



Typical Characteristics for PUC-4G18G-CD-1

PMI MODEL NUMBER PUC-4G18G-CD-1 IS AN AMPLIFIED UP/DOWN-CONVERTER FOR THE FREQUENCY RANGE OF 4GHz TO 18GHz WITH AN IF RANGE OF 10MHz to 100MHz. IT FEATURES A 32dB PROGRAMMABLE ATTENUATOR WITH 10-BIT RESOLUTION, AND AN OUTPUT AMPLIFIER TO PROVIDE CONVERSION GAIN. IT ALSO FEATURES AN IF TRANSFER SWITCH TO SELECT THE UPPER OR LOWER SIDEBAND.



December 9, 2014
Designed by: Paul Kuhn
Mechanical Layout: Justin Shupe
Reported by: Paul Kuhn

7311-F Grove Road Frederick, MD 21704 USA Phone: (301)662-5019 Fax: (301)662-1731
Email: sales@pmi-rf.com



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DESCRIPTION

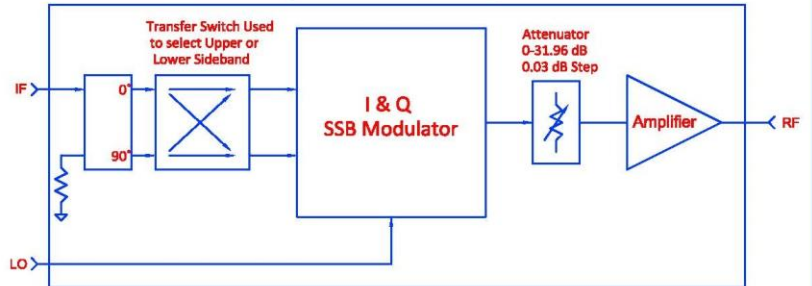
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	2	ORIGINAL RELEASE	7/8/14	

SPECIFICATIONS

- FREQUENCY RANGE: 4 to 18GHz
- CONVERSION GAIN: 10 dB, ± 3 dB MAX (RF= 0dBm, IF modulation =+14dBm)
- MAX INPUT POWER: 20dBm MAX
- VSWR: 2.0:1 MAX (RF= 0dBm, IF modulation =+14dBm)
- CARRIER SUPPRESSION: 20dBc MIN, 25dBc TYP
- SIDE BAND SUPPRESSION: 15dBc MIN, 20dBc TYP
- IF FREQUENCY RANGE: 10MHz to 100MHz
- POWER SUPPLY: +15V @ 400mA MAX
-15V @ 100mA MAX
- RF OUTPUT 1dB COMPRESSION: 12dBm TYP (RF= 2dBm, IF modulation =+14dBm)
- RF INPUT 1dB COMPRESSION: 5dBm TYP (IF modulation =+14dBm, >5dB Attenuation)
- SIDEBAND SWITCHING SPEED: 150ns MAX
- RF CONNECTORS: SMA FEMALE INPUTS AND OUTPUT
- DATA CONTROL INPUT: TRUE BINARY (NOT BCD)
- LOGIC LEVELS: TTL & LVTTL COMPATIBLE
- LATCH: SEE LATCH TRUTH TABLE
- SIZE: 6.50" X 2.50" X 0.50"
- FINISH: BLUE PAINT

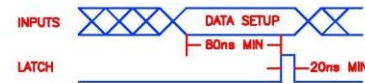
BLOCK DIAGRAM



ATTENUATOR

- ATTENUATION RANGE: 0 to 31.96dB
- NUMBER OF ATTENUATION BITS: 10-BITS (1024 STEPS)
- MAX ATTENUATION STEP SIZE: 0.03dB
- SWITCHING SPEED: 500ns MAX

INPUT TIMING DIAGRAM



NOTE1: ALLOW AT LEAST 80ns FOR DATA SETUP BEFORE LATCH LOGIC 1
NOTE2: IF LATCH IS NOT USED LEAVE LATCH PIN UNCONNECTED (DEFAULT LOGIC 1)

ENVIRONMENTAL RATINGS

- TEMPERATURE: -40°C TO +85°C (OPERATING)
-54°C TO +100°C (STORAGE)
- HUMIDITY: 95% MAX
- SHOCK: MIL-STD-202G, METHOD 213B COND. B
- VIBRATION: MIL-STD-202G, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202G, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202G, METHOD 107D COND. A

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

15-PIN CONNECTOR PIN-OUT	
PIN	FUNCTION
1	0.03dB (LSB)
2	0.06dB
3	0.12dB
4	0.25dB
5	0.50dB
6	1.00dB
7	2.00dB
8	4.00dB
9	8.00dB
10	16.00dB (MSB)
11	-15 VDC
12	GND
13	+15 VDC
14	SIDEBAND SELECT
15	LATCH

SIDEBAND SELECT TRUTH TABLE	
LOGIC 1	UPPER SIDEBAND
LOGIC 0	LOWER SIDEBAND
LATCH TRUTH TABLE	
LOGIC 1	DATA TRANSPARENT
LOGIC 0	DATA LOCKED

PMI CONFIDENTIAL AND PROPRIETARY

PLANAR MONOLITHICS INDUSTRIES, INC.

