



COAXIAL

IQ Mixer

ZMIQ-44H-K+

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

THE BIG DEAL

- Wideband RF & LO, 18 to 40 GHz
- Wideband IF, DC to 7 GHz
- Excellent Image Rejection, Typ. 29 dB
- High LO-RF Isolation, Typ. 42 dB
- High Input IP3, Typ. +25 dBm
- Usable as Image Reject Mixer & SSB Converter
- Small Size with 2.92 mm Connectors at RF- and LO-Ports, and SMA on IF-I and -Q Ports

APPLICATIONS

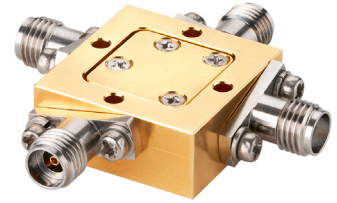
- Test and Measurement Equipment
- 5G mmWave and Back Haul Radio
- Satellite Communications
- Radar, EW, and ECM Defense Systems

PRODUCT OVERVIEW

The ZMIQ-44H-K+ is a passive wideband in-phase/quadrature (I/Q) mixer utilizing MCLs' own GaAs HBT device, [SMIQ-1844H+](#). The ZMIQ-44H-K+ is usable as a single-sideband upconverter for transmit applications or an image rejection mixer for receiver applications. The ZMIQ-44H-K+ is ideal for wideband frequency translation applications that require inherent rejection of image signals and spurious mixing products. The mixer covers a broad band with RF and LO frequency ranges of 18 to 40 GHz and an IF frequency range of DC to 7 GHz. As a passive mixer, the ZMIQ-44H-K+ offers lower noise figure than active mixers enabling superior dynamic range for high performance applications. The mixer is housed in a compact rugged package with 2.92 mm and SMA coaxial connections.

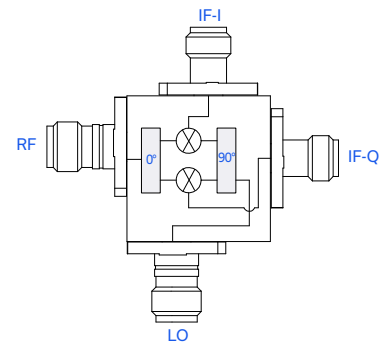
KEY FEATURES

Feature	Advantages
High Image Rejection, 29 dB typ.	Provides inherent rejection of unwanted image signals without the need for external filtering.
High Isolation, <ul style="list-style-type: none"> • LO-RF, 42 dB typ. • LO-IF, 40 dB typ. 	Enables excellent carrier rejection in single-sideband upconverter transmit applications. Minimizes filtering requirements needed to ensure signal integrity.
Wide RF/LO Bandwidth, 18 to 40 GHz	Useful in wideband systems or in reconfigurable narrowband systems across multiple bands with minimal component changes.
Wide IF Bandwidth, DC to 7 GHz	Enables use of high IF conversion to reduce filtering requirements. IF operation as low as DC enables use in phase detector applications.



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM





COAXIAL

IQ Mixer

ZMIQ-44H-K+

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

ELECTRICAL SPECIFICATIONS¹ AT +25°C, Z₀ = 50Ω, LO POWER = +18 dBm, UNLESS OTHERWISE NOTED.

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Unit
RF Frequency Range		18		40	GHz
LO Frequency Range		18		40	GHz
IF Frequency Range		DC		7	GHz
LO Power		+17	+18	+20	dBm
Conversion Loss ²	18 - 33		10	12.5	dB
	33 - 40		11	14.5	
Amplitude Unbalance	18 - 33		±0.5	±1.0	dB
	33 - 40		±0.5	±1.5	
Phase Unbalance (Relative to 90°)	18 - 33		2.5	9	Degree
	33 - 40		3.0	15	
Image Rejection ³ (Tested as a Downconverter)	18 - 40		29		dBc
Single Sideband Rejection ⁴ (Tested as an Upconverter)	18 - 40		26		dBc
LO-RF Isolation	18 - 33	35	42		dB
	33 - 40	30	41		
LO-I Isolation	18 - 33	25	41		dB
	33 - 40	20	27		
LO-Q Isolation	18 - 33	25	44		dB
	33 - 40	15	28		
RF-I Isolation	18 - 33	15	25		dB
	33 - 40	18	30		
RF-Q Isolation	18 - 33	14	30		dB
	33 - 40	25	40		
Input Power at 1dB Compression	18 - 40		+10		dBm
Input IP3 (I) ⁵ Lower Side Band	18 - 33		+25		dBm
	33 - 40		+25		
Input IP3 (Q) ⁵ Lower Side Band	18 - 33		+25		dBm
	33 - 40		+25		
Input IP3 (I) ⁵ Upper Side Band	18 - 33		+25		dBm
	33 - 40		+25		
Input IP3 (Q) ⁵ Upper Side Band	18 - 33		+26		dBm
	33 - 40		+25		

1. Unless otherwise specified, IF = 200 MHz

2. Conversion loss (dB) = RF Power (dBm) minus worse of I/Q Port Power (dBm) minus 3dB theoretical loss of an Ideal External Hybrid, measured as a Downconverter.

