

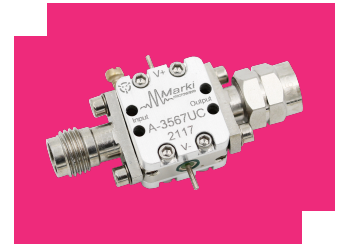
# A-3567UC

## 30 GHz - 67 GHz LO Driver Amplifier

### DEVICE OVERVIEW

#### General Description

The A-3567UC is a broadband MMIC LO buffer amplifier that is capable of producing at least +18 dBm up to 67 GHz. This amplifier can be used to drive L- or H-diode mixers from 35-67 GHz, or L- or H-diode IQ mixers from 35-60 GHz. It also has built-in DC blocking capacitors on the input and output.



#### Features

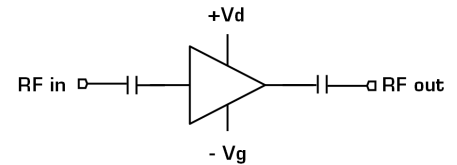
- +20dBm Saturated Power
- Broadband Performance

#### Applications

- LO Driver amplifier for L-, H-, or S-diode mixers
- Mobile test and measurement equipment
- Radar
- SATCOM
- 5G transceivers

#### Functional Block

##### Diagram



#### Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
A-3567UC	30 GHz - 67 GHz LO Driver Amplifier	UC	<u>Standard</u>	REACH RoHS	Released	EAR99

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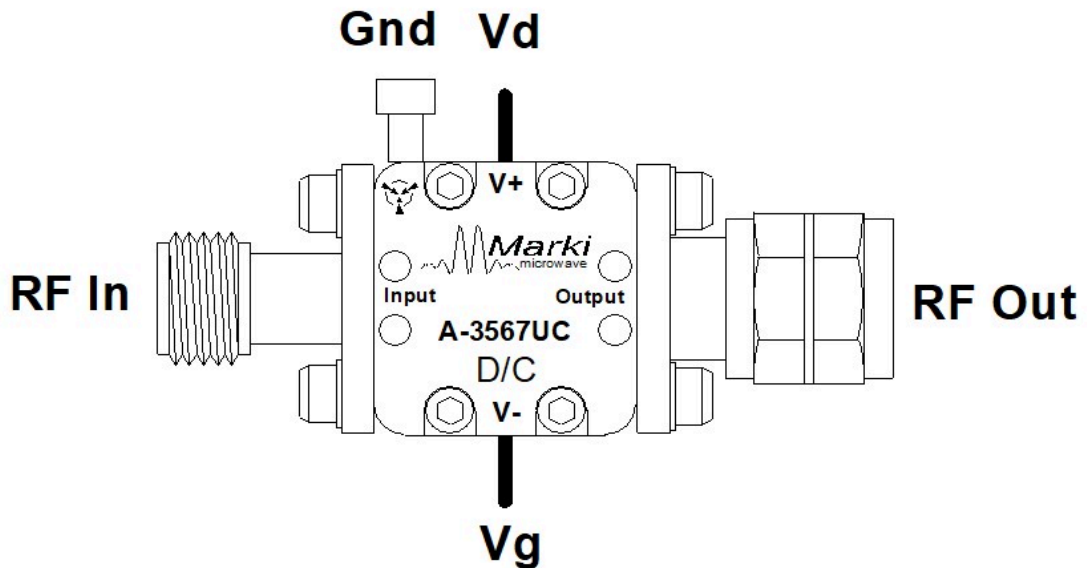
### Revision History

Revision Code	Revision Date	Comment
-	2021-05-01	Datasheet Initial Release

### Port Configuration and Functions

#### Port Diagram

A port diagram of the A-3567UC is shown below.



#### Port Functions

Port	Function	Connector Type	Description	Equivalent Circuit for Package
GND	Ground	-	Exterior housing must be connected to a DC/RF ground potential with high thermal and electrical conductivity.	<b>GND</b> ↓
RF In	RF Input	1.85F	This is the RF Input port of the amplifier. It is internally DC blocked and RF matched to 50 Ω.	RF In □     ↓
RF Out	RF Output	1.85M	This is the RF Output port of the amplifier. It is internally DC blocked and RF matched to 50 Ω.	↓     □ RF Out
Vd	Drain Supply Pin	-	The Vd pin supplies drain voltage to the amplifier IC. Apply gate voltage Vg before applying drain voltage.	Vd ↓
Vg	Gate Bias Pin	-	The Vg pin supplies negative control voltage to the amplifier and controls the amplifier gain. The user should apply between 0.4V and -0.6V to Vg pad before applying positive DC voltage to Vd port. Lower (more negative) voltages on Vg pad will result in lower drain current and lower small signal gain.	Vg ↓

## Specifications

### Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may become inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	85	°C
Maximum Storage Temperature	150	°C
Minimum Operating Temperature	-40	°C
Minimum Storage Temperature	-65	°C
Negative Bias Voltage (Vg)	-2	V
Positive Drain Supply Voltage (Vd)	4.5	V
RF Input Power	22	dBm
Total Positive Drain Supply Current (Id)	600	mA

### Package Information

Parameter	Details	Rating
ESD	125 to < 250 Volts	HBM Class 0B
Weight	Package name: UC	11.8g
Dimensions	-	13.21 x 14.22 mm

### Recommended Operating Conditions

The Recommended Operating Conditions indicate the limits, inside which the device should be operated, to guarantee the performance given in Electrical Specifications. Operating outside these limits may not necessarily cause damage to the device, but the performance may degrade outside the limits of the electrical specifications. For limits, above which damage may occur, see Absolute Maximum Ratings.