7311-F GROVE ROAD
FREDERICK, MARYLAND 21704 USA
TEL: 301-662-5019 FAX: 301-662-1731
WEBSITE: www.pmi-rf.com
E-MAIL: sales@pmi-rf.com
ISO 9001 CERTIFIED



APPROVALS		DATE		TITLE			
DESIGN	JGS		7/8/14	PRODUCT FEATURE			
MODIFIED				PUC-4G18G-CD-1			
ISSUED				SIZE	FROM NO.	DWG NO.	REV.
				A	05XQ0	27022421	2
				SCALE	N:S		SHEET 1 OF 2

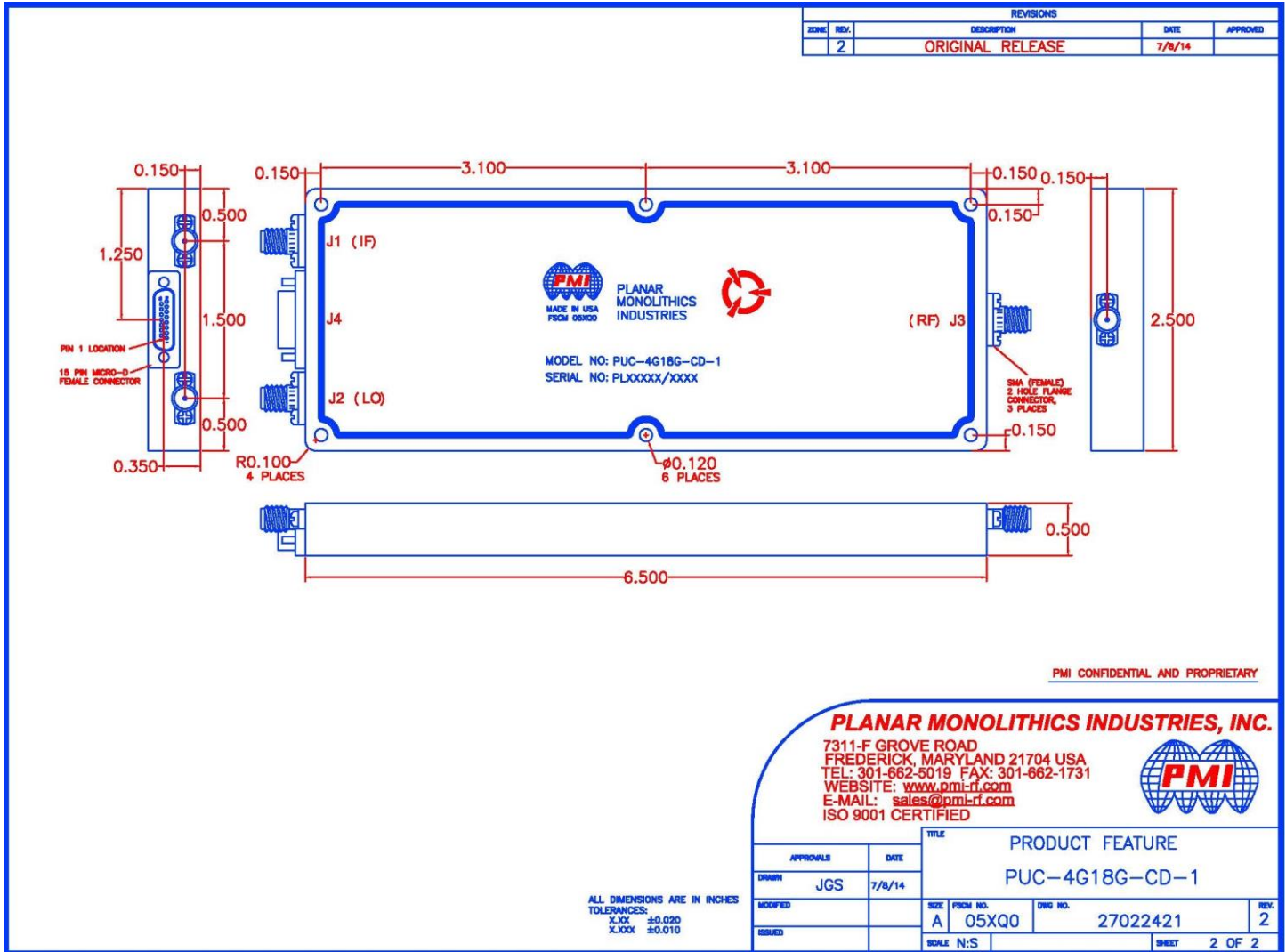
ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

