0.48 | -0.09  | -0.03                   | -0.39 | -0.13  |
| 4300        | -0.15                   | -0.44 | -0.07  | -0.05                   | -0.30 | -0.15  |
| 4400        | -0.13                   | -0.31 | -0.05  | -0.07                   | -0.12 | -0.17  |
| 4500        | -0.11                   | -0.19 | -0.03  | -0.09                   | 0.05  | -0.19  |
| 4600        | -0.09                   | -0.12 | -0.01  | -0.11                   | 0.16  | -0.21  |
| 4700        | -0.07                   | -0.13 | -0.03  | -0.13                   | 0.23  | -0.23  |
| 4800        | -0.05                   | -0.21 | -0.05  | -0.11                   | 0.21  | -0.21  |
| 4900        | -0.03                   | -0.29 | -0.07  | -0.09                   | 0.19  | -0.19  |
| 5000        | -0.01                   | -0.36 | -0.09  | -0.07                   | 0.16  | -0.17  |
| 5100        | 0.00                    | -0.52 | -0.11  | -0.05                   | 0.06  | -0.15  |
| 5200        | 0.00                    | -0.69 | -0.12  | -0.03                   | -0.07 | -0.13  |
| 5300        | -0.10                   | -0.88 | -0.27  | -0.07                   | -0.22 | -0.11  |
| 5400        | -0.23                   | -1.00 | -0.40  | -0.11                   | -0.34 | -0.09  |
| 5500        | -0.17                   | -1.14 | -0.44  | -0.15                   | -0.49 | -0.01  |
| 5600        | -0.19                   | -1.16 | -0.15  | -0.18                   | -0.64 | -0.19  |
| 5700        | -0.21                   | -1.32 | -0.21  | -0.36                   | -0.79 | -0.37  |
| 5800        | -0.23                   | -1.46 | -0.25  | -0.53                   | -0.93 | -0.54  |

# Frequency Mixer

**SMIQ-263H+**

## Typical Performance Data

| RF<br>(MHz) | Input IP3<br>(I)     |       |       | Input IP3<br>(Q) |       |       | Input IP3<br>(I) |       |       | Input IP3<br>(Q)      |       |       | Input IP3<br>(I) |       |       | Input IP3<br>(Q) |       |       |                       |  |  |  |  |  |  |  |  |
|-------------|----------------------|-------|-------|------------------|-------|-------|------------------|-------|-------|-----------------------|-------|-------|------------------|-------|-------|------------------|-------|-------|-----------------------|--|--|--|--|--|--|--|--|
|             | IF = LO-RF = 200 MHz |       |       |                  |       |       |                  |       |       | IF = LO-RF = 1000 MHz |       |       |                  |       |       |                  |       |       | IF = LO-RF = 2000 MHz |  |  |  |  |  |  |  |  |
|             | @LO (dBm)            |       |       | @LO (dBm)        |       |       | @LO (dBm)        |       |       | @LO (dBm)             |       |       | @LO (dBm)        |       |       | @LO (dBm)        |       |       |                       |  |  |  |  |  |  |  |  |
|             | +17                  | +18   | +19   | +17              | +18   | +19   | +17              | +18   | +19   | +17                   | +18   | +19   | +17              | +18   | +19   | +17              | +18   | +19   |                       |  |  |  |  |  |  |  |  |
| 2000        | 16.79                | 16.96 | 17.18 | 19.33            | 19.55 | 19.66 | 14.03            | 14.33 | 14.60 | 14.56                 | 14.97 | 15.37 | 17.71            | 18.68 | 19.53 | 15.97            | 16.66 | 17.34 |                       |  |  |  |  |  |  |  |  |
| 2100        | 17.05                | 17.13 | 17.43 | 19.72            | 19.95 | 20.23 | 13.86            | 14.28 | 14.72 | 14.69                 | 15.24 | 15.68 | 18.29            | 19.25 | 20.45 | 16.80            | 17.76 | 18.15 |                       |  |  |  |  |  |  |  |  |
| 2200        | 16.61                | 16.69 | 16.79 | 19.62            | 19.72 | 20.03 | 13.64            | 14.33 | 14.90 | 14.52                 | 15.15 | 15.67 | 18.45            | 19.65 | 20.80 | 16.62            | 18.32 | 19.11 |                       |  |  |  |  |  |  |  |  |
| 2300        | 16.48                | 16.65 | 16.78 | 19.43            | 19.52 | 19.67 | 14.15            | 14.90 | 15.62 | 14.79                 | 15.38 | 15.97 | 19.70            | 21.60 | 23.29 | 17.11            | 19.07 | 20.23 |                       |  |  |  |  |  |  |  |  |
| 2400        | 16.10                | 16.33 | 16.52 | 18.61            | 18.84 | 18.93 | 14.20            | 15.06 | 15.91 | 14.09                 | 14.75 | 15.40 | 19.86            | 22.20 | 25.43 | 16.63            | 18.89 | 20.73 |                       |  |  |  |  |  |  |  |  |
| 2500        | 16.19                | 16.47 | 16.85 | 18.66            | 18.76 | 18.87 | 15.54            | 16.61 | 17.65 | 13.90                 | 14.62 | 15.30 | 21.23            | 22.54 | 26.79 | 17.18            | 18.83 | 21.11 |                       |  |  |  |  |  |  |  |  |
| 2600        | 16.23                | 16.43 | 16.84 | 17.86            | 18.31 | 18.49 | 16.58            | 17.99 | 19.21 | 13.53                 | 14.34 | 15.31 | 22.31            | 22.24 | 25.08 | 18.27            | 18.73 | 20.82 |                       |  |  |  |  |  |  |  |  |
| 2700        | 17.60                | 17.87 | 18.05 | 17.76            | 18.26 | 18.58 | 17.79            | 19.10 | 20.59 | 13.50                 | 14.39 | 15.40 | 19.78            | 21.24 | 22.35 | 22.12            | 20.39 | 21.64 |                       |  |  |  |  |  |  |  |  |
| 2800        | 18.72                | 19.20 | 19.56 | 17.64            | 18.10 | 18.46 | 17.88            | 18.51 | 19.73 | 13.34                 | 14.35 | 15.32 | 20.25            | 20.88 | 21.02 | 26.86            | 21.80 | 21.80 |                       |  |  |  |  |  |  |  |  |
| 2900        | 20.22                | 20.89 | 21.85 | 17.92            | 18.56 | 18.95 | 18.03            | 18.54 | 19.29 | 13.85                 | 14.85 | 15.95 | 23.07            | 23.34 | 22.33 | 25.44            | 23.50 | 22.15 |                       |  |  |  |  |  |  |  |  |
| 3000        | 21.22                | 22.04 | 22.97 | 17.97            | 18.65 | 19.30 | 18.26            | 18.60 | 19.26 | 15.22                 | 15.93 | 16.83 | 24.77            | 25.48 | 25.44 | 24.79            | 24.59 | 23.33 |                       |  |  |  |  |  |  |  |  |
| 3100        | 20.78                | 21.61 | 22.77 | 17.96            | 18.83 | 19.46 | 18.47            | 18.97 | 19.34 | 17.03                 | 17.78 | 18.15 | 23.06            | 25.37 | 25.98 | 22.65            | 24.50 | 23.47 |                       |  |  |  |  |  |  |  |  |
| 3200        | 19.38                | 20.31 | 21.12 | 17.75            | 18.61 | 19.32 | 18.61            | 19.00 | 19.34 | 18.49                 | 19.77 | 19.72 | 19.84            | 24.88 | 24.46 | 21.07            | 23.19 | 23.77 |                       |  |  |  |  |  |  |  |  |
| 3300        | 19.06                | 19.94 | 21.08 | 18.01            | 18.77 | 19.81 | 19.78            | 20.13 | 20.05 | 19.39                 | 20.67 | 20.86 | 17.54            | 25.46 | 24.49 | 20.67            | 22.96 | 24.07 |                       |  |  |  |  |  |  |  |  |
| 3400        | 18.69                | 19.71 | 20.33 | 17.98            | 18.80 | 19.51 | 20.07            | 20.96 | 21.17 | 19.37                 | 21.40 | 21.86 | 14.74            | 24.54 | 23.63 | 19.93            | 22.27 | 23.25 |                       |  |  |  |  |  |  |  |  |
| 3500        | 18.46                | 19.19 | 19.96 | 17.99            | 18.66 | 19.20 | 20.48            | 21.74 | 22.21 | 19.67                 | 22.23 | 23.73 | 13.04            | 22.18 | 23.14 | 19.88            | 22.18 | 23.49 |                       |  |  |  |  |  |  |  |  |
| 3600        | 18.63                | 19.20 | 19.69 | 18.15            | 18.99 | 19.59 | 20.14            | 21.55 | 23.84 | 20.05                 | 22.60 | 25.88 | 11.84            | 20.51 | 23.75 | 20.01            | 23.14 | 25.29 |                       |  |  |  |  |  |  |  |  |
| 3700        | 18.25                | 18.86 | 19.46 | 17.62            | 18.43 | 19.04 | 21.19            | 20.26 | 21.60 | 21.64                 | 21.59 | 23.40 | 10.80            | 17.25 | 23.52 | 20.10            | 21.92 | 24.54 |                       |  |  |  |  |  |  |  |  |
| 3800        | 17.88                | 18.72 | 19.42 | 17.70            | 18.36 | 18.95 | 20.91            | 21.76 | 21.16 | 22.35                 | 23.40 | 23.40 | 10.47            | 14.84 | 21.73 | 26.21            | 20.84 | 23.66 |                       |  |  |  |  |  |  |  |  |
| 3900        | 17.93                | 18.69 | 19.74 | 17.90            | 18.59 | 19.32 | 20.45            | 21.87 | 22.44 | 22.03                 | 25.14 | 26.16 | 8.33             | 12.76 | 20.02 | 18.51            | 19.73 | 24.07 |                       |  |  |  |  |  |  |  |  |
| 4000        | 18.10                | 19.19 | 19.83 | 17.94            | 18.98 | 19.75 | 20.86            | 21.05 | 22.32 | 22.73                 | 24.30 | 28.22 | 4.31             | 11.16 | 17.56 | 13.40            | 19.27 | 22.65 |                       |  |  |  |  |  |  |  |  |
| 4100        | 18.68                | 19.70 | 20.48 | 18.20            | 19.57 | 20.13 | 21.04            | 20.78 | 21.70 | 25.36                 | 25.00 | 25.97 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4200        | 18.86                | 20.16 | 20.81 | 18.25            | 20.13 | 20.96 | 21.48            | 21.03 | 21.61 | 29.63                 | 26.76 | 27.80 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4300        | 18.80                | 20.42 | 21.79 | 18.20            | 20.30 | 21.90 | 21.43            | 21.00 | 21.38 | 34.39                 | 27.92 | 28.61 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4400        | 18.75                | 20.08 | 21.55 | 18.25            | 20.22 | 22.09 | 19.27            | 20.61 | 21.23 | 25.16                 | 30.17 | 28.62 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4500        | 18.68                | 19.60 | 21.25 | 18.12            | 20.21 | 22.65 | 17.15            | 20.78 | 21.56 | 22.63                 | 32.48 | 29.01 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4600        | 18.39                | 19.40 | 20.24 | 17.88            | 19.52 | 21.65 | 15.43            | 19.79 | 21.27 | 21.95                 | 29.27 | 27.95 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4700        | 18.38                | 18.97 | 19.77 | 18.11            | 19.18 | 20.73 | 15.18            | 18.29 | 20.69 | 22.96                 | 28.90 | 25.06 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4800        | 19.29                | 19.87 | 20.34 | 19.42            | 19.96 | 20.96 | 17.70            | 17.42 | 21.08 | 19.10                 | 31.32 | 25.05 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 4900        | 19.60                | 20.07 | 20.50 | 19.80            | 20.68 | 21.64 | 8.38             | 15.47 | 20.18 | 14.89                 | 26.31 | 25.37 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5000        | 19.84                | 20.54 | 20.60 | 20.56            | 20.97 | 22.03 | 2.85             | 15.32 | 18.45 | 12.23                 | 20.77 | 25.79 |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5100        | 20.45                | 21.43 | 21.41 | 22.10            | 21.63 | 22.46 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5200        | 19.80                | 21.25 | 21.88 | 23.60            | 22.49 | 22.85 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5300        | 18.86                | 20.92 | 22.21 | 25.08            | 23.22 | 23.11 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5400        | 17.85                | 20.54 | 22.17 | 27.13            | 23.63 | 22.85 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5500        | 16.98                | 19.53 | 21.94 | 25.43            | 24.14 | 23.03 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5600        | 13.70                | 18.90 | 21.56 | 21.42            | 24.35 | 23.28 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5700        | 8.53                 | 18.26 | 20.84 | 18.26            | 24.29 | 23.10 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5800        | 3.39                 | 17.51 | 19.37 | 16.84            | 21.67 | 22.81 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 5900        | 1.19                 | 15.38 | 19.06 | 17.04            | 20.28 | 22.24 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |
| 6000        | 0.53                 | 13.89 | 19.08 | 17.74            | 20.25 | 21.78 |                  |       |       |                       |       |       |                  |       |       |                  |       |       |                       |  |  |  |  |  |  |  |  |