3. Level of undesired image signal below desired RF signal.

4. Level of undesired sideband below desired sideband.

5. IIP3(dBm) = OIP3(dBm) - Conversion loss(dB), where Conversion loss(dB) = RF Power (dBm) - worse of I/Q Port Power(dBm) measured as a Downconverter.

ABSOLUTE MAXIMUM RATINGS⁶

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
RF Power	+24 dBm
LO Power	+24 dBm
I/Q Power	+23 dBm
IF Current	16 mA

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





COAXIAL

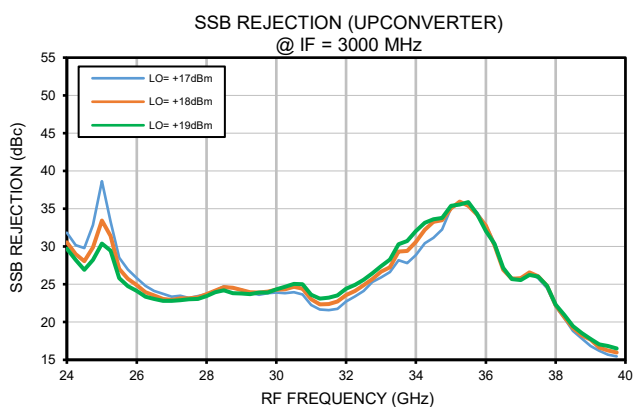
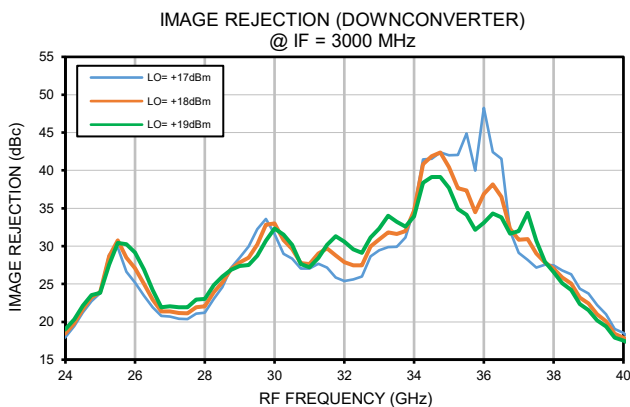
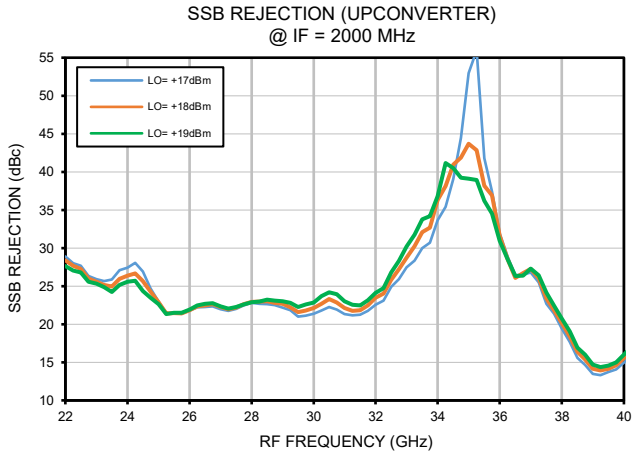
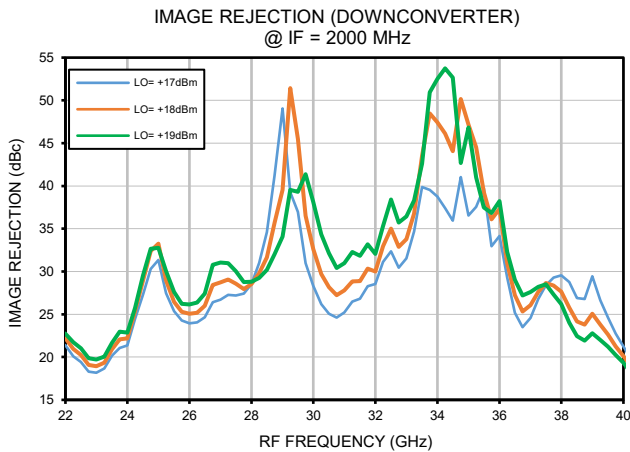
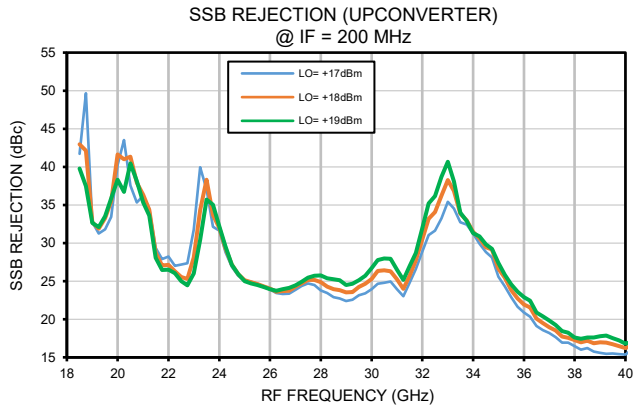
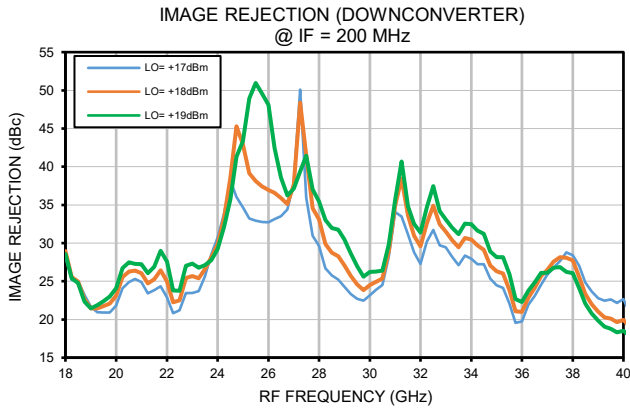
IQ Mixer