Parameter	Min	Nominal	Max	Unit
Power Supply DC Voltage (Vd)	3	3.5	4	V
Ambient Temperature	-40	25	85	°C
Power Supply DC Current (with RF Input)	-	-	500	mA
Power Supply DC Current (Id) (No RF Input)	200	300	400	mA
Negative Bias Voltage (Vg)	-0.6	-0.5	-0.4	V

### Sequencing Requirements

Turn-on Procedure:

1. Apply negative bias to Vg
2. Apply Vd

Turn-off Procedure:

1. Turn off Vd
2. Turn off Vg f

## Electrical Specifications

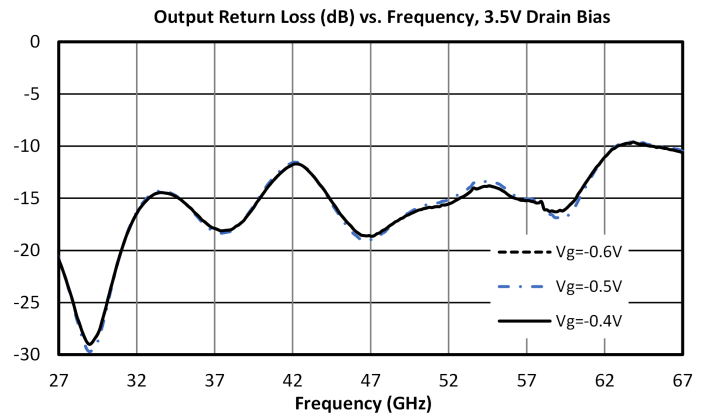
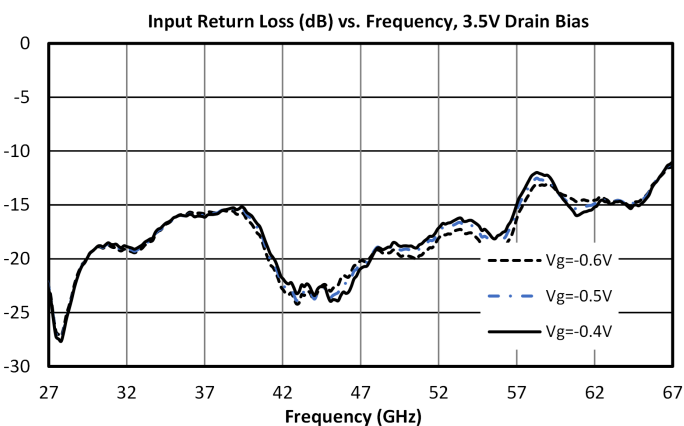
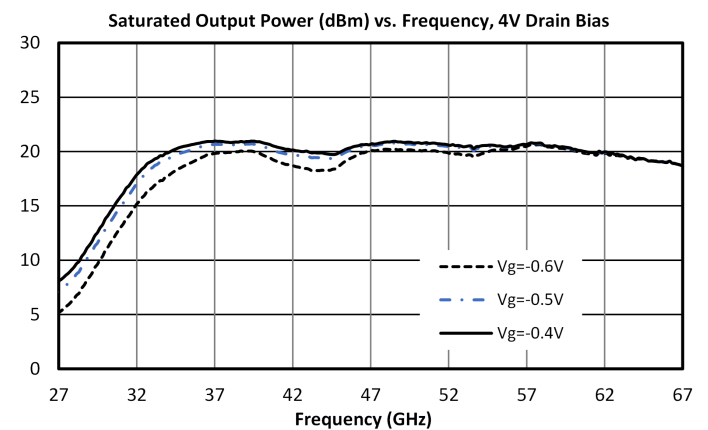
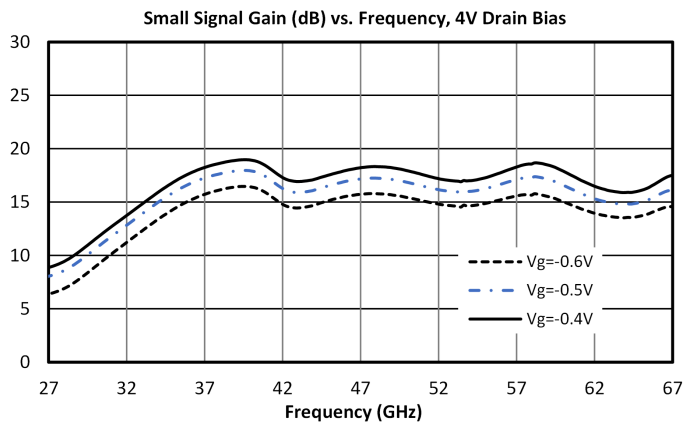
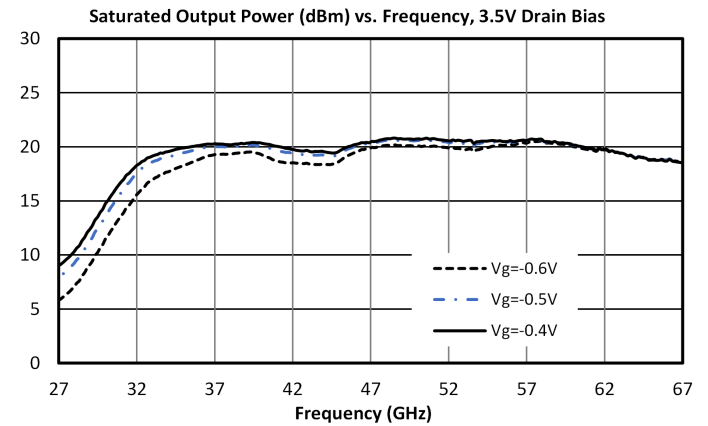
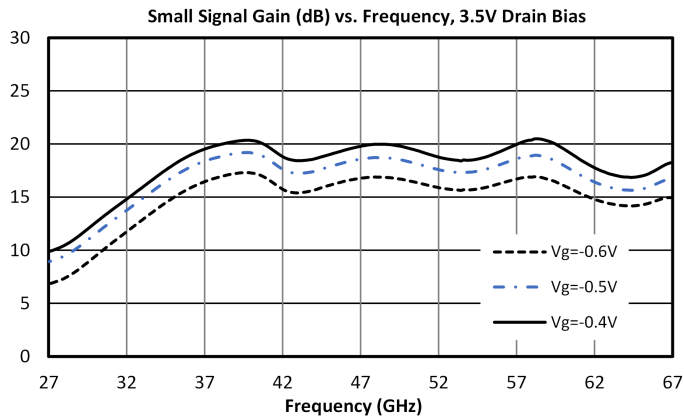
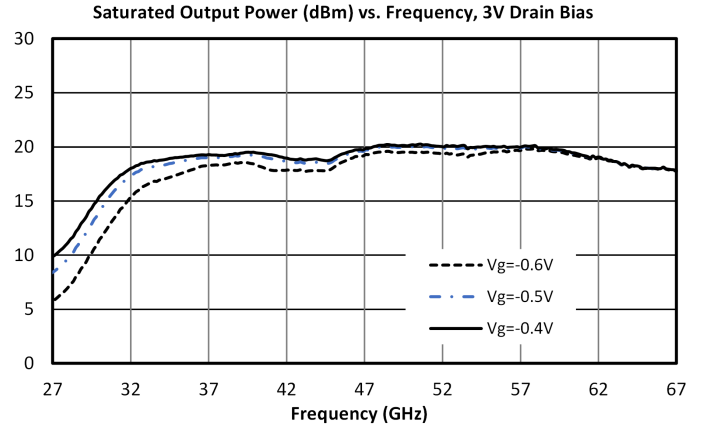
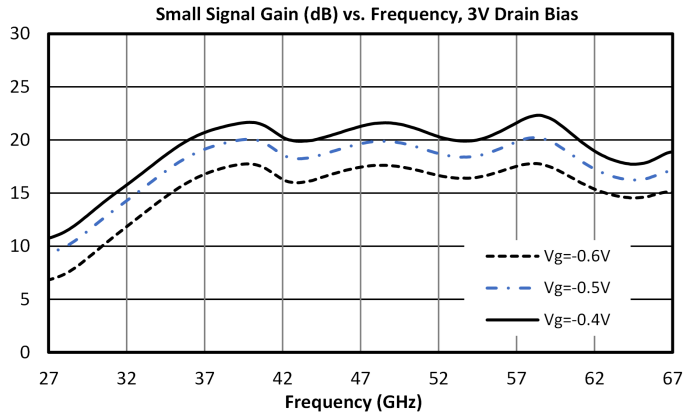