# Frequency Mixer SMIQ-263H+

*Typical Performance Data*

| RF<br>(MHz) | Input IP3<br>(I)      |       |       | Input IP3<br>(Q) |       |       |
|-------------|-----------------------|-------|-------|------------------|-------|-------|
|             | IF = LO-RF = 3000 MHz |       |       |                  |       |       |
|             | @LO (dBm)             |       |       | @LO (dBm)        |       |       |
|             | +17                   | +18   | +19   | +17              | +18   | +19   |
| 2000        | 17.22                 | 17.28 | 17.56 | 17.80            | 17.78 | 17.82 |
| 2100        | 16.71                 | 17.12 | 17.61 | 17.47            | 17.62 | 17.76 |
| 2200        | 16.06                 | 16.69 | 17.35 | 16.87            | 17.02 | 17.16 |
| 2300        | 16.42                 | 17.37 | 18.03 | 17.73            | 17.63 | 17.66 |
| 2400        | 16.28                 | 17.24 | 17.99 | 17.51            | 17.38 | 17.26 |
| 2500        | 16.75                 | 17.81 | 18.47 | 17.69            | 17.67 | 17.59 |
| 2600        | 18.72                 | 19.21 | 19.18 | 17.98            | 18.12 | 17.94 |
| 2700        | 24.63                 | 21.11 | 21.01 | 17.72            | 18.94 | 18.96 |
| 2800        | 13.75                 | 19.21 | 22.24 | 15.91            | 18.93 | 19.15 |
| 2900        | 8.33                  | 16.05 | 24.00 | 13.90            | 19.39 | 20.15 |
| 3000        | 3.66                  | 15.57 | 19.12 | 10.87            | 18.82 | 20.62 |

# Frequency Mixer

SMIQ-263H+

## Typical Performance Data

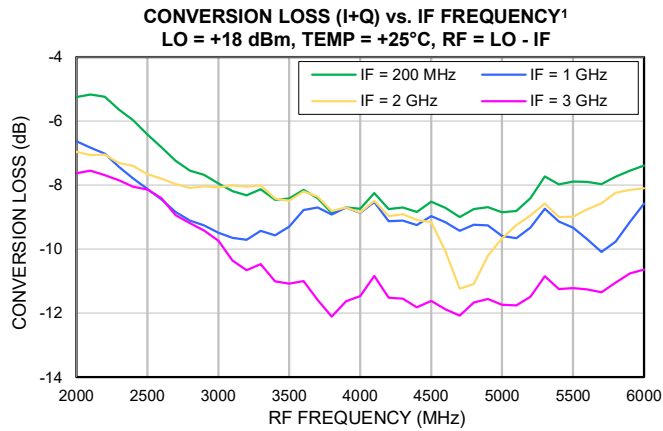
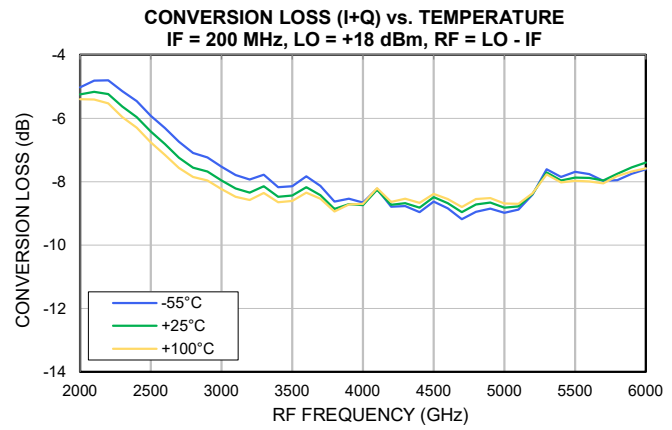
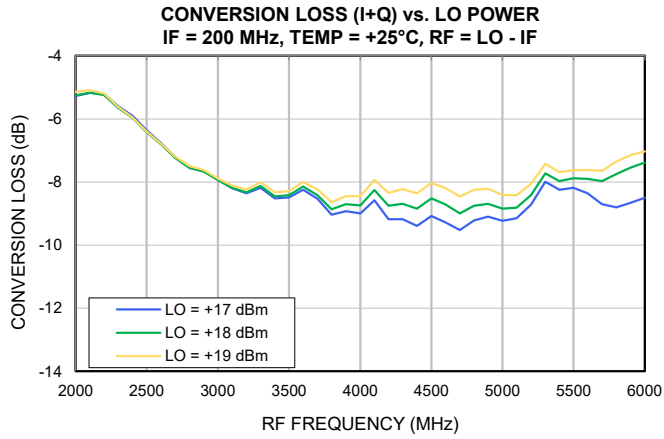
| RF<br>(MHz) | Input IP3<br>(I)     |       |        | Input IP3<br>(Q) |       |        | Input IP3<br>(I) |       |        | Input IP3<br>(Q)      |       |        | Input IP3<br>(I) |       |        | Input IP3<br>(Q) |       |        |                       |  |  |  |  |  |  |  |  |
|-------------|----------------------|-------|--------|------------------|-------|--------|------------------|-------|--------|-----------------------|-------|--------|------------------|-------|--------|------------------|-------|--------|-----------------------|--|--|--|--|--|--|--|--|
|             | IF = LO-RF = 200 MHz |       |        |                  |       |        |                  |       |        | IF = LO-RF = 1000 MHz |       |        |                  |       |        |                  |       |        | IF = LO-RF = 2000 MHz |  |  |  |  |  |  |  |  |
|             | @ TEMPERATURE        |       |        | @ TEMPERATURE    |       |        | @ TEMPERATURE    |       |        | @ TEMPERATURE         |       |        | @ TEMPERATURE    |       |        | @ TEMPERATURE    |       |        |                       |  |  |  |  |  |  |  |  |
|             | -55°C                | +25°C | +100°C | -55°C            | +25°C | +100°C | -55°C            | +25°C | +100°C | -55°C                 | +25°C | +100°C | -55°C            | +25°C | +100°C | -55°C            | +25°C | +100°C |                       |  |  |  |  |  |  |  |  |
| 2000        | 17.28                | 16.96 | 16.26  | 20.05            | 19.55 | 18.49  | 14.92            | 14.33 | 13.98  | 15.48                 | 14.97 | 14.56  | 18.50            | 18.68 | 19.03  | 15.98            | 16.66 | 17.27  |                       |  |  |  |  |  |  |  |  |
| 2100        | 17.70                | 17.13 | 16.30  | 20.60            | 19.95 | 18.74  | 14.48            | 14.28 | 14.30  | 15.62                 | 15.24 | 14.93  | 18.67            | 19.25 | 19.94  | 17.32            | 17.76 | 18.11  |                       |  |  |  |  |  |  |  |  |
| 2200        | 17.70                | 16.69 | 15.69  | 21.34            | 19.72 | 18.16  | 14.21            | 14.33 | 14.62  | 15.50                 | 15.15 | 14.84  | 19.08            | 19.65 | 20.85  | 18.14            | 18.32 | 18.70  |                       |  |  |  |  |  |  |  |  |
| 2300        | 17.77                | 16.65 | 15.73  | 21.29            | 19.52 | 17.94  | 14.57            | 14.90 | 15.44  | 16.05                 | 15.38 | 15.11  | 20.91            | 21.60 | 23.15  | 18.92            | 19.07 | 19.85  |                       |  |  |  |  |  |  |  |  |
| 2400        | 17.11                | 16.33 | 15.65  | 20.23            | 18.84 | 17.36  | 14.40            | 15.06 | 15.96  | 15.21                 | 14.75 | 14.58  | 21.53            | 22.20 | 24.24  | 18.42            | 18.89 | 19.82  |                       |  |  |  |  |  |  |  |  |
| 2500        | 16.82                | 16.47 | 16.16  | 20.16            | 18.76 | 17.45  | 15.60            | 16.61 | 17.83  | 14.99                 | 14.62 | 14.61  | 21.62            | 22.54 | 25.24  | 18.16            | 18.83 | 20.00  |                       |  |  |  |  |  |  |  |  |
| 2600        | 16.54                | 16.43 | 16.31  | 19.71            | 18.31 | 17.20  | 17.13            | 17.99 | 19.02  | 14.41                 | 14.34 | 14.69  | 21.49            | 22.24 | 23.32  | 18.08            | 18.73 | 19.79  |                       |  |  |  |  |  |  |  |  |
| 2700        | 18.07                | 17.87 | 17.60  | 18.94            | 18.26 | 17.47  | 18.66            | 19.10 | 19.86  | 14.29                 | 14.39 | 14.82  | 21.48            | 21.24 | 21.38  | 19.39            | 20.39 | 21.10  |                       |  |  |  |  |  |  |  |  |
| 2800        | 19.45                | 19.20 | 18.84  | 18.69            | 18.10 | 17.48  | 18.32            | 18.51 | 18.96  | 14.12                 | 14.35 | 14.94  | 19.68            | 20.88 | 21.72  | 22.57            | 21.80 | 21.60  |                       |  |  |  |  |  |  |  |  |
| 2900        | 21.04                | 20.89 | 20.48  | 19.18            | 18.56 | 17.90  | 18.52            | 18.54 | 18.76  | 14.35                 | 14.85 | 15.69  | 22.60            | 23.34 | 23.25  | 24.31            | 23.50 | 21.73  |                       |  |  |  |  |  |  |  |  |
| 3000        | 22.70                | 22.04 | 21.13  | 19.35            | 18.65 | 18.07  | 18.66            | 18.60 | 18.71  | 15.03                 | 15.93 | 16.92  | 25.12            | 25.48 | 25.38  | 27.30            | 24.59 | 22.39  |                       |  |  |  |  |  |  |  |  |
| 3100        | 22.91                | 21.61 | 20.73  | 19.61            | 18.83 | 18.27  | 18.70            | 18.97 | 18.95  | 16.80                 | 17.78 | 18.43  | 24.08            | 25.37 | 24.45  | 26.38            | 24.50 | 22.64  |                       |  |  |  |  |  |  |  |  |
| 3200        | 20.96                | 20.31 | 19.71  | 19.22            | 18.61 | 18.22  | 18.75            | 19.00 | 18.82  | 19.11                 | 19.77 | 19.50  | 24.91            | 24.88 | 24.14  | 23.62            | 23.19 | 22.46  |                       |  |  |  |  |  |  |  |  |
| 3300        | 20.72                | 19.94 | 19.80  | 19.45            | 18.77 | 18.44  | 19.78            | 20.13 | 19.79  | 20.80                 | 20.67 | 20.47  | 29.60            | 25.46 | 24.03  | 23.06            | 22.96 | 22.43  |                       |  |  |  |  |  |  |  |  |
| 3400        | 20.21                | 19.71 | 19.22  | 19.25            | 18.80 | 18.38  | 21.48            | 20.96 | 20.85  | 21.43                 | 21.40 | 21.54  | 27.81            | 24.54 | 23.09  | 22.15            | 22.27 | 22.61  |                       |  |  |  |  |  |  |  |  |
| 3500        | 19.58                | 19.19 | 18.62  | 19.51            | 18.66 | 18.24  | 21.71            | 21.74 | 21.78  | 21.57                 | 22.23 | 22.70  | 22.04            | 22.18 | 22.42  | 21.58            | 22.18 | 23.03  |                       |  |  |  |  |  |  |  |  |
| 3600        | 19.80                | 19.20 | 18.89  | 19.82            | 18.99 | 18.53  | 21.67            | 21.55 | 21.93  | 21.89                 | 22.60 | 23.81  | 19.42            | 20.51 | 22.74  | 22.53            | 23.14 | 24.28  |                       |  |  |  |  |  |  |  |  |
| 3700        | 19.37                | 18.86 | 18.68  | 19.32            | 18.43 | 18.12  | 19.75            | 20.26 | 20.93  | 20.27                 | 21.59 | 22.89  | 15.25            | 17.25 | 20.93  | 21.01            | 21.92 | 23.42  |                       |  |  |  |  |  |  |  |  |
| 3800        | 19.22                | 18.72 | 18.62  | 18.74            | 18.36 | 18.32  | 21.05            | 21.76 | 21.72  | 22.14                 | 23.40 | 23.72  | 12.23            | 14.84 | 19.49  | 19.46            | 20.84 | 23.12  |                       |  |  |  |  |  |  |  |  |
| 3900        | 19.01                | 18.69 | 18.90  | 18.78            | 18.59 | 18.63  | 21.27            | 21.87 | 22.07  | 23.70                 | 25.14 | 26.18  | 10.49            | 12.76 | 17.90  | 18.63            | 19.73 | 22.90  |                       |  |  |  |  |  |  |  |  |
| 4000        | 19.19                | 19.19 | 19.39  | 19.31            | 18.98 | 19.14  | 20.68            | 21.05 | 21.42  | 22.35                 | 24.30 | 26.93  | 9.72             | 11.16 | 15.71  | 22.73            | 19.27 | 21.90  |                       |  |  |  |  |  |  |  |  |
| 4100        | 19.62                | 19.70 | 19.90  | 19.26            | 19.57 | 19.88  | 20.96            | 20.78 | 21.22  | 23.68                 | 25.00 | 26.47  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4200        | 20.16                | 20.16 | 20.34  | 19.60            | 20.13 | 20.52  | 21.17            | 21.03 | 21.01  | 24.93                 | 26.76 | 27.28  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4300        | 20.26                | 20.42 | 20.71  | 19.63            | 20.30 | 21.36  | 20.71            | 21.00 | 20.85  | 27.86                 | 27.92 | 28.57  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4400        | 19.92                | 20.08 | 20.59  | 19.39            | 20.22 | 21.50  | 20.64            | 20.61 | 20.96  | 28.85                 | 30.17 | 27.26  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4500        | 19.42                | 19.60 | 20.19  | 19.27            | 20.21 | 21.60  | 20.61            | 20.78 | 20.99  | 31.72                 | 32.48 | 26.53  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4600        | 19.09                | 19.40 | 19.54  | 18.91            | 19.52 | 20.74  | 19.48            | 19.79 | 20.85  | 29.52                 | 29.27 | 24.81  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4700        | 18.58                | 18.97 | 19.33  | 18.13            | 19.18 | 20.47  | 17.15            | 18.29 | 20.08  | 24.95                 | 28.90 | 23.90  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4800        | 19.40                | 19.87 | 20.19  | 19.12            | 19.96 | 21.20  | 15.18            | 17.42 | 20.00  | 21.91                 | 31.32 | 23.97  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 4900        | 19.61                | 20.07 | 20.15  | 19.64            | 20.68 | 21.72  | 13.96            | 15.47 | 19.24  | 21.26                 | 26.31 | 24.36  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5000        | 20.10                | 20.54 | 20.41  | 19.91            | 20.97 | 21.77  | 10.79            | 15.32 | 17.92  | 15.98                 | 20.77 | 24.41  |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5100        | 21.22                | 21.43 | 21.01  | 20.91            | 21.63 | 22.24  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5200        | 21.52                | 21.25 | 21.31  | 21.75            | 22.49 | 22.80  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5300        | 21.36                | 20.92 | 21.65  | 22.43            | 23.22 | 23.14  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5400        | 20.42                | 20.54 | 21.43  | 23.70            | 23.63 | 22.70  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5500        | 19.24                | 19.53 | 20.81  | 25.85            | 24.14 | 22.89  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5600        | 18.09                | 18.90 | 20.32  | 26.95            | 24.35 | 22.96  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5700        | 17.18                | 18.26 | 19.68  | 25.37            | 24.29 | 22.55  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5800        | 10.23                | 17.51 | 19.25  | 19.32            | 21.67 | 22.04  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 5900        | 5.73                 | 15.38 | 19.01  | 17.93            | 20.28 | 21.31  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |
| 6000        | 4.01                 | 13.89 | 18.87  | 18.19            | 20.25 | 21.11  |                  |       |        |                       |       |        |                  |       |        |                  |       |        |                       |  |  |  |  |  |  |  |  |