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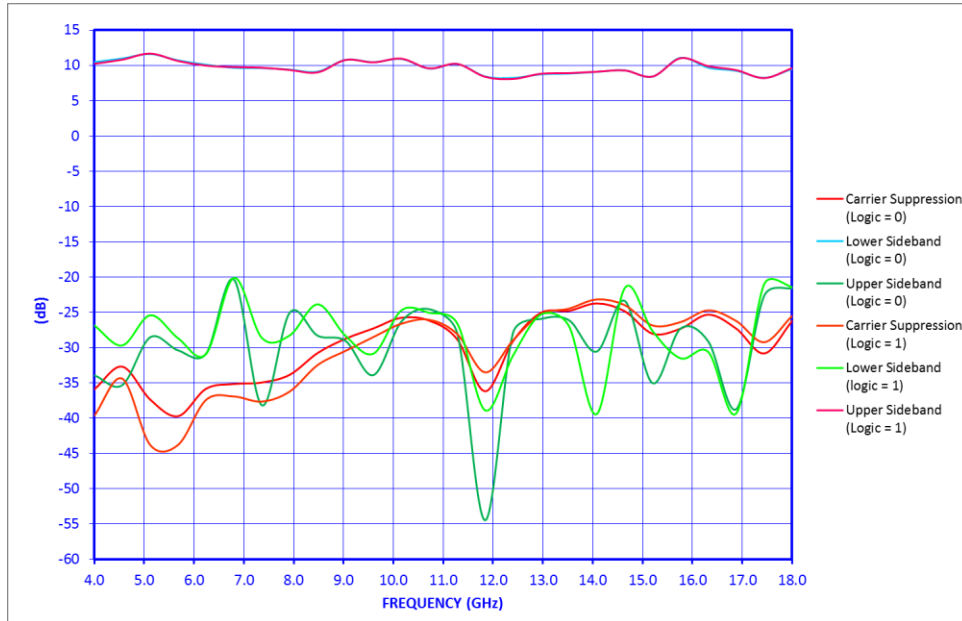
Summary Test Data

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS	QA QC
1	FREQUENCY RANGE:	4 to 18 GHz	4 to 18 GHz	
2	CONVERSION GAIN:	10 dB, ± 3 dB MAX (RF= 0dBm, IF modulation =+14dBm)	10 dB, ± 2.5 dB	
3	MAX INPUT POWER:	20dBm MAX	20 dBm	
4	VSWR:	2.0:1 MAX (RF= 0dBm, IF modulation =+14dBm)	1.9 :1	
5	CARRIER SUPPRESSION:	20dBc MIN, 25dBc TYP	23 dBc	
6	SIDE BAND SUPPRESSION:	15dBc MIN, 20dBc TYP	19 dBc	
7	IF FREQUENCY RANGE:	10MHz to 100MHz	10MHz to 100MHz	
8	POWER SUPPLY:	+15V @ 400mA MAX -15V @ 100mA MAX	+15V @ 178 mA -15V @ 3 mA	
9	RF OUTPUT 1dB COMPRESSION:	12dBm TYP (RF= 2dBm, IF modulation =+14dBm)	12 dBm	
10	RF INPUT 1dB COMPRESSION:	5dBm TYP (IF modulation =+14dBm, >5dB Attenuation)	6 dBm	
11	SIDEBAND SWITCHING SPEED:	150ns MAX	45 ns	