The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits apply only to our connectorized units and are guaranteed at TA=+25°C.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Small Signal Gain	3.5V/-0.4V Bias	35	67	-	16	-	dB
Small Signal Gain	3.5V/-0.5V Bias	35	67	13	18	-	dB
Small Signal Gain	3.5V/-0.6V Bias	35	67	-	19	-	dB
Saturated Output Power <sup>1</sup>	3.5V/-0.5V Bias	35	67	15	20	-	dBm
Output IP3	3.5V/-0.5V, -20 dBm Input Power	35	67	-	26	-	dBm
Input IP3	3.5V/-0.5V, -20 dBm Input Power	35	67	-	8	-	dBm
Input Return Loss	3.5V/-0.5V Bias	35	67	-	-17	-	dB
Output Return Loss	3.5V/-0.5V Bias	35	67	-	-15	-	dB
Reverse Isolation	3.5V/-0.5V Bias	35	67	-	44	-	dB
Input Power for Saturation	3.5V/-0.5V	35	67	-	5	-	dBm
Bias Requirements <sup>2</sup>	3.5V/-0.4V	-	-	-	374	-	mA
Bias Requirements <sup>3</sup>	3.5V/-0.5V	-	-	-	298	-	mA
Bias Requirements <sup>4</sup>	3.5V/-0.6V	-	-	-	222	-	mA