# Frequency Mixer SMIQ-263H+

## Typical Performance Data

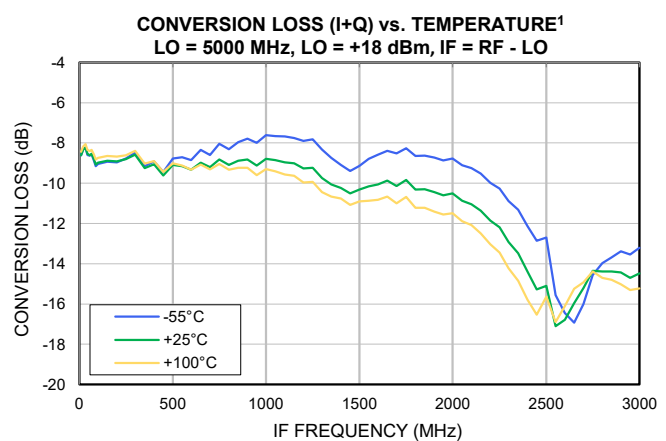
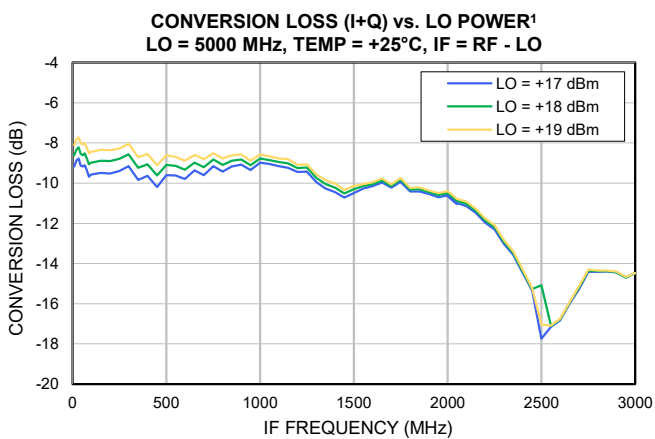
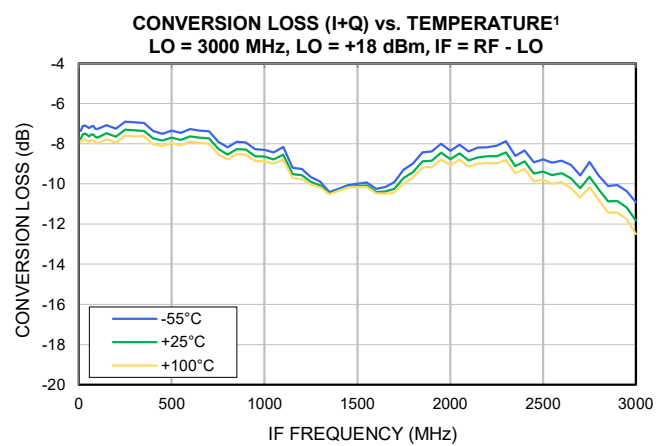
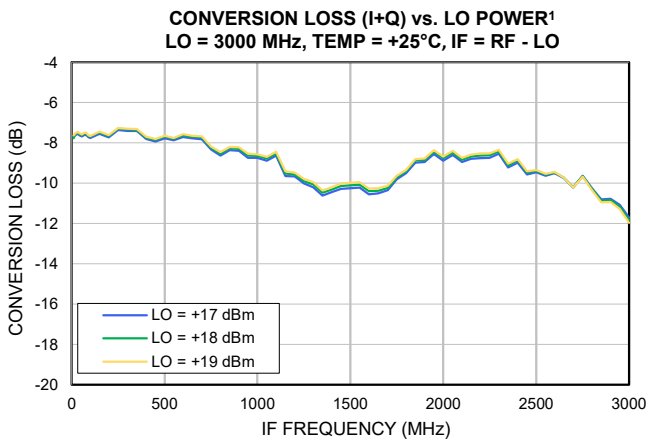
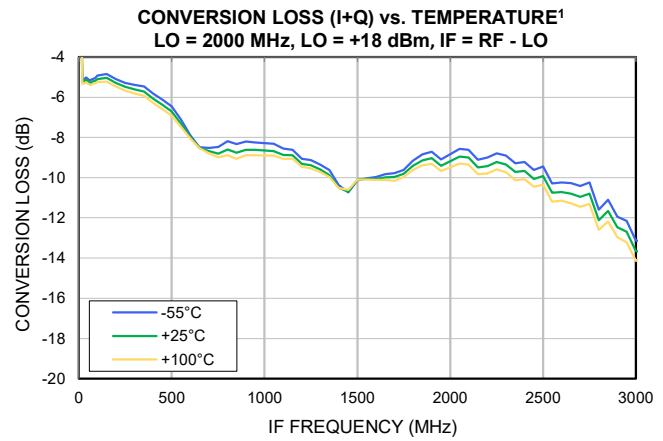
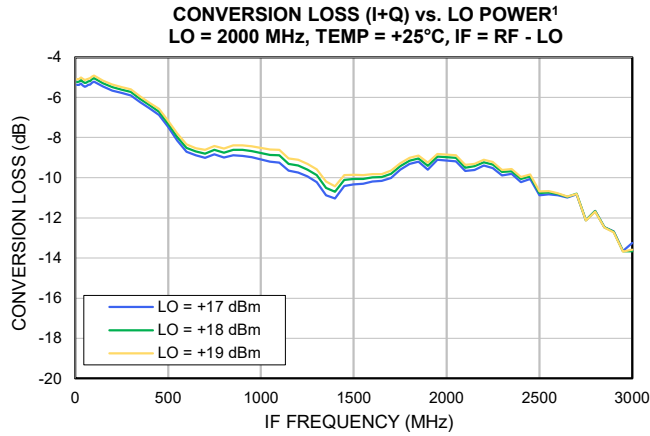
| RF<br>(MHz) | Input IP3<br>(I)      |       |        | Input IP3<br>(Q) |       |        |
|-------------|-----------------------|-------|--------|------------------|-------|--------|
|             | IF = LO-RF = 3000 MHz |       |        |                  |       |        |
|             | @ TEMPERATURE         |       |        | @ TEMPERATURE    |       |        |
|             | -55°C                 | +25°C | +100°C | -55°C            | +25°C | +100°C |
| 2000        | 18.14                 | 17.28 | 16.42  | 18.78            | 17.78 | 16.44  |
| 2100        | 17.74                 | 17.12 | 16.62  | 18.40            | 17.62 | 16.48  |
| 2200        | 17.03                 | 16.69 | 16.18  | 17.90            | 17.02 | 15.86  |
| 2300        | 18.03                 | 17.37 | 16.59  | 19.04            | 17.63 | 16.26  |
| 2400        | 17.83                 | 17.24 | 16.76  | 19.25            | 17.38 | 15.96  |
| 2500        | 17.90                 | 17.81 | 17.41  | 19.04            | 17.67 | 16.39  |
| 2600        | 18.84                 | 19.21 | 18.53  | 19.44            | 18.12 | 16.83  |
| 2700        | 20.48                 | 21.11 | 20.10  | 20.28            | 18.94 | 17.91  |
| 2800        | 17.03                 | 19.21 | 20.10  | 19.60            | 18.93 | 18.07  |
| 2900        | 14.92                 | 16.05 | 19.36  | 19.05            | 19.39 | 18.98  |
| 3000        | 9.45                  | 15.57 | 17.29  | 15.80            | 18.82 | 19.42  |