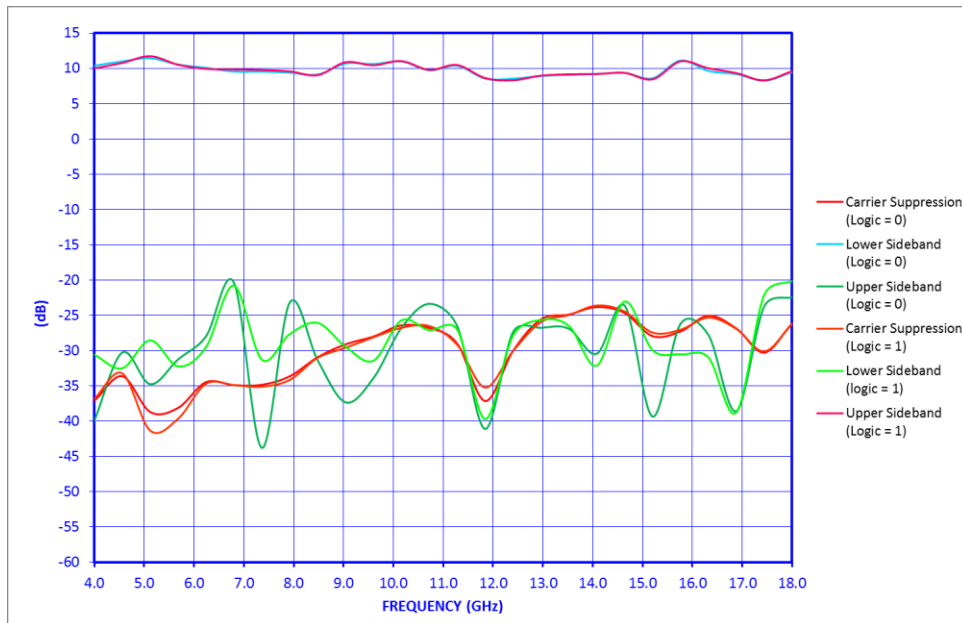


Typical Characteristics for PUC-4G18G-CD-1

Conversion Gain, IF = 10 MHz



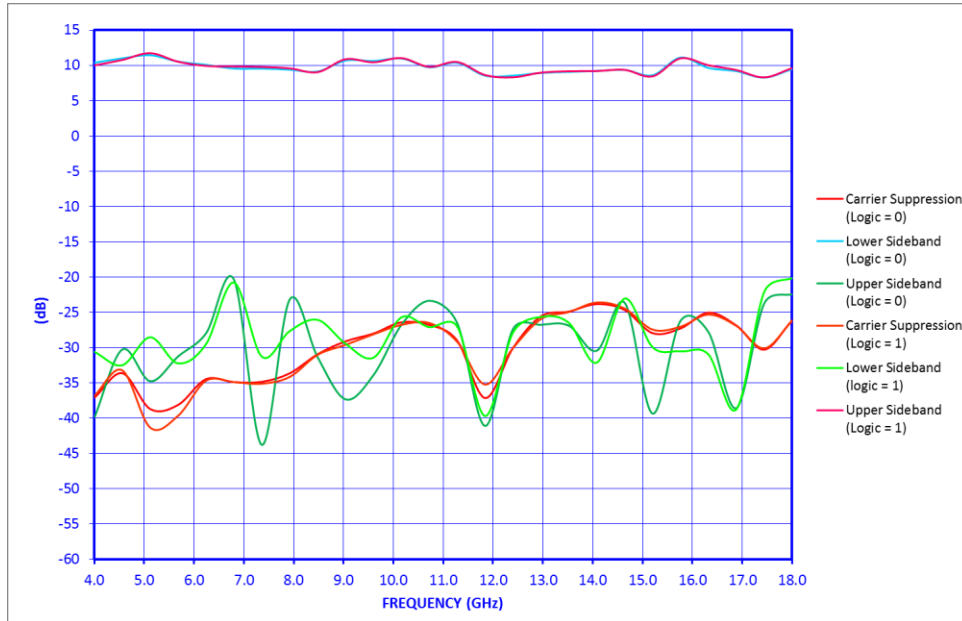
Conversion Gain, IF = 25 MHz



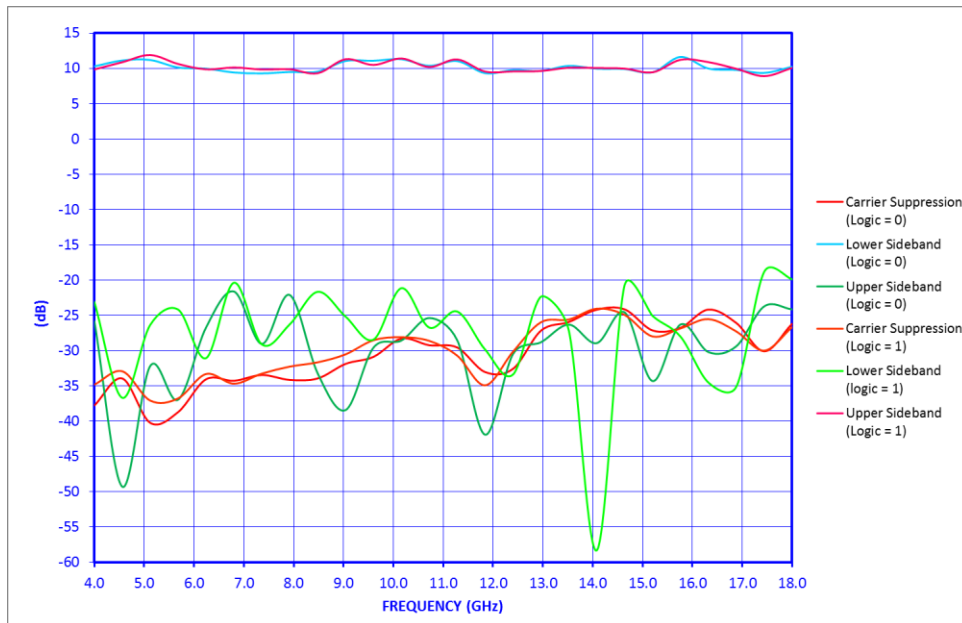


Typical Characteristics for PUC-4G18G-CD-1