<sup>[1]</sup> Saturated Output Power measured with A-3567UC driver biased at 3.5V/-0.5V input to A-3567 DUT at specified bias condition. Input power to driver nominally 0dBm with 6dB attenuator, corresponding to +8dBm to +10dBm input power.

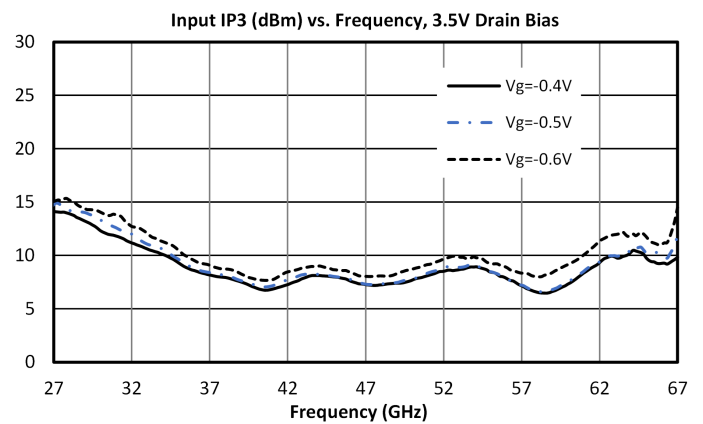
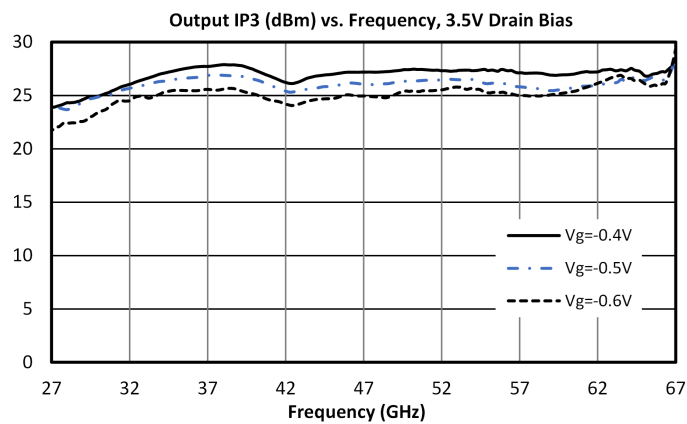
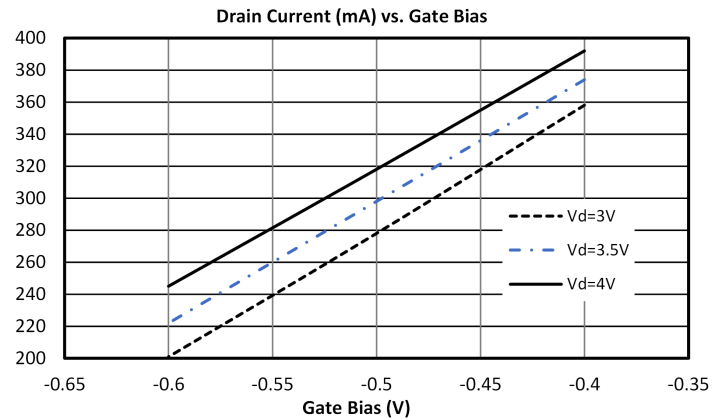
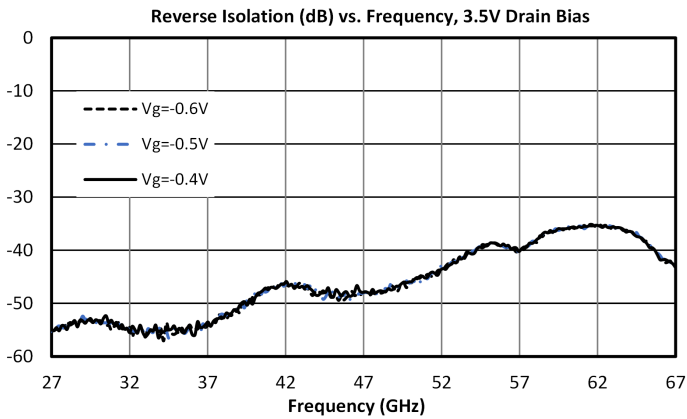
<sup>[2]</sup><sup>[3]</sup><sup>[4]</sup> Bias conditions tested with no RF input power. Bias conditions presented as Vd/Vg.