## Typical Performance Curves



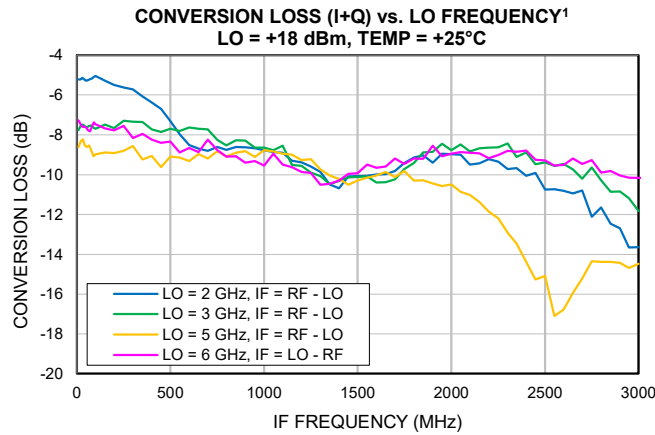
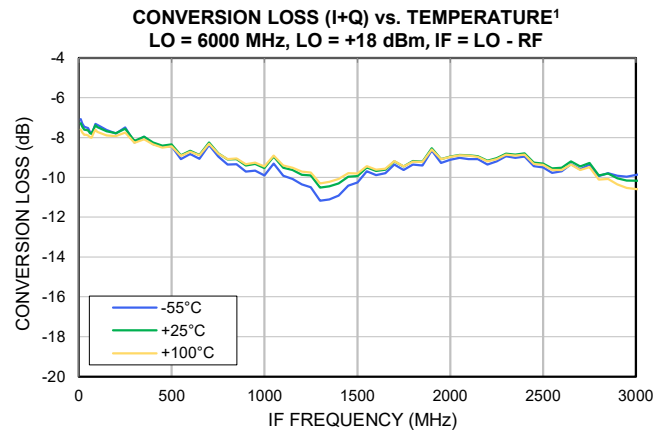
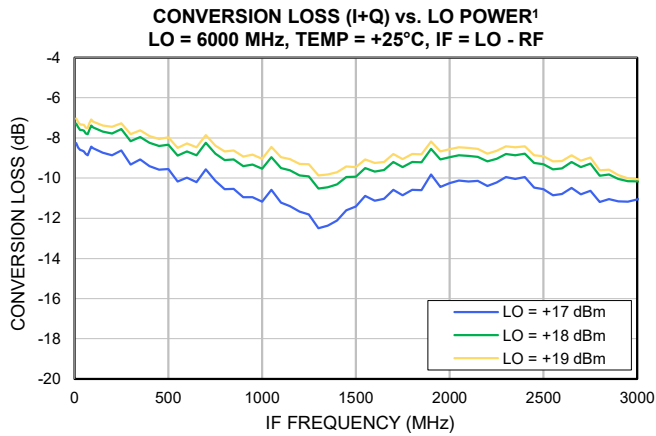
1. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



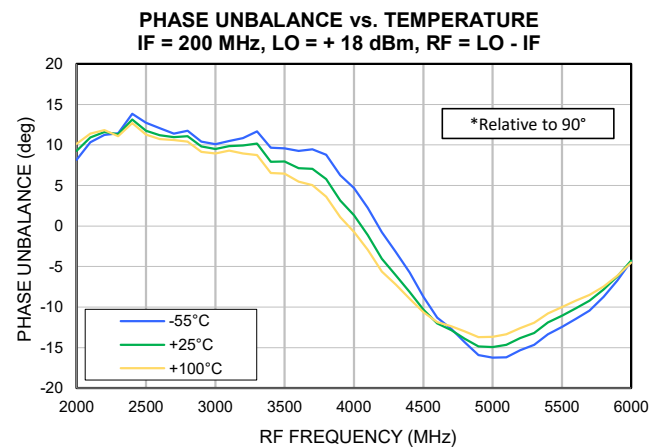
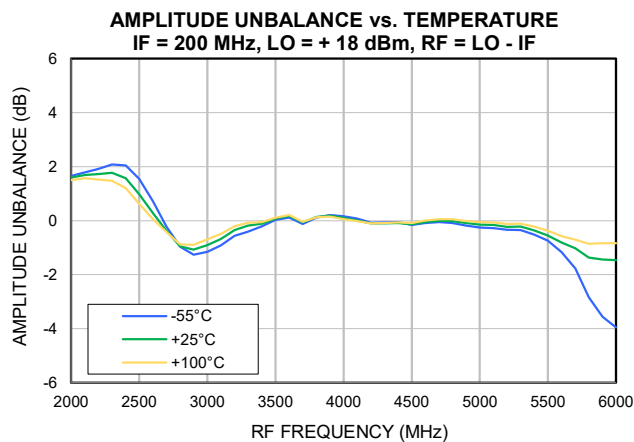
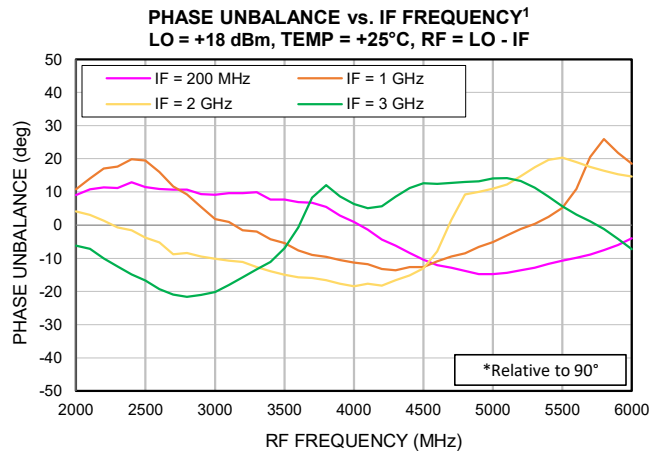
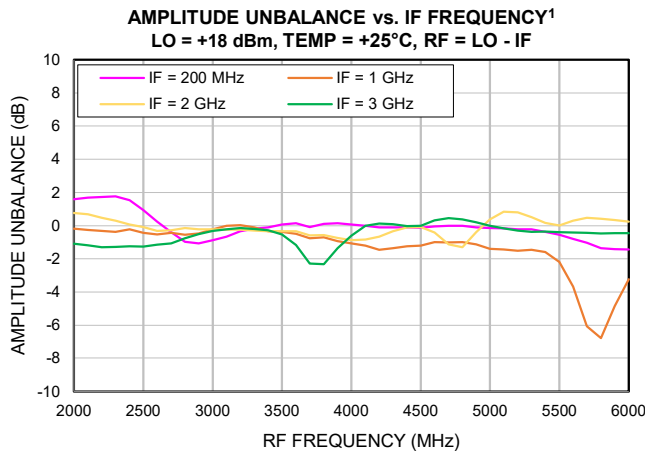
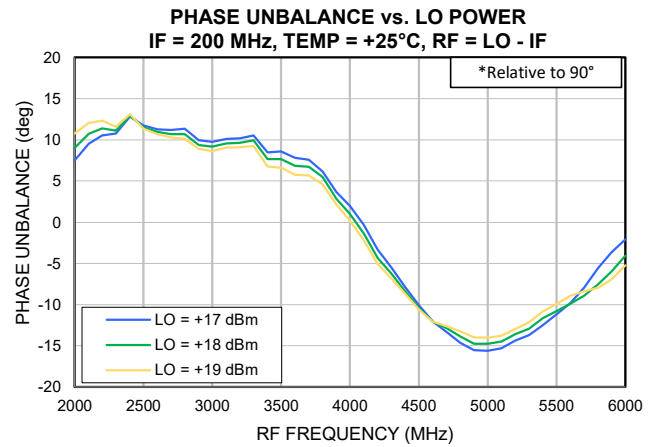
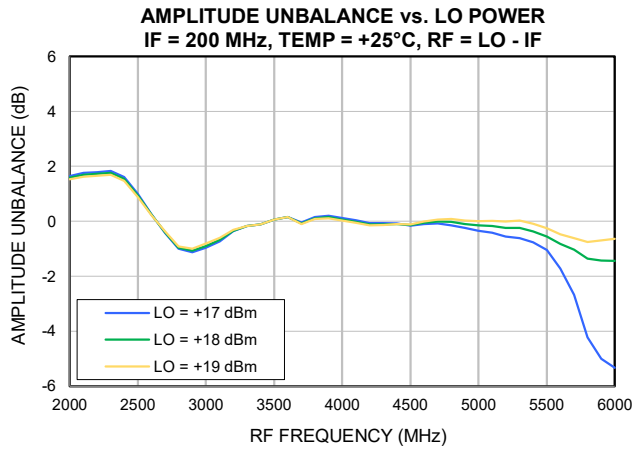
1. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