Conversion Gain, IF = 50 MHz



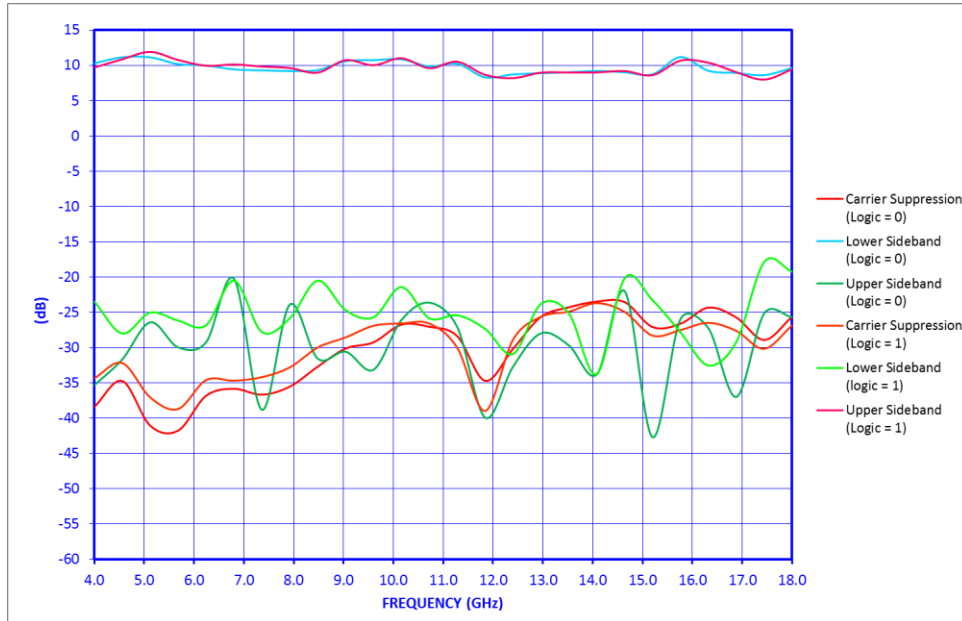
Conversion Gain, IF = 62 MHz



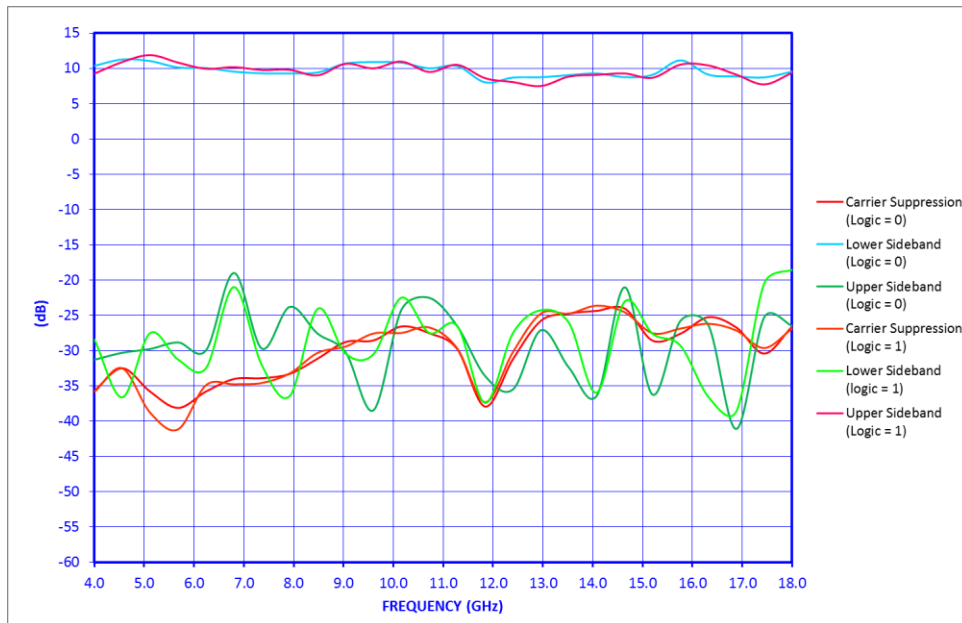


Typical Characteristics for PUC-4G18G-CD-1

Conversion Gain, IF = 75 MHz



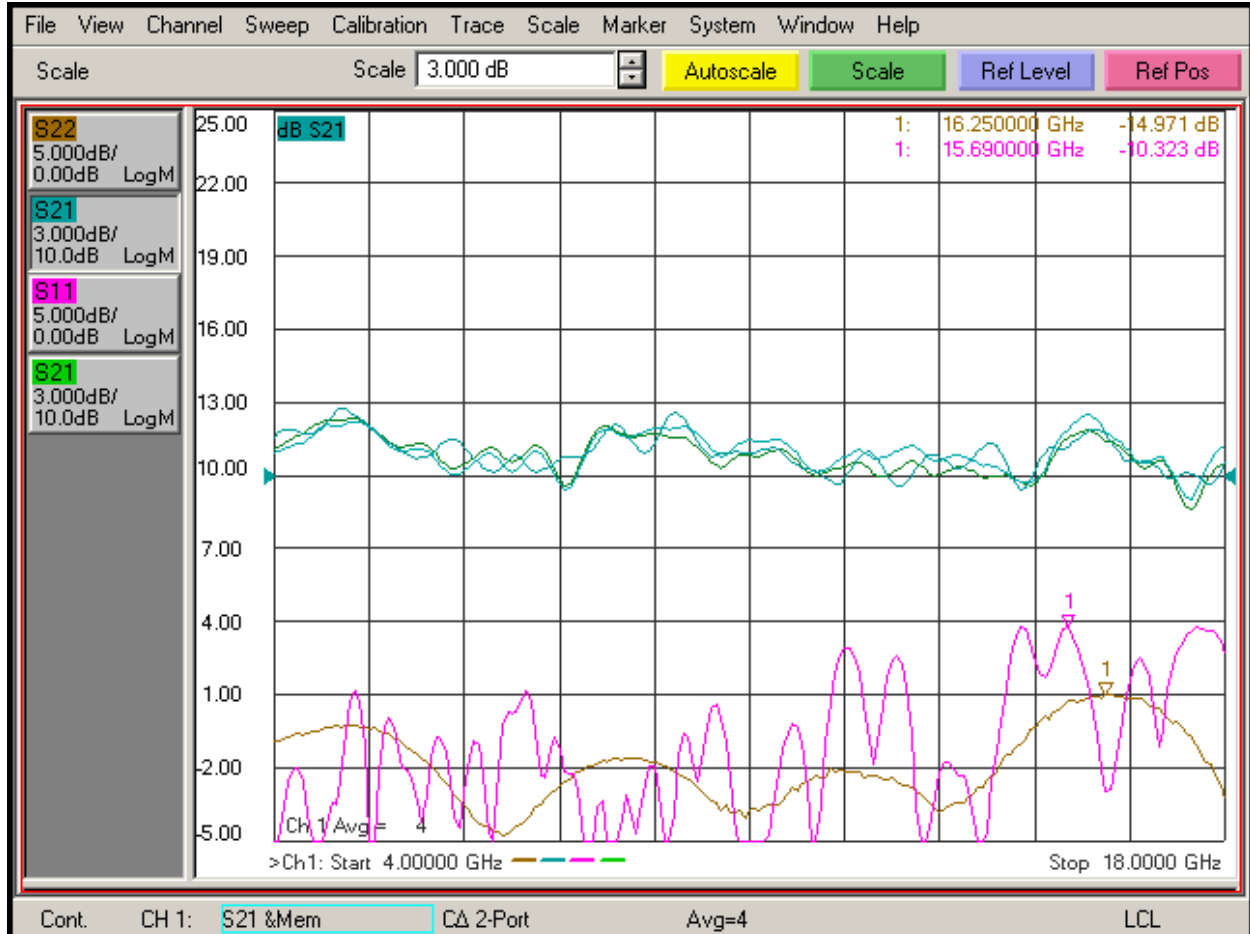