### Typical Performance Plots



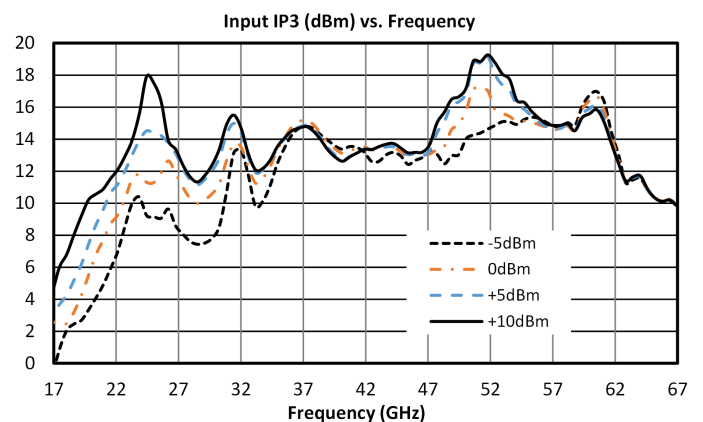
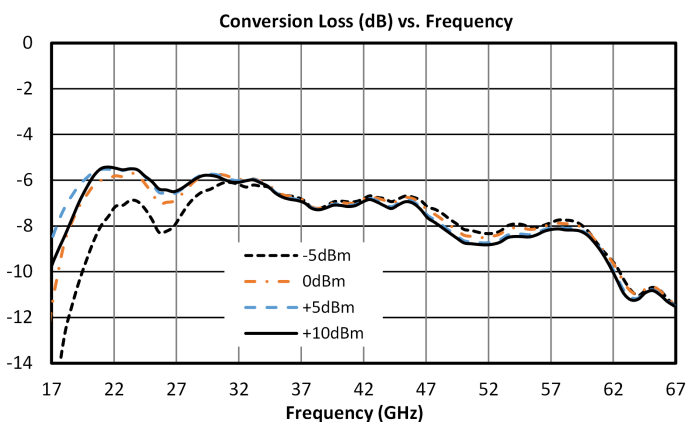
# A-3567UC

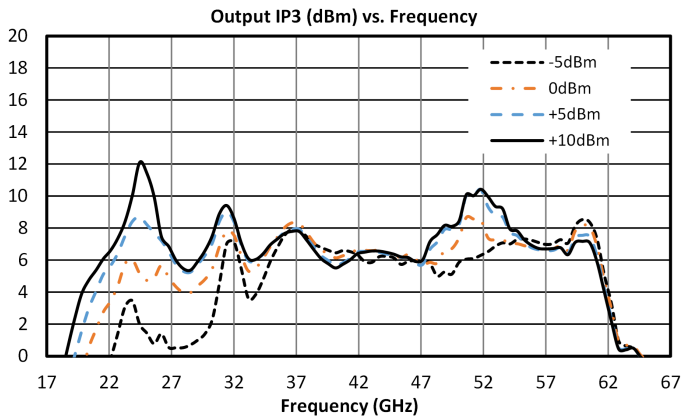
## 30 GHz - 67 GHz LO Driver Amplifier



### MM1-1467LUB Mixer Performance with A-3567UC LO Driver

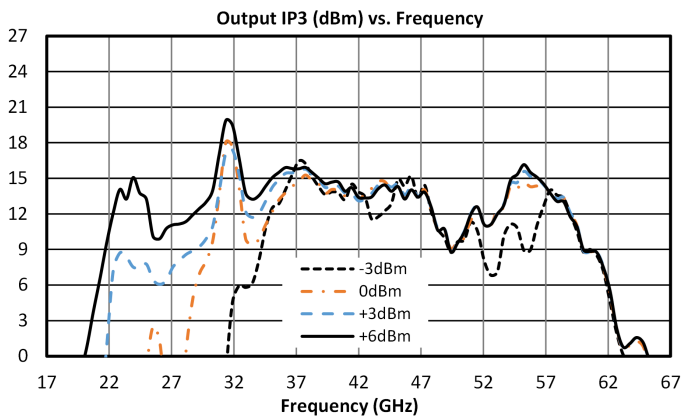
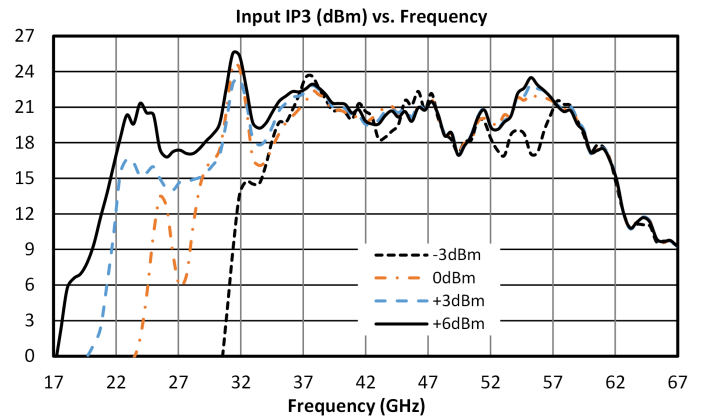
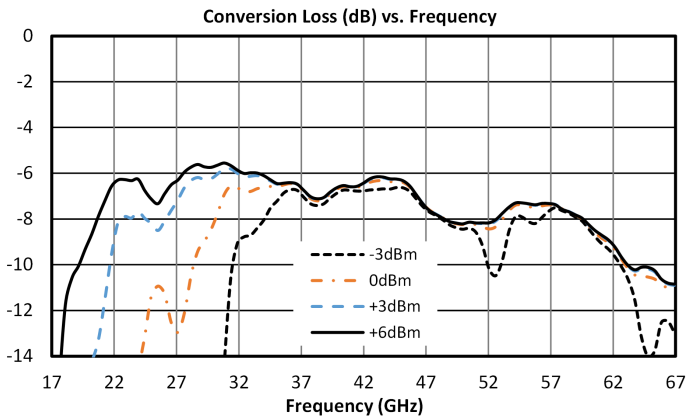
Data taken by driving MM1-1467LUB module LO port with A-3567UC module in Config A biased at 3.5V<sub>d</sub> and -0.5V<sub>g</sub>. Specified power is at input to A-3567UC driver. IF frequency 91MHz.