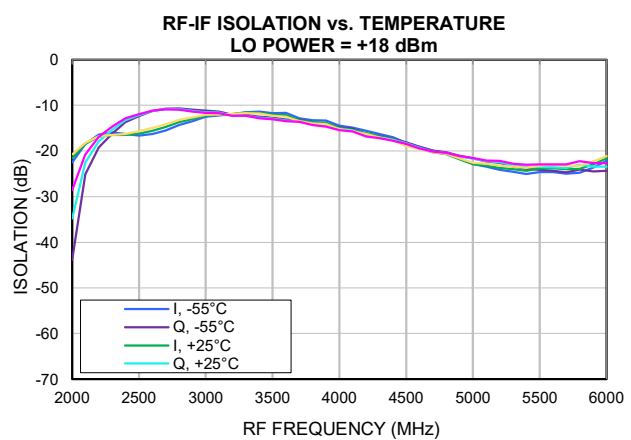
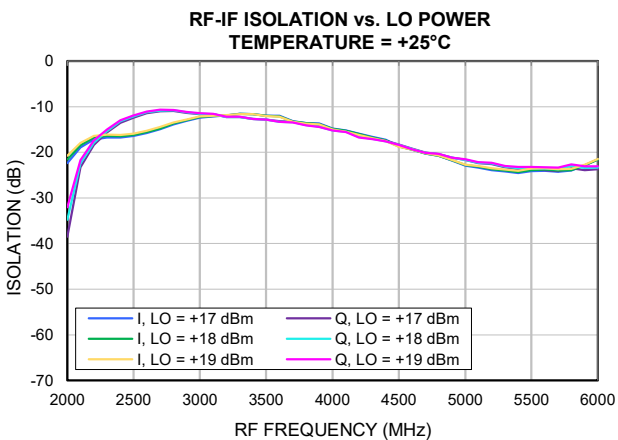
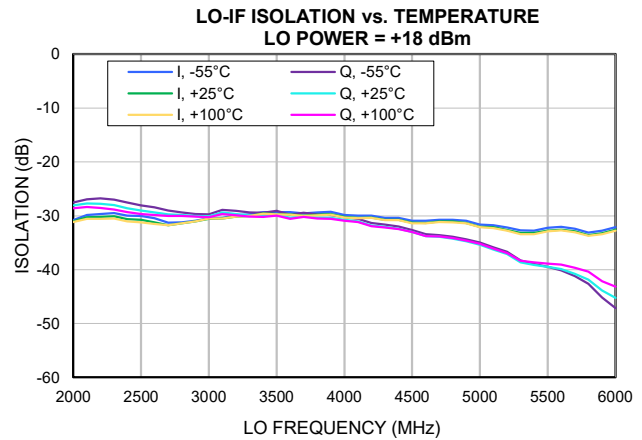
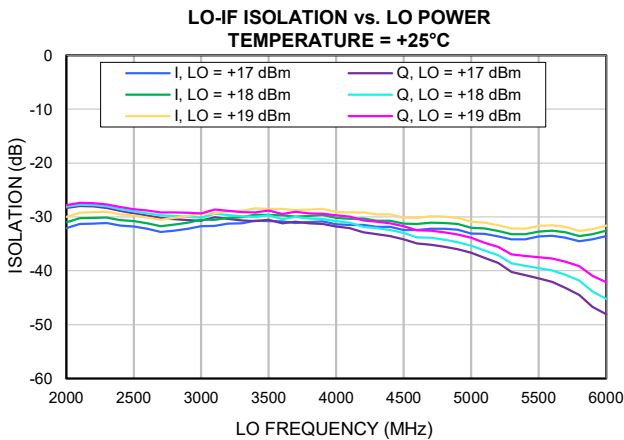
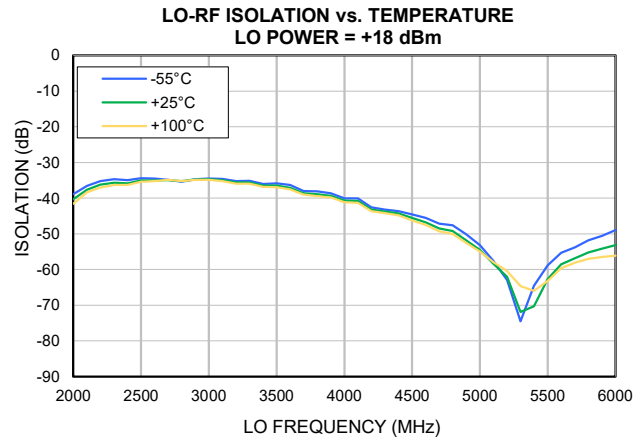
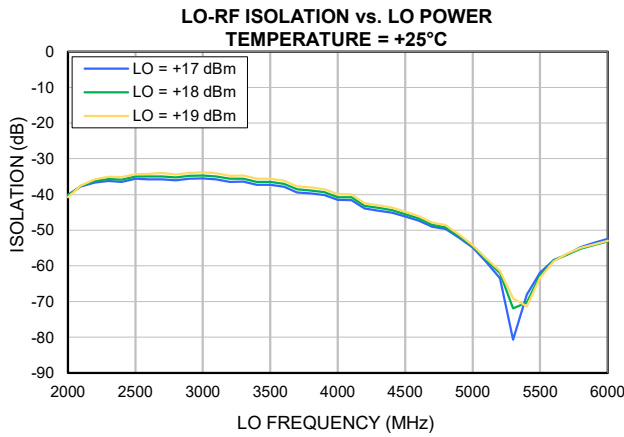
1. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



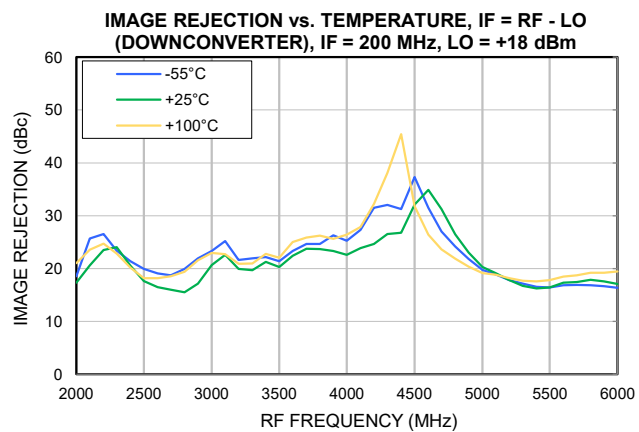
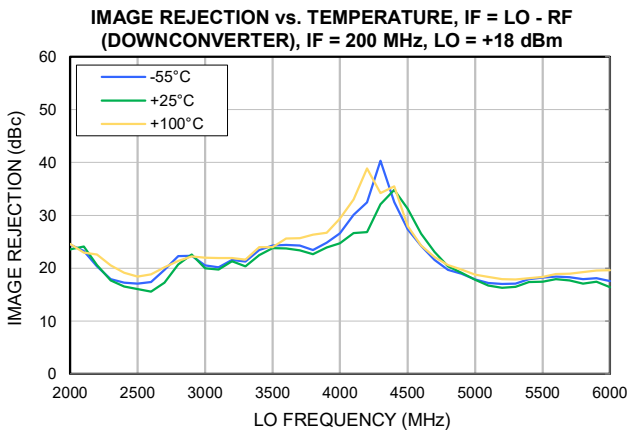
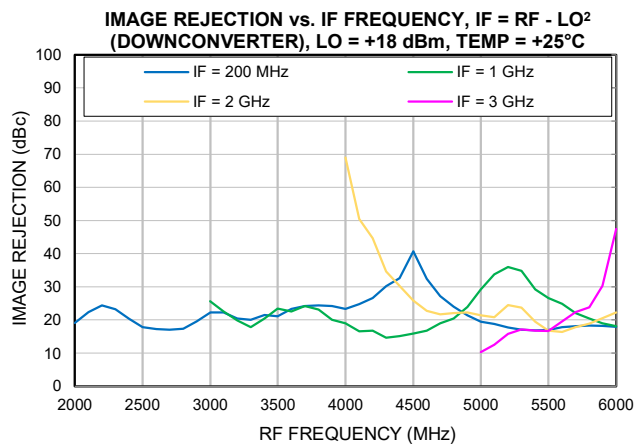
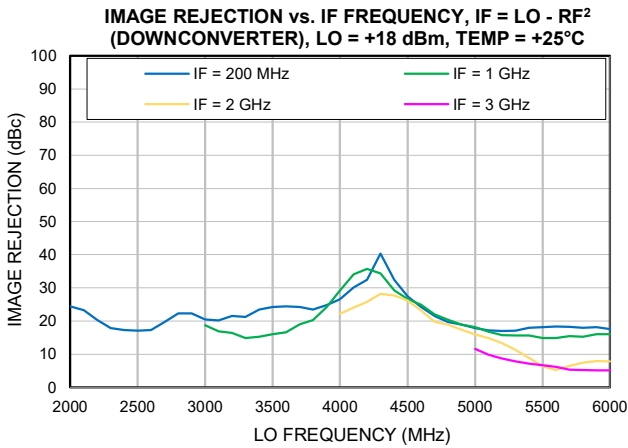
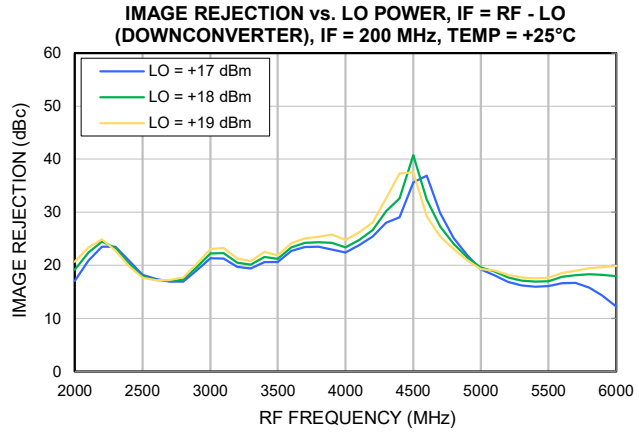
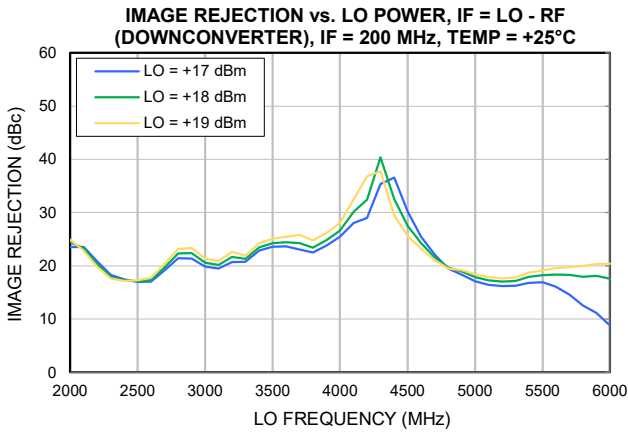
1. Performance degrades when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