Conversion Gain, IF = 100 MHz





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Return Loss: J2 (LO) → S11 and J3 (RF) → S22





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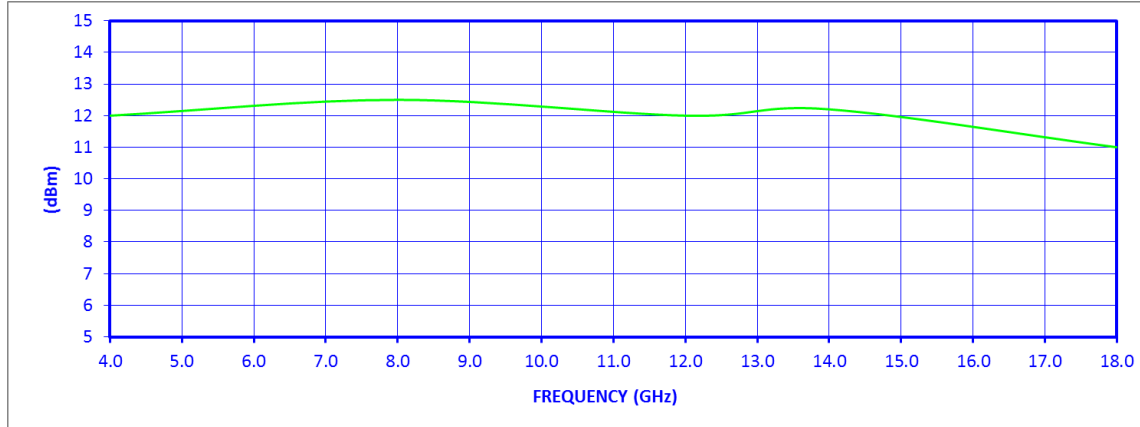
Return Loss: J1 (IF) → S11