### MM1-1467HUB Mixer Performance with A-3567UC LO Driver

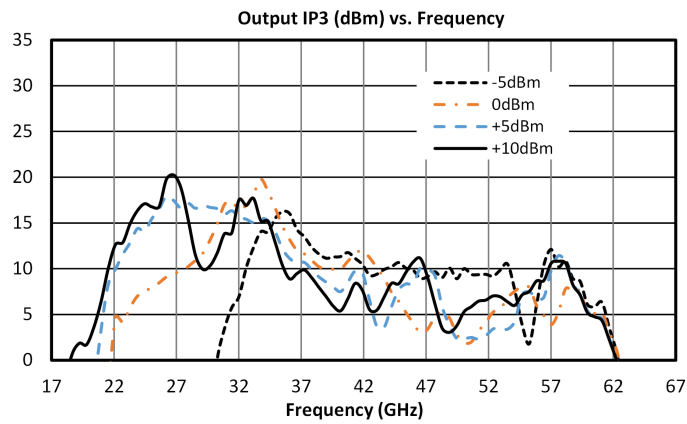
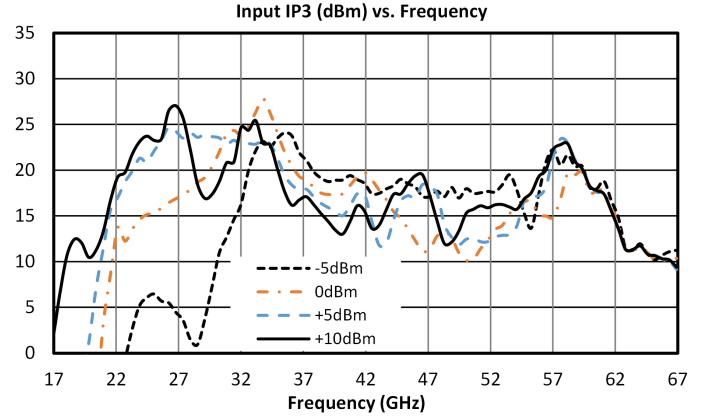
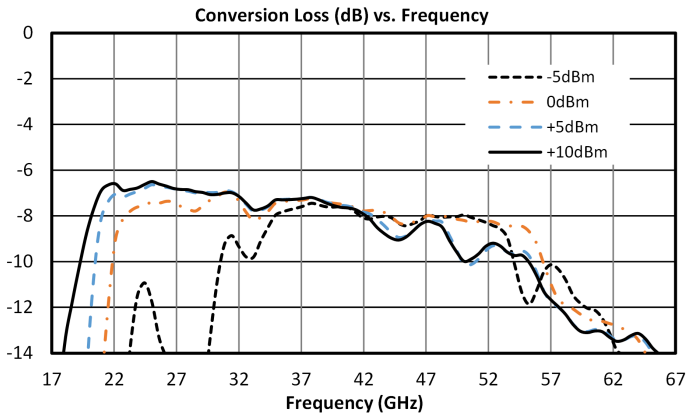
Data taken by driving MM1-1467HUB module LO port with A-3567UC module in Config A biased at  $3.5V_D$  and  $-0.5V_G$ . Specified power is at input to A-3567UC driver. IF frequency 91MHz.