ZMIQ-44H-K+

Mini-Circuits

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

TYPICAL PERFORMANCE GRAPHS





COAXIAL

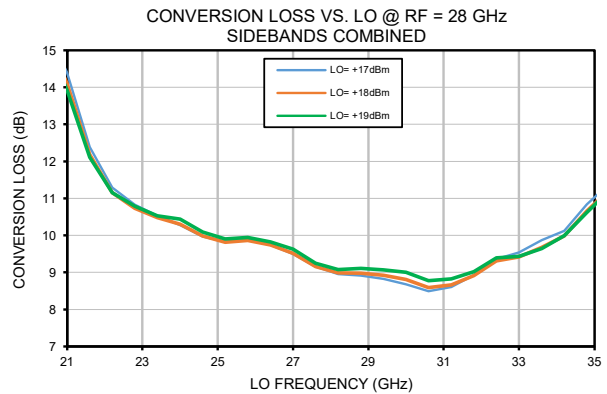
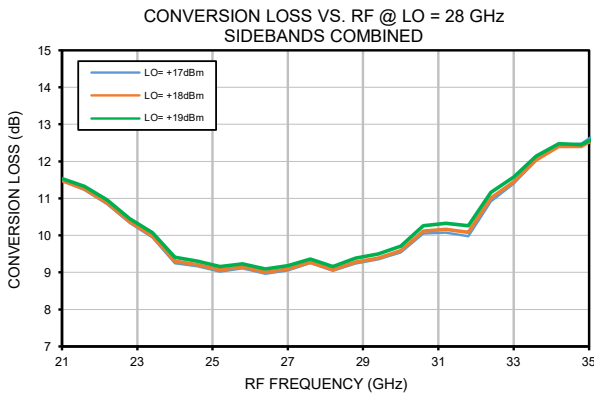
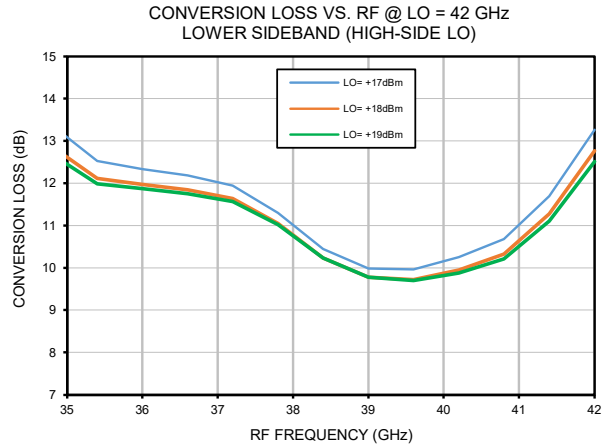
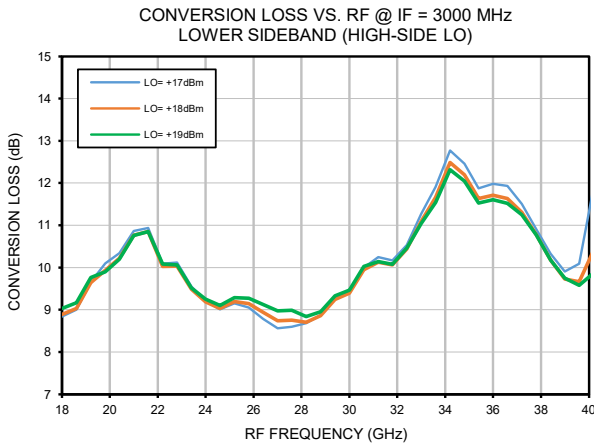
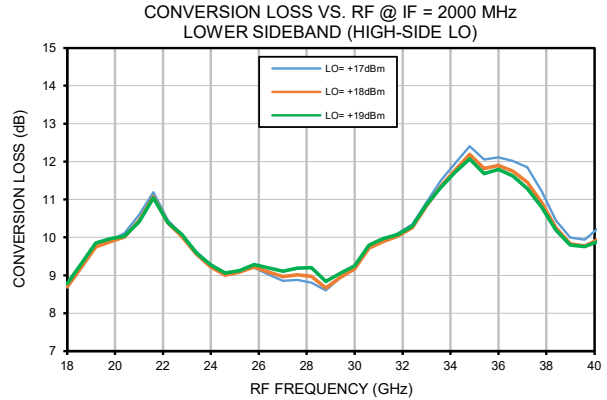
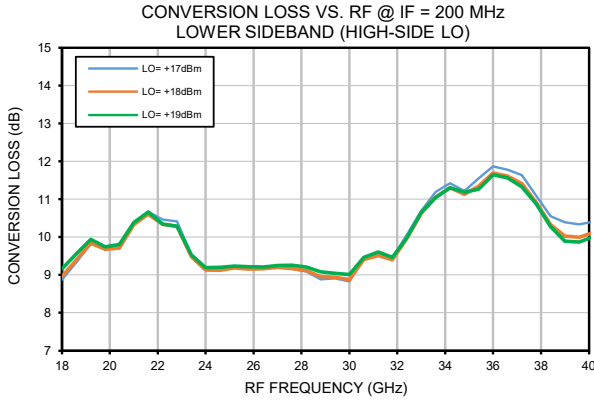
IQ Mixer