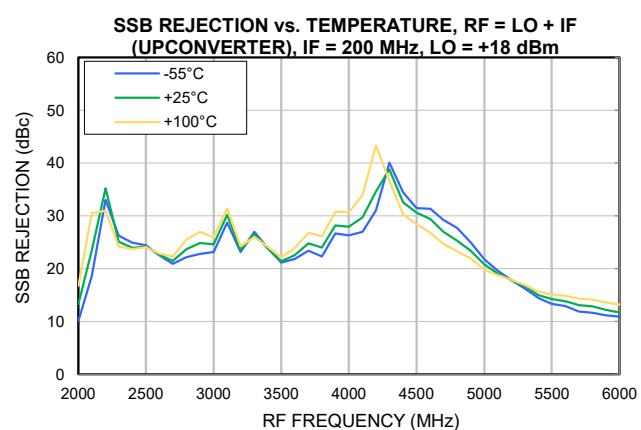
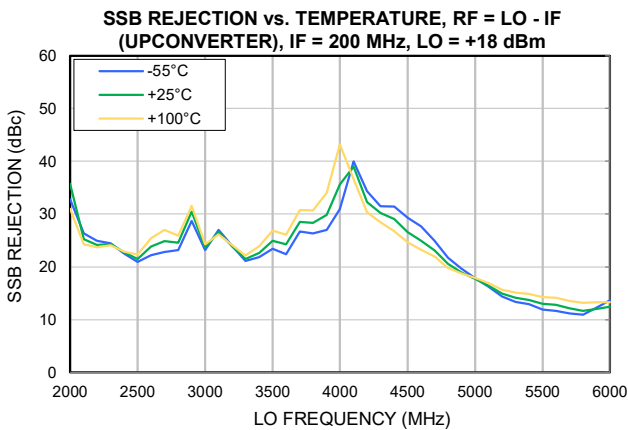
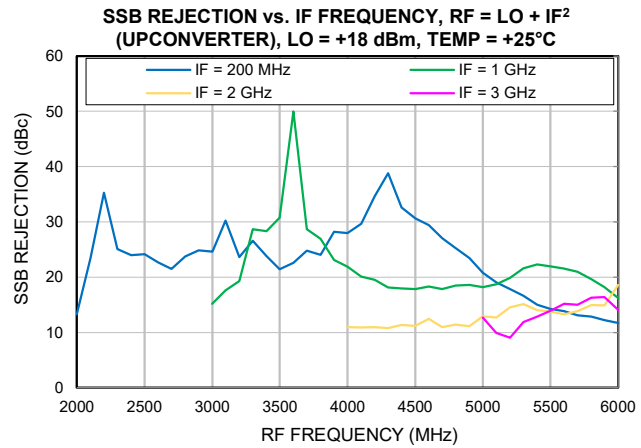
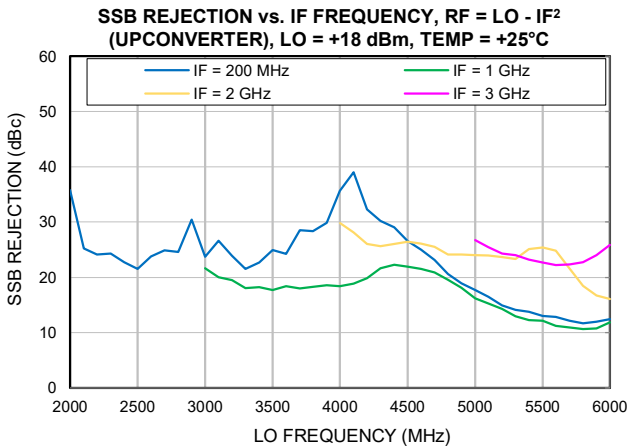
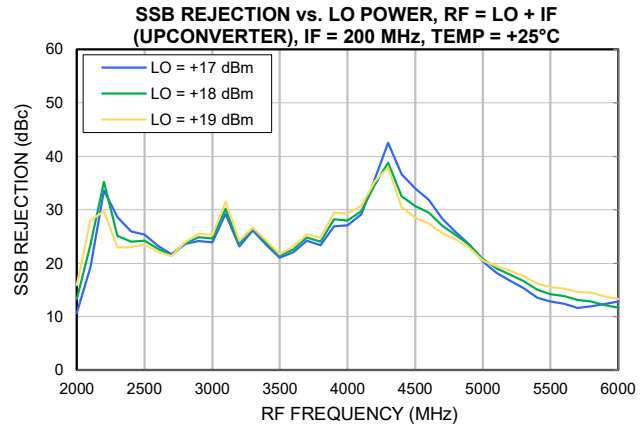
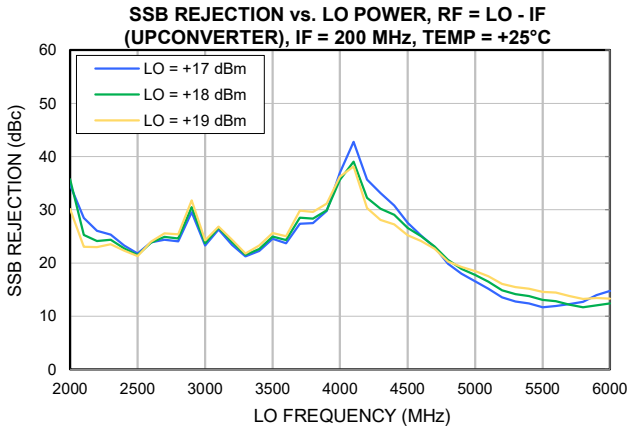


## Typical Performance Curves



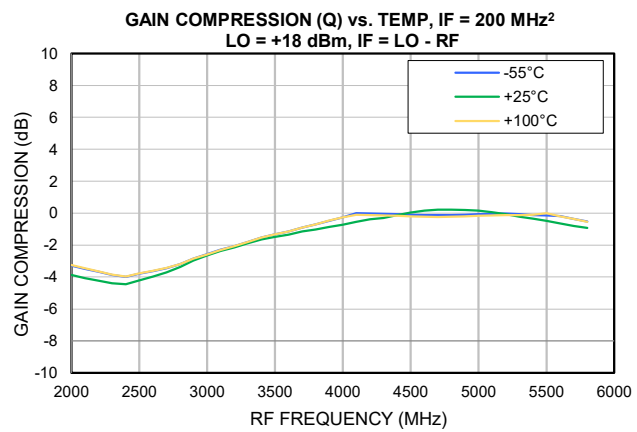
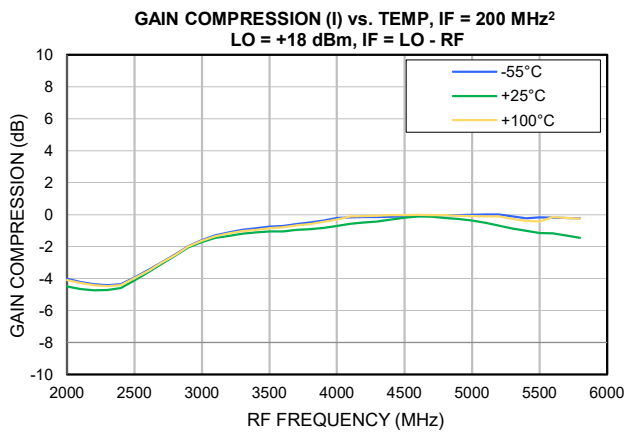
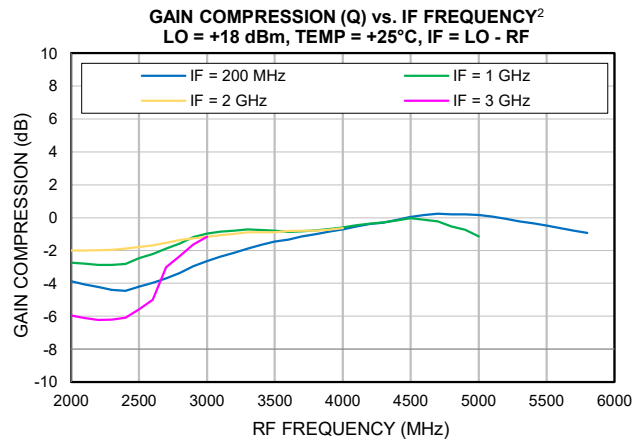
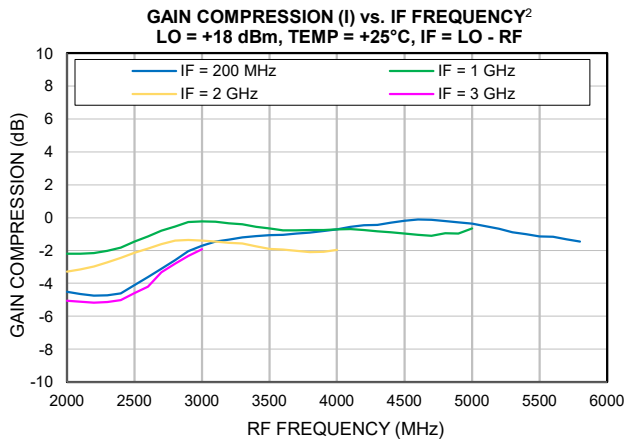
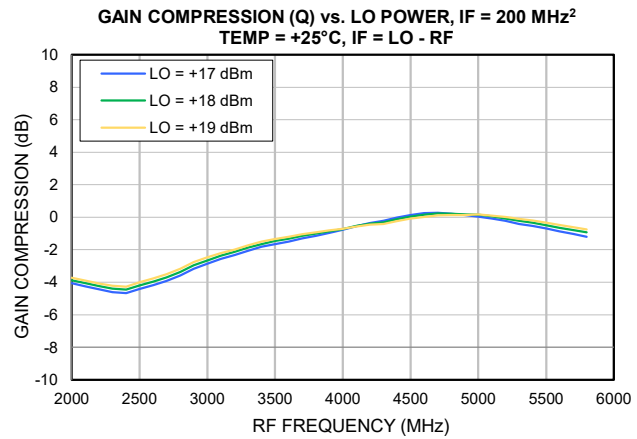
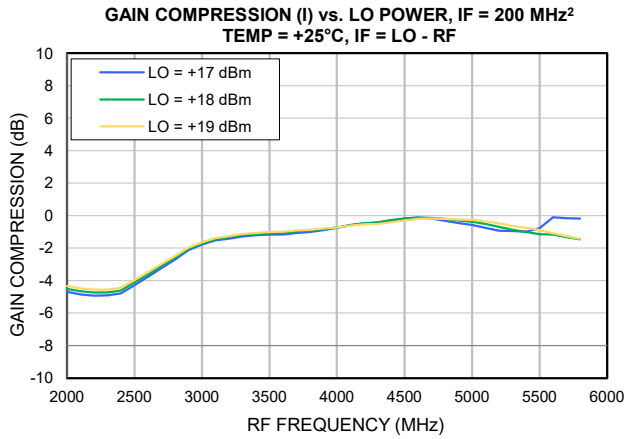
2. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