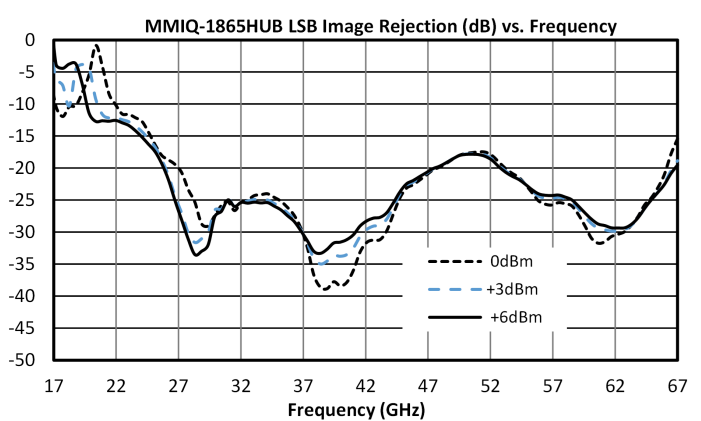
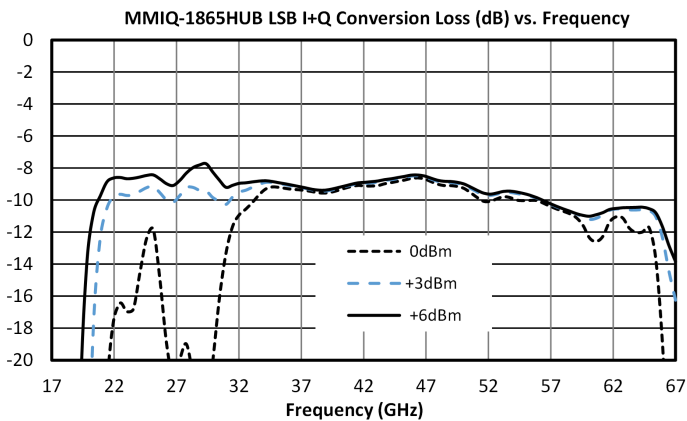
### MM1-1857HS Mixer Performance with A-3567UC LO Driver

Data taken by driving MM1-1857HS module LO port with A-3567UC module with a biased at  $3.5V_d$  and  $-0.5V_g$ . Specified power is at input to A-3567UC driver. IF frequency 91MHz.



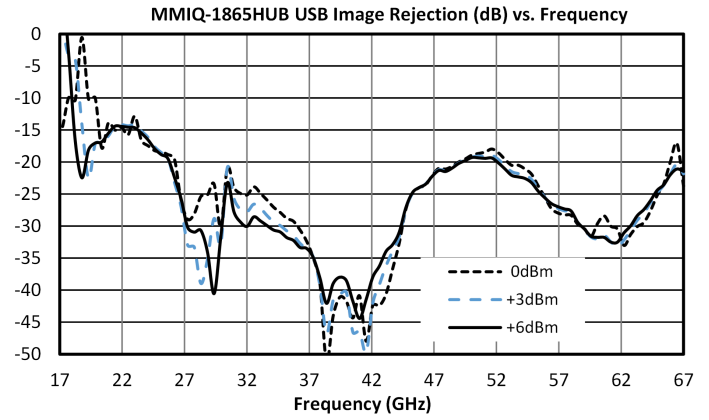
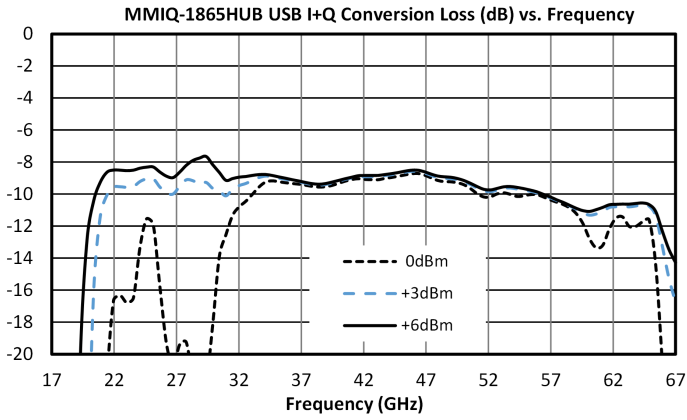
### MMIQ-1865HUB IQ Mixer Performance with A-3567UC LO Driver

Data taken by driving MMIQ-1465HUB module LO port with A-3567UC module biased at  $3.5V_d$  and  $-0.5V_g$ . Specified power is at input to A-3567UC driver. Combined I+Q frequency 91MHz.