ZMIQ-44H-K+

Mini-Circuits

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

TYPICAL PERFORMANCE GRAPHS





COAXIAL

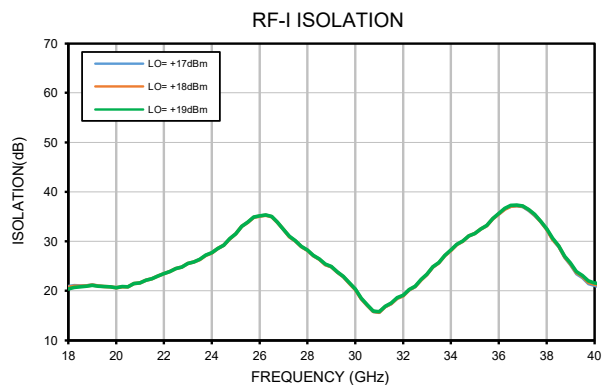
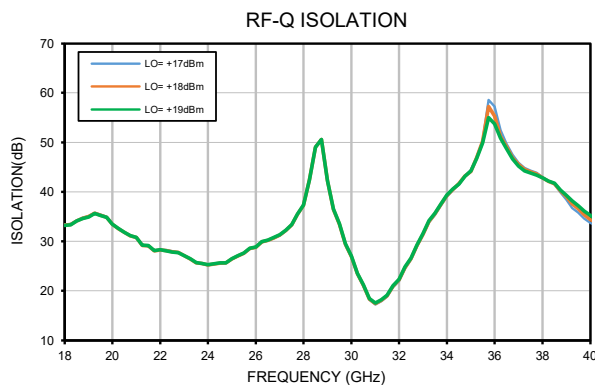
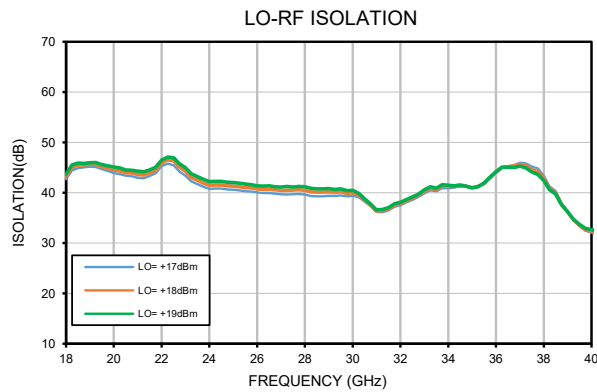
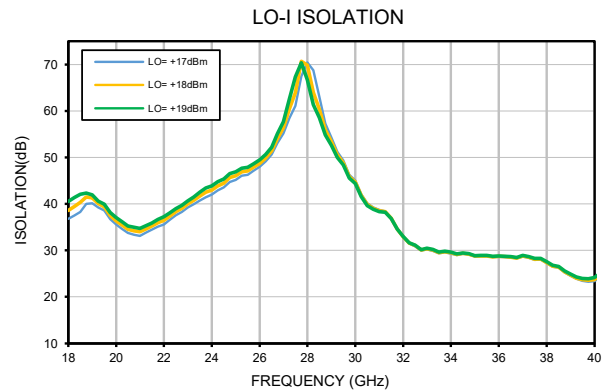
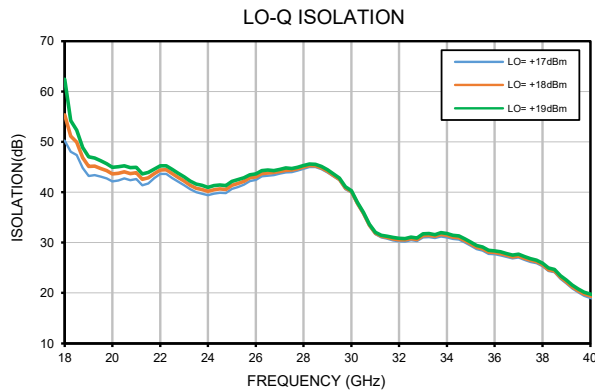
IQ Mixer