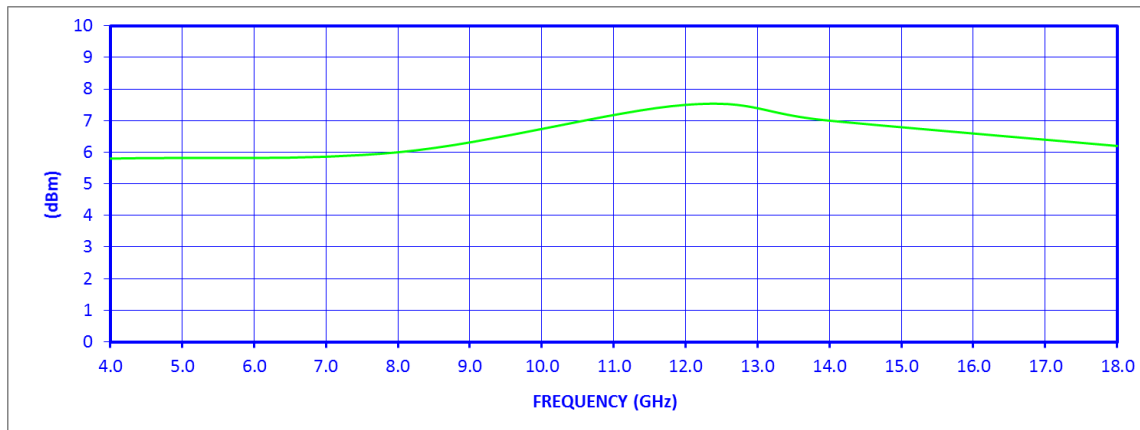


Typical Characteristics for PUC-4G18G-CD-1

RF P1dB Output Compression IF =10 MHz, 14 dBm



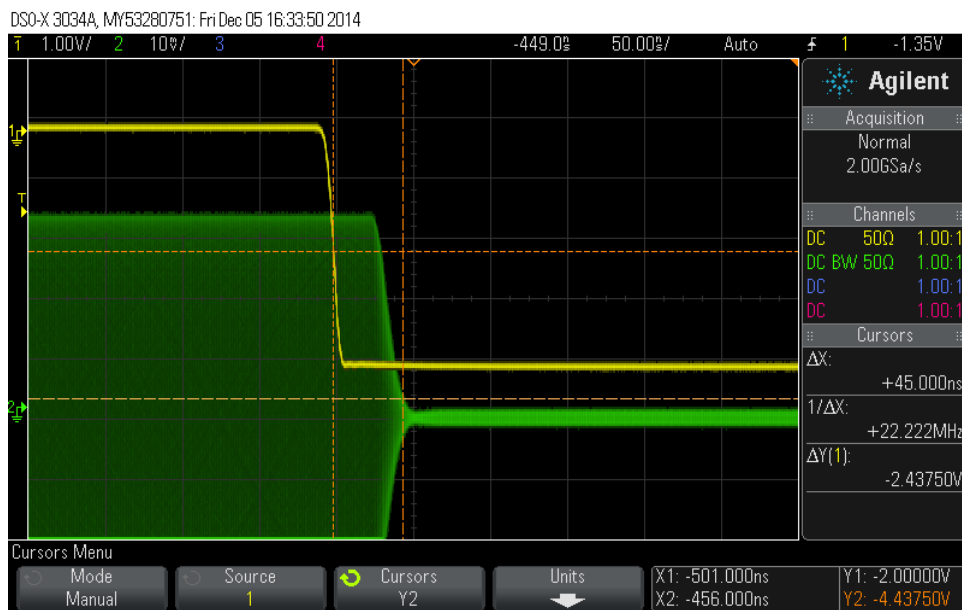
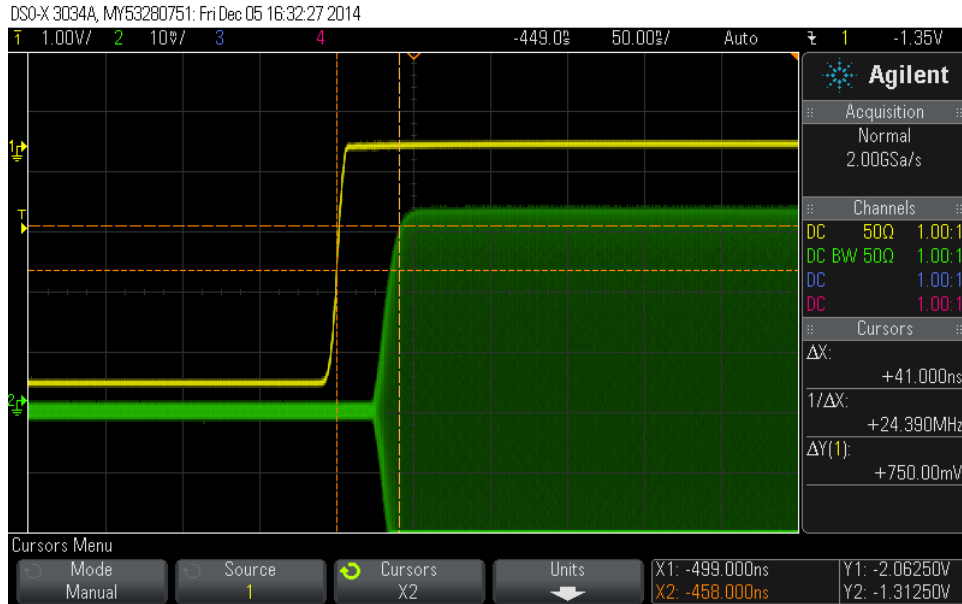
RF P1dB Input Compression IF =10 MHz, 14 dBm @ 10 dB Attenuation