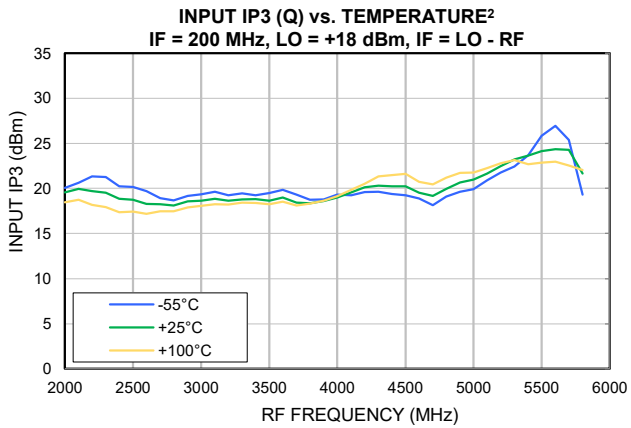
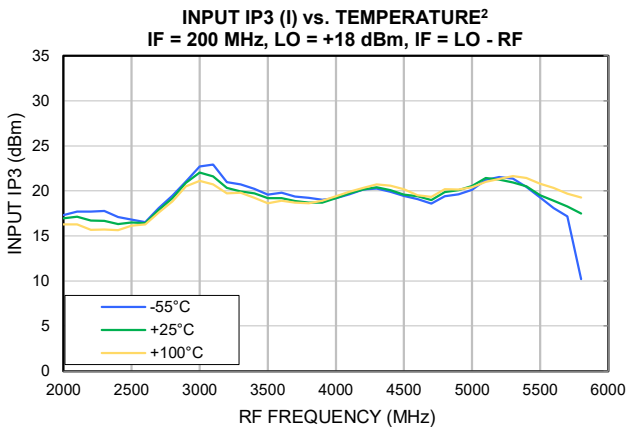
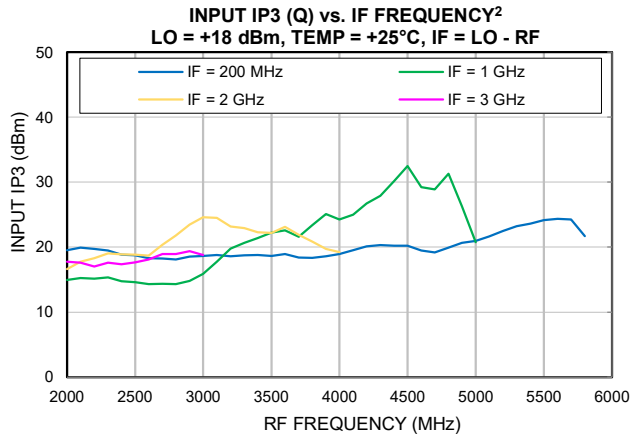
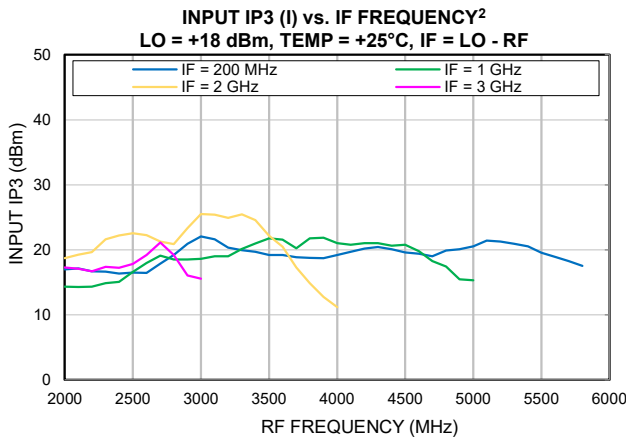
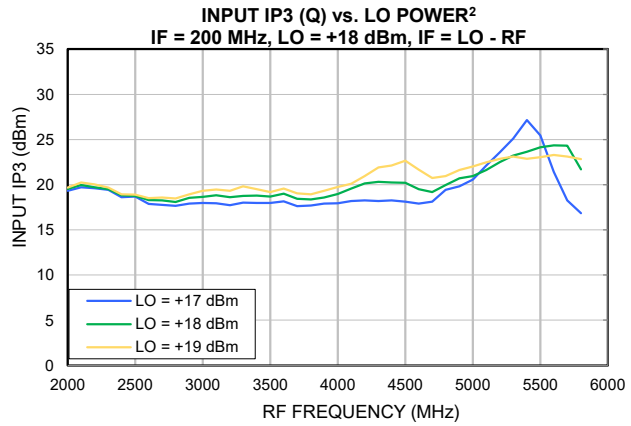
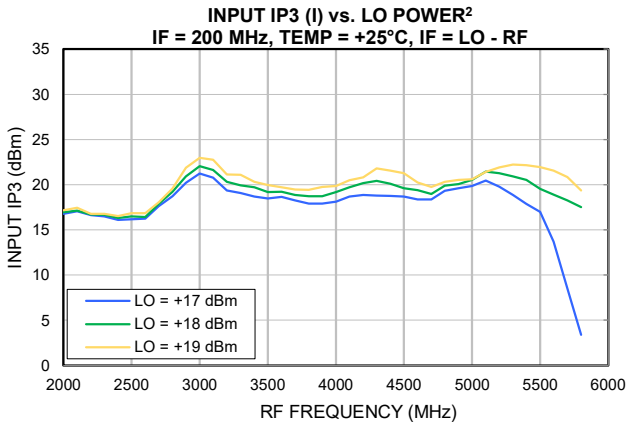
2. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



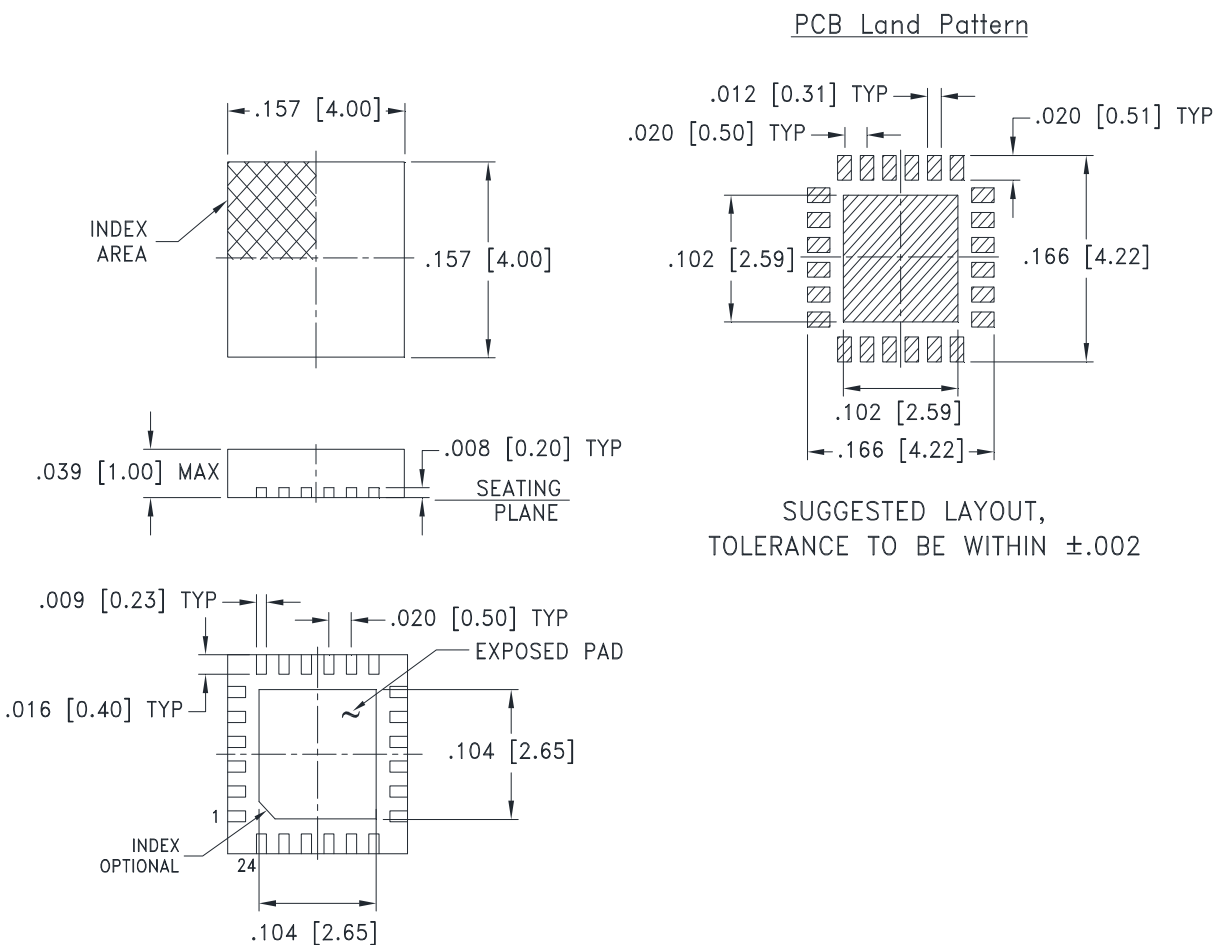
2. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.

## Typical Performance Curves



2. Plot truncated when LO or RF is outside of the specified 2 GHz to 6 GHz range.

### Outline Dimensions



**Weight: .04 Grams**

**Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm$  .01; 3 Pl.  $\pm$  .005**

#### Notes:

1. Case material: Plastic.
2. Termination finish:
  - For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin. All models, (+) suffix. See model Data sheet.
  - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

**Mini-Circuits®**  
ISO 9001 ISO 14001 CERTIFIED

ALL NEW  
minicircuits.com

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

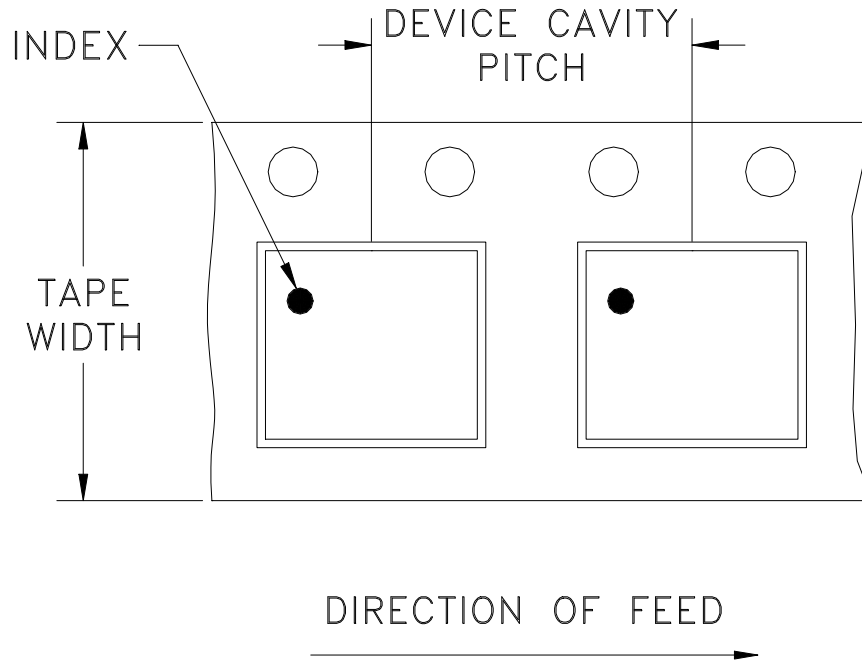
RF/IF MICROWAVE COMPONENTS

DG1847 Rev.: AH (16 FEB 23) ECO-016811 File: DG1847

This document and its contents are the property of Mini-Circuits.