ZMIQ-44H-K+

Mini-Circuits

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

TYPICAL PERFORMANCE GRAPHS





COAXIAL

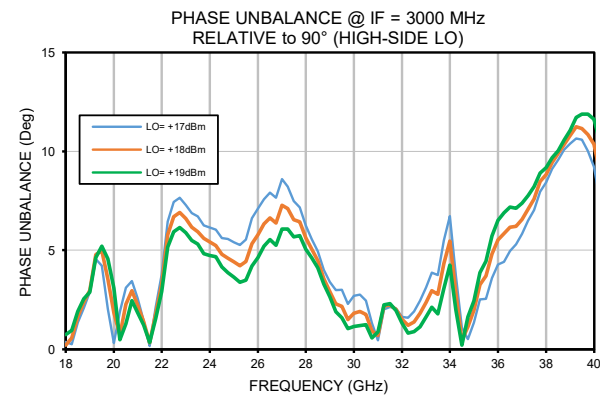
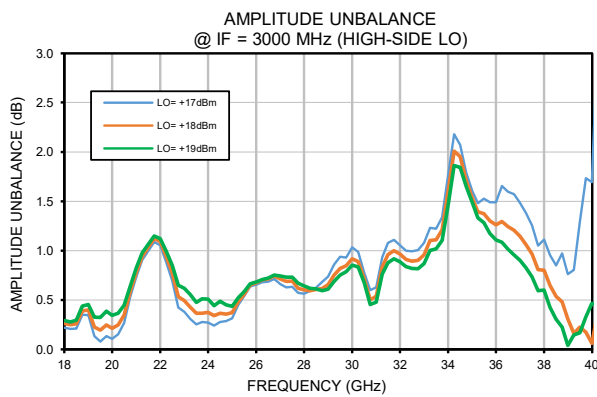
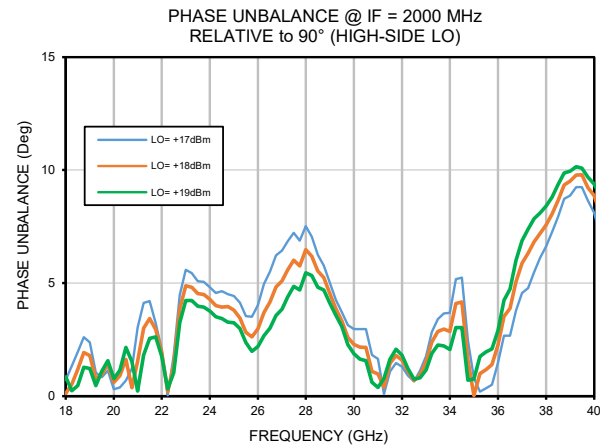
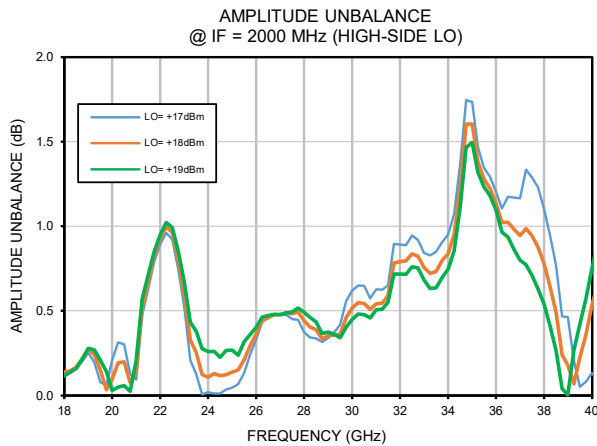
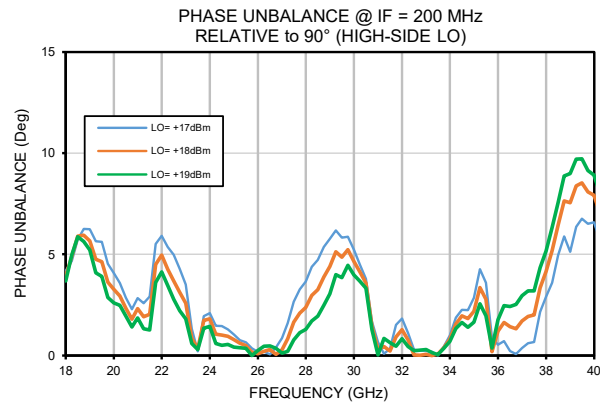
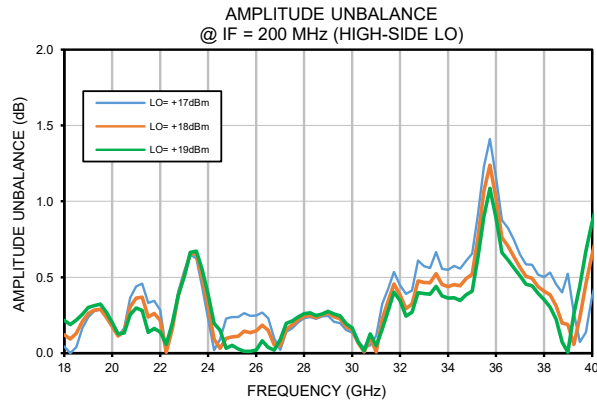
IQ Mixer