Typical Characteristics for PUC-4G18G-CD-1

Sideband Switching Speed

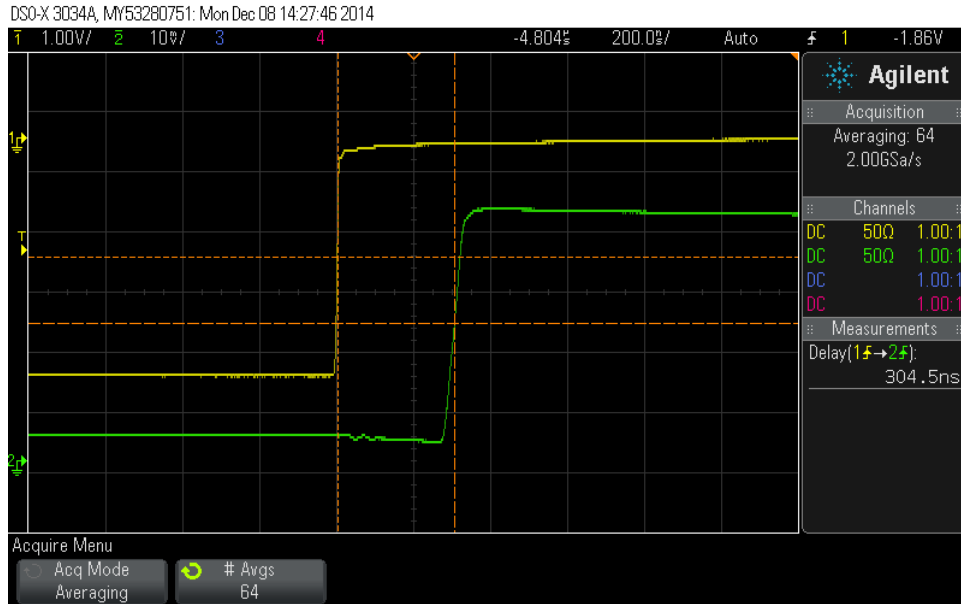


Yellow Trace: Logic Input Pulse
Green Trace: RF Measured with an RF Mixer into a 20 MHz Filter

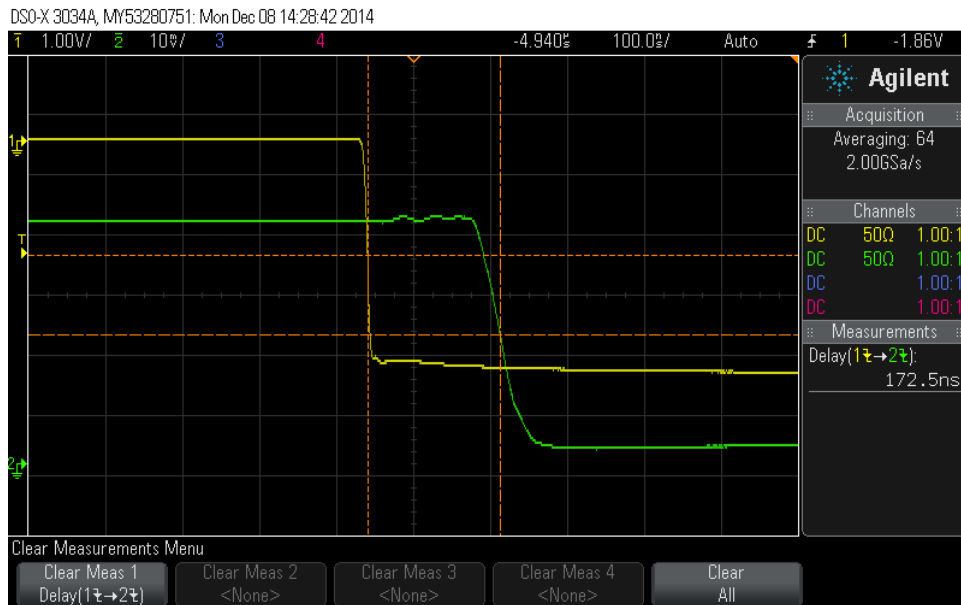


Typical Characteristics for PUC-4G18G-CD-1

Attenuator Switching Speed (On Delay)



Attenuator Switching Speed (Off Delay)



Yellow Trace: Logic Input Pulse
Green Trace: RF Measured with a Tunnel Diode

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Typical Characteristics for PUC-4G18G-CD-1

Attenuation 5 dB Steps