# Tape & Reel Packaging TR-F68

## DEVICE ORIENTATION IN T&R



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel see note |      |
|----------------|-------------------------|-------------------|---------------------------|------|
| 12             | 8                       | 7                 | Small quantity standard   | 20   |
|                |                         |                   |                           | 50   |
|                |                         |                   |                           | 100  |
|                |                         |                   |                           | 200  |
|                |                         |                   |                           | 500  |
|                |                         | 7                 | Standard                  | 1000 |
|                |                         | 13                | Standard                  | 2000 |
|                |                         |                   |                           | 3000 |
|                |                         |                   |                           | 4000 |

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



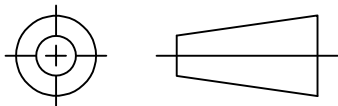
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

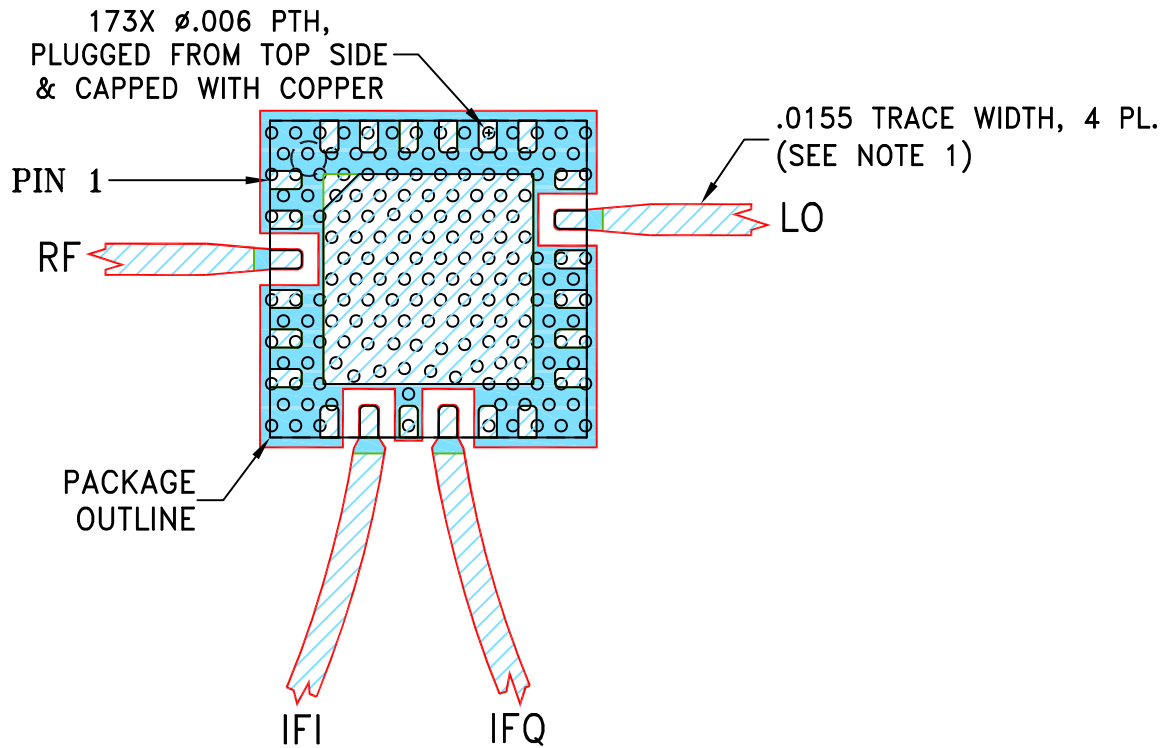
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No.    | DESCRIPTION | DATE     | DR  | AUTH |
|-----|------------|-------------|----------|-----|------|
| OR  | ECO-023655 | NEW RELEASE | 11/20/24 | ITG | IL   |
|     |            |             |          |     |      |
|     |            |             |          |     |      |

SUGGESTED MOUNTING CONFIGURATION FOR  
DG1847 CASE STYLE



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04003C, DIELECTRIC THICKNESS .008"; COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

| UNLESS OTHERWISE SPECIFIED | INITIALS |     | DATE     |
|----------------------------|----------|-----|----------|
| DIMENSIONS ARE IN INCHES   | DRAWN    | ITG | 11/20/24 |
| TOLERANCES ON:             | CHECKED  | GF  | 11/20/24 |
| 2 PL DECIMALS ±            | APPROVED | IL  | 11/20/24 |
| 3 PL DECIMALS ± .005       |          |     |          |
| ANGLES ±                   |          |     |          |
| FRACTIONS ±                |          |     |          |

**Mini-Circuits<sup>®</sup>** 13 Neptune Avenue  
Brooklyn NY 11235

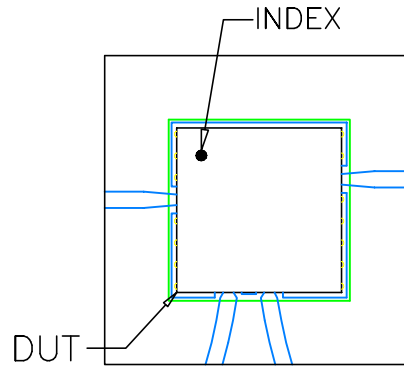
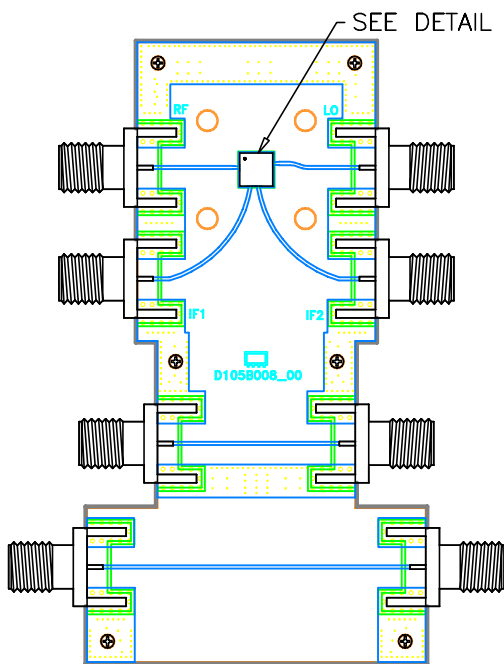
**PL, DG1847, TB-SMIQ-263HC+**

Mini-Circuits<sup>®</sup>  
THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

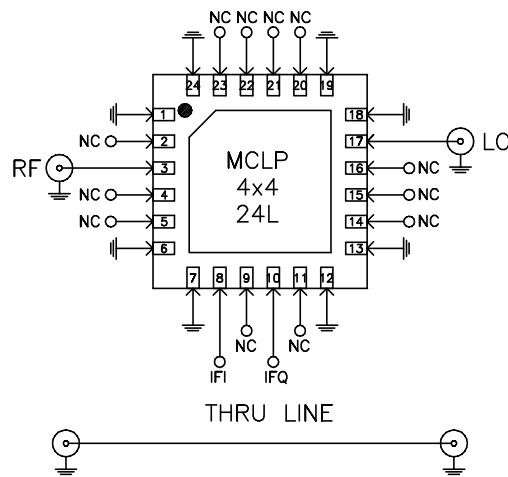
ASHEETA1.DWG REV:A DATE:01/12/95

| SIZE  | CODE IDENT | DRAWING NO: | REV:          |
|-------|------------|-------------|---------------|
| A     | 15542      | 98-PL-805   | OR            |
| FILE: | 98PL805    | SCALE: 10:1 | SHEET: 1 OF 1 |

# Evaluation Board and Circuit



DETAIL "A"  
LOCATION OF  
UNITS COMPONENTS  
(SCALE 5:1)




SCHEMATIC DIAGRAM

| Function           | Pad                    |
|--------------------|------------------------|
| RF                 | 3                      |
| LO                 | 17                     |
| IFQ                | 10                     |
| IFI                | 8                      |
| GND                | 1,6-7,12-13,18-19,24   |
| NC, GND Externally | 2,4-5,9,11,14-16,20-23 |

## Notes:

1. 50 Ohm SMA Female Connectors.
2. PCB Material: Roger R04003C or equivalent,  
Dielectric constant=3.5, Thickness=0.008 inch

 **Mini-Circuits®**



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification                  | Test/Inspection Condition  | Reference/Spec  |
|--------------------------------|--|---|
| Operating Temperature          | -40° to 85° C or -45° to 85° C or -55° to 105° C or -40° to 105° C or -40° to 95° C<br>Ambient Environment | Individual Model Data Sheet                                     |
| Storage Temperature            | -55° to 100° C or -65° to 150°<br>Ambient Environment  | Individual Model Data Sheet                                     |
| HTOL                           | 1000 hours at 125°C  | MIL-STD-883, Method 1005, Condition B                           |
| Thermal Shock                  | -55° to 100°C, 100 cycles  | MIL-STD-202, Method 107, Condition A-3, except +100°C           |
| Mechanical Shock               | 1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only   | MIL-STD-883, Method 2002, Condition B, except Y1 direction only |
| Vibration (Variable Frequency) | 50g peak   | MIL-STD-883, Method 2007, Condition B                           |
| Autoclave                      | 15 psig, 100% RH, 121°C, 96 hours  | JESD22-A102, Condition C  |
| HAST                           | 130°C, 85% RH, 96 hours  | JESD22-A110   |
| Solderability                  | 10X Magnification  | J-STD-002, Para 4.2.5, Test S, 95% Coverage                     |
| Solder Reflow Heat             | Sn-Pb Eutetic Process: 240°C peak<br>Pb-Free Process: 260°C peak   | J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1                   |
| Moisture Sensitivity: Level 1  | Bake at 125°C for 24 hours<br>Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak             | J-STD-020   |

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| <b>Specification</b>           | <b>Test/Inspection Condition</b>  | <b>Reference/Spec</b>   |
|--------------------------------|---|-------------------------|
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C;<br>distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215 |