ZMIQ-44H-K+

Mini-Circuits

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

TYPICAL PERFORMANCE GRAPHS





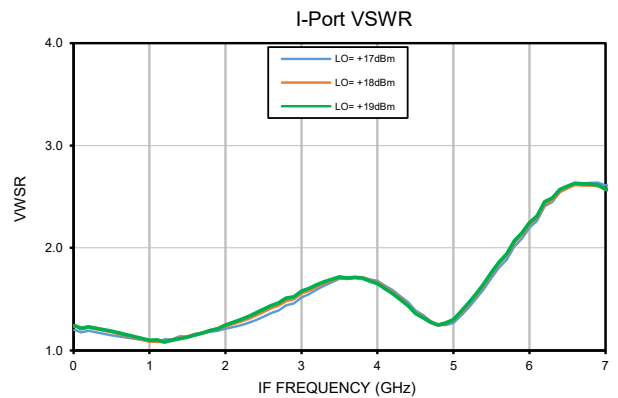
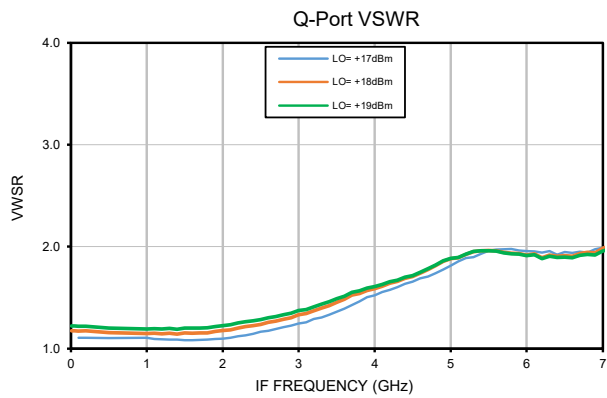
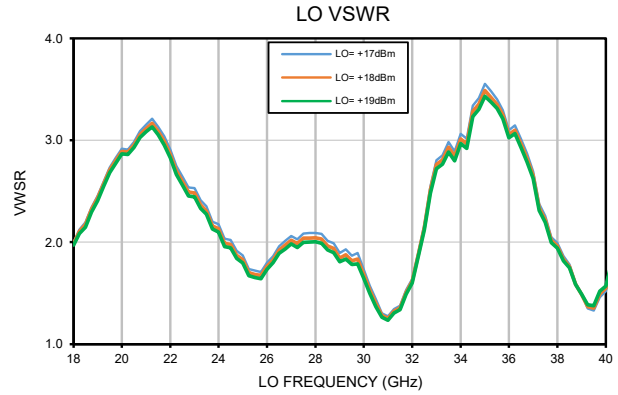
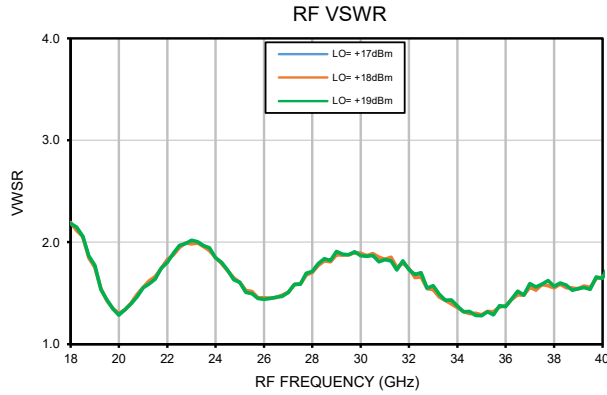
COAXIAL