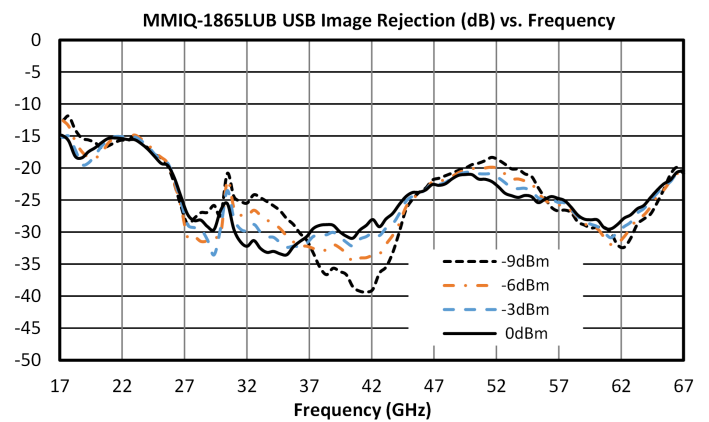
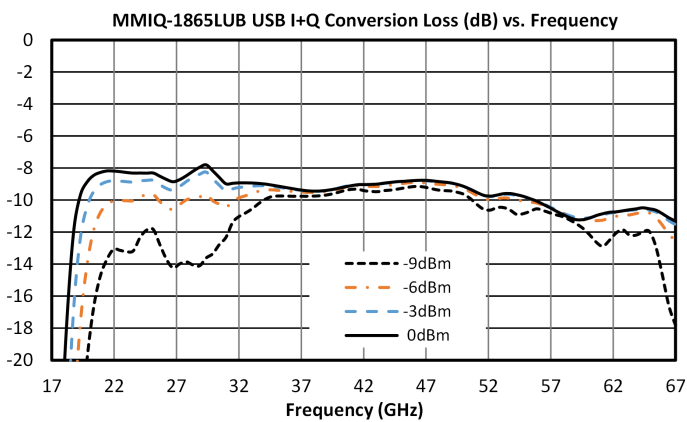
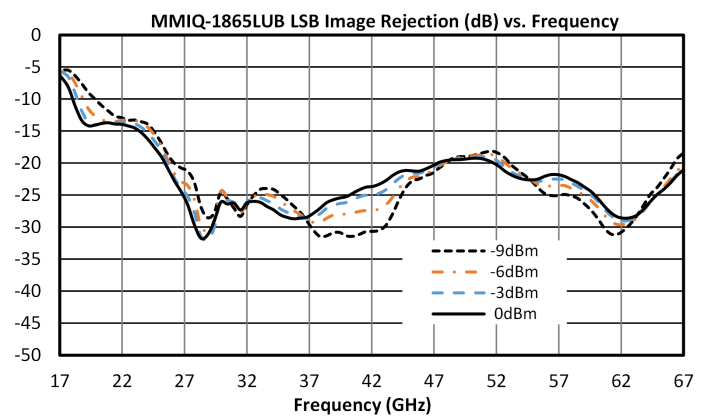
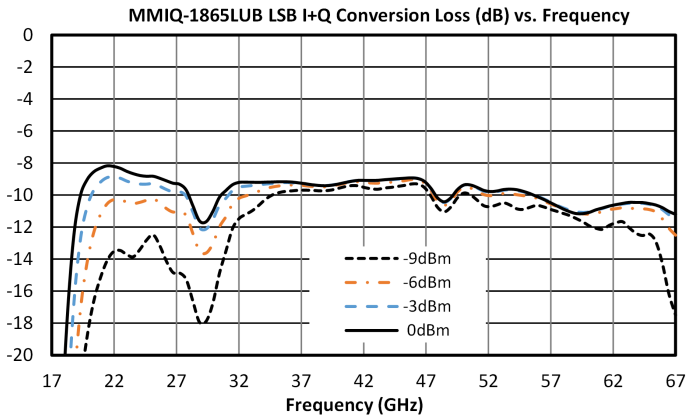
# A-3567UC

## 30 GHz - 67 GHz LO Driver Amplifier



### MMIQ-1865LUB IQ Mixer Performance with A-3567UC LO Driver

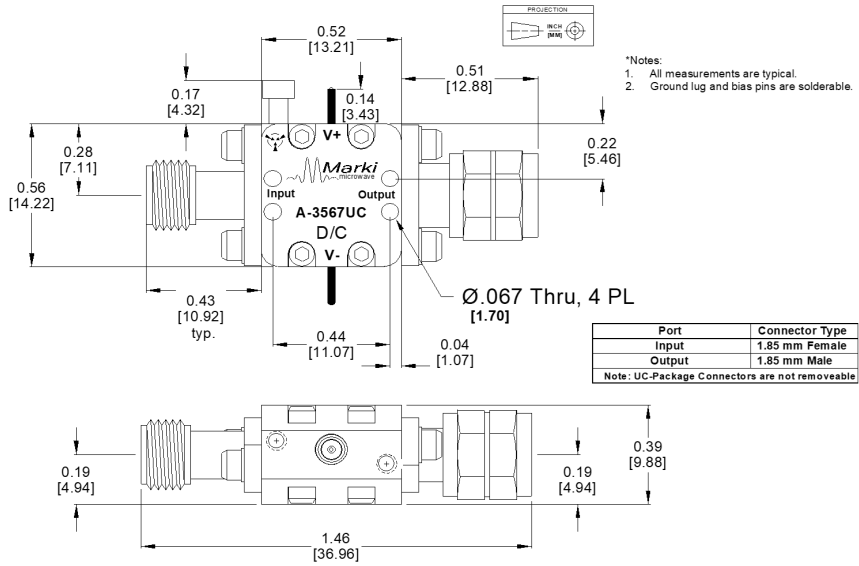
Data taken by driving MMIQ-1465HUB module LO port with A-3567UC module biased at  $3.5V_d$  and  $-0.5V_g$ . Specified power is at input to A-3567UC driver. Combined I+Q frequency 91MHz.



### Mechanical Data

### Outline Drawing

Download : [Outline 3D Drawing](#) | [Outline 3D STP](#)



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