IQ Mixer

ZMIQ-44H-K+

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

TYPICAL PERFORMANCE GRAPHS





COAXIAL

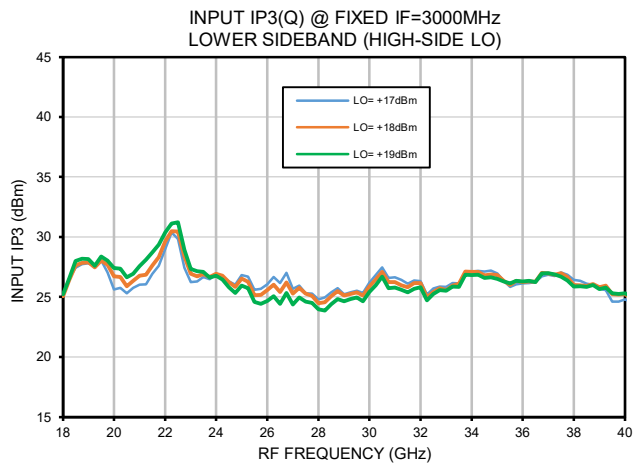
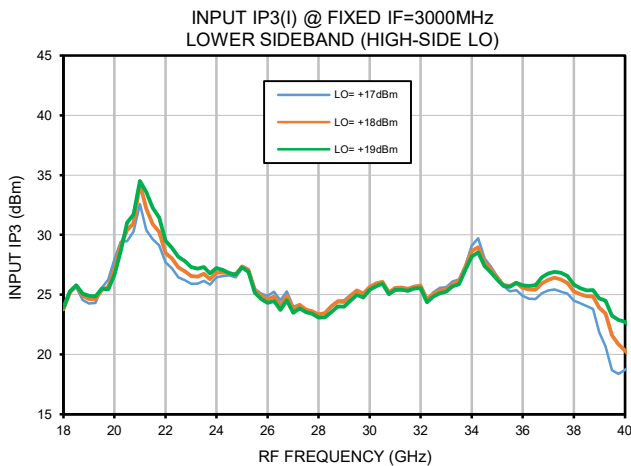
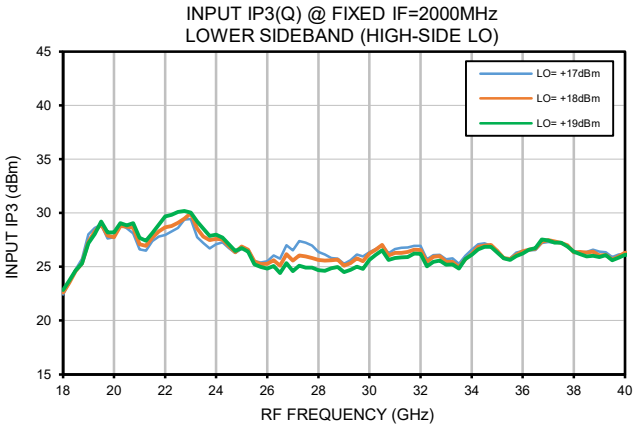
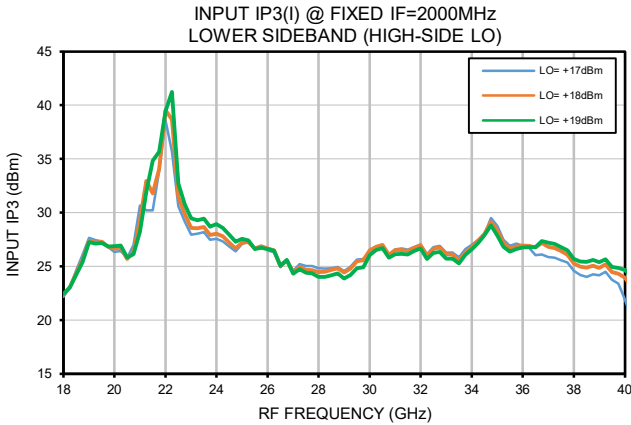
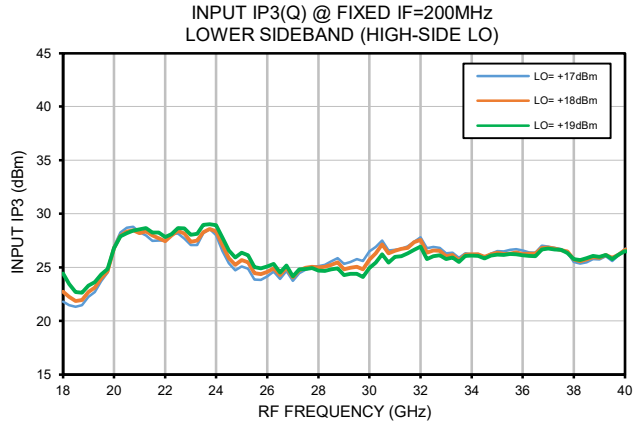
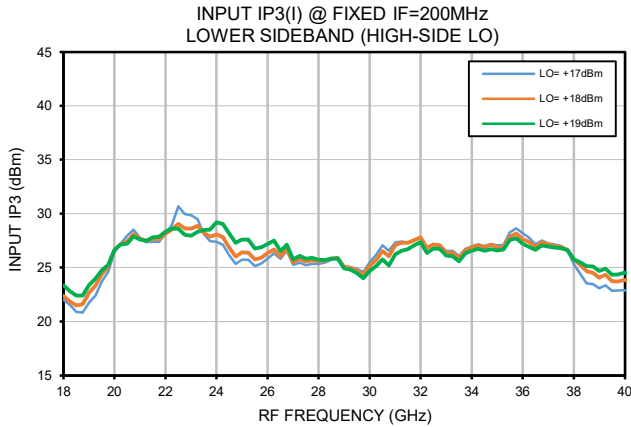
IQ Mixer

ZMIQ-44H-K+

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

TYPICAL PERFORMANCE GRAPHS

$P_{IN} = 0$ dBm/Tone with 1 MHz spacing (RF2 = RF1 + 1 MHz)





COAXIAL

IQ Mixer

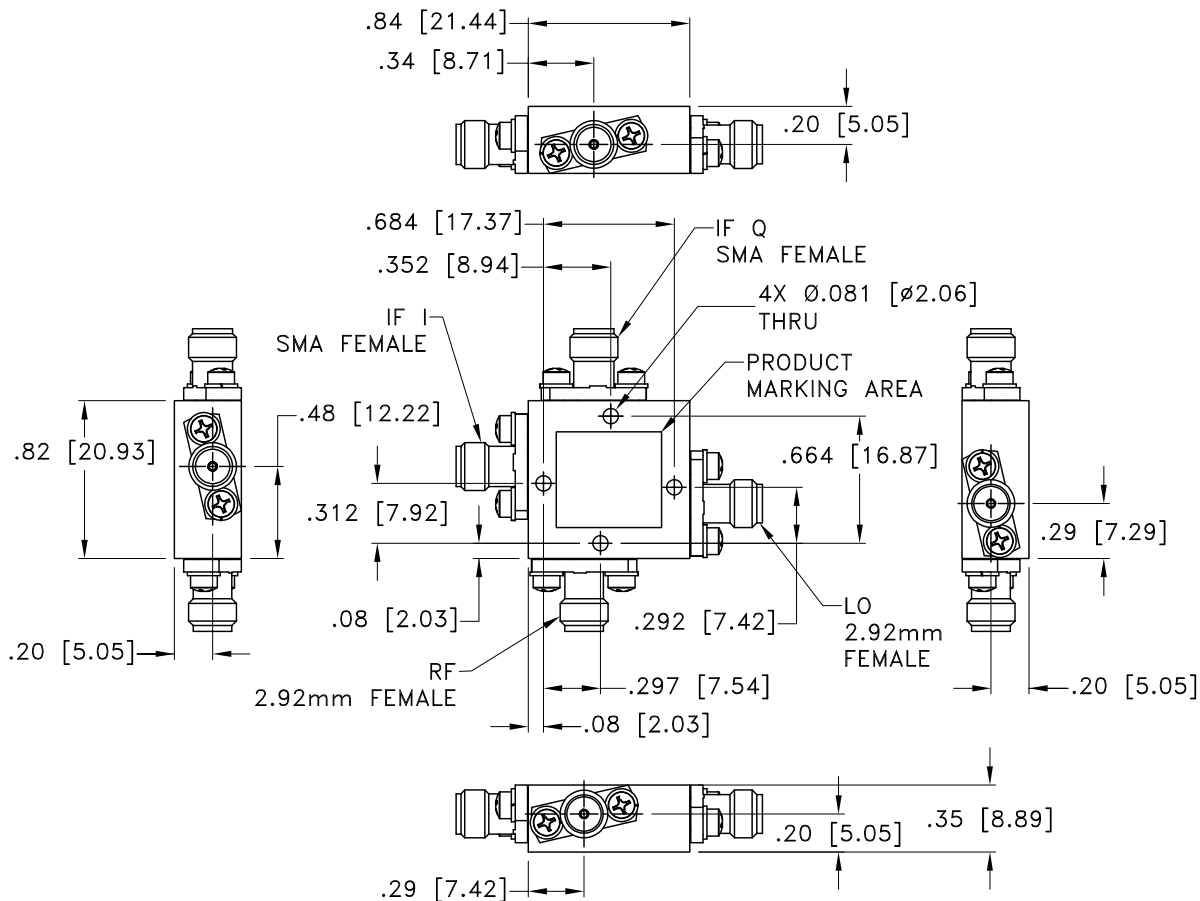
ZMIQ-44H-K+

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

COAXIAL CONNECTIONS

Function	Connector	Port Marking on Case Style Drawing	Description
RF Port	2.92 mm-F	RF	RF Port. Connects to RF Output for Upconverters or RF Input for Downconverters.
LO Port	2.92 mm-F	LO	LO Port. Connects to LO Input.
IF-I Port	SMA-F	IF I	IF I Port. Connects to the IF I Input for Upconverters or IF I Output for Downconverters.
IF-Q Port	SMA-F	IF Q	IF Q Port. Connects to the IF Q Input for Upconverters or IF Q Output for Downconverters.

CASE STYLE DRAWING



Weight: 32 grams

Dimensions are in inches [mm]. Tolerances: 2 PL±.03; 3 PL ±.015 INCHES





COAXIAL

IQ Mixer

ZMIQ-44H-K+

50Ω Level 18 (LO Power +18 dBm) 18 to 40 GHz 2.92 mm / SMA Female

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

Performance Data & Graphs	Data
	Graphs
Case Style	UK3584-1
Connectors	2.92 mm / SMA Female
RoHS Status	Compliant
Environmental Ratings	ENV131

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 therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

