



**TYPICAL CHARACTERISTICS
ON
BPM-2640-180-292FF**

PMI MODEL: BPM-2640-180-292FF IS A BI-PHASE MODULATOR OPERATING OVER THE 26 TO 40 GHz FREQUENCY RANGE. THIS MODEL OFFERS INSERTION LOSS OF 8dB TYPICAL WHILE MAINTAINING A TYPICAL AMPLITUDE BALANCE OF ± 4.0 dB. THIS COMPACT HOUSING MEASURES 1.0" x 1.0" x 0.5" AND IS OUTFITTED WITH 2.92mm FEMALE CONNECTORS.



October 25, 2019
Designed By: PMI Engineering

Tested By:
Garrett Radtke
Alfredo Lopez

Reported By;
Garrett Radtke



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DESCRIPTION

PMI MODEL: BPM-2640-180-292FF IS A BI-PHASE MODULATOR OPERATING OVER THE 26 TO 40 GHz FREQUENCY RANGE. THIS MODEL OFFERS INSERTION LOSS OF 8 dB TYPICAL WHILE MAINTAINING A TYPICAL AMPLITUDE BALANCE OF ± 4.0 dB. THIS COMPACT HOUSING MEASURES 1.0" x 1.0" x 0.5" AND IS OUTFITTED WITH 2.92mm FEMALE CONNECTORS.

SPECIFICATIONS

- FREQUENCY RANGE: 26 TO 40 GHz
- INSERTION LOSS: 8 dB TYP.
- VSWR: 2.0:1 GOAL
3.0:1 MAX
- SWITCHING SPEED: 100 ns MAXIMUM
- PHASE VARIATION: $\pm 40^\circ$ TYP
- AMPLITUDE BALANCE: ± 4.0 dB TYP
- PHASE SHIFT CONTROL INPUT: TTL "0" = 0°
TTL "1" = 180°
- POWER HANDLING: 20 dBm OPERATIONAL
- IMPEDANCE: 50 Ω
- POWER SUPPLY: +5 VDC @ 75 mA MAXIMUM
-5 VDC @ 20 mA MAXIMUM
- CONNECTORS: 2.92 mm FEMALE
- SIZE: 1.0" x 1.0" x 0.5"
- FINISH: PAINTED BLUE

ENVIRONMENTAL RATINGS

- TEMPERATURE: -55 $^\circ$ C TO +85 $^\circ$ C (OPERATING)
-65 $^\circ$ C TO +125 $^\circ$ C (STORAGE)
- HUMIDITY: UP TO 90%, NON-CONDENSING
- SHOCK: MIL-STD-202, METHOD 213B COND. B
- VIBRATION: MIL-STD-202, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202, METHOD 107D COND. A

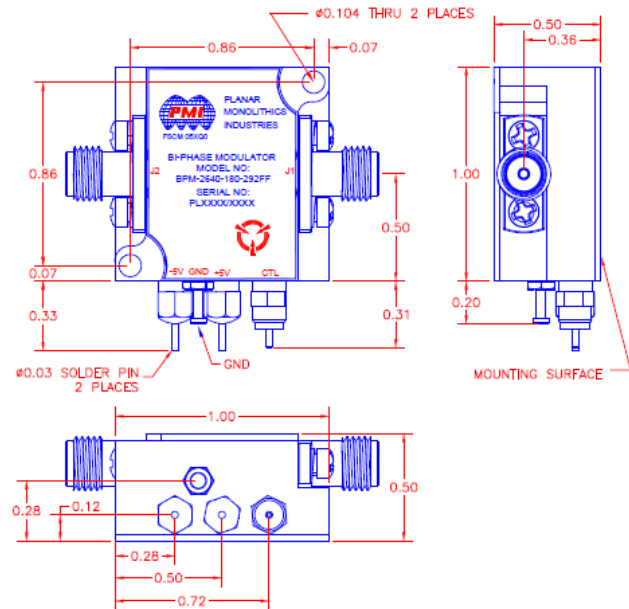
NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PMI CONFIDENTIAL AND PROPRIETARY

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

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	10/16/19	

MECHANICAL OUTLINE



PLANAR MONOLITHICS INDUSTRIES, INC.

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FREDERICK, MARYLAND 21704 USA
TEL: (301)-662-5019, FAX: (301)-662-1731
WEB: www.pmi-rf.com, EMAIL: sales@pmi-rf.com
ISO 9001 CERTIFIED



APPROVALS		DATE		TITLE	
DESIGN	JPH	5/29/18		PRODUCT FEATURE BPM-2640-180-292FF	
DRAWING	JPH	10/16/19			
ISSUED				SIZE: A	REV: A1
				FSM NO. 05XQ0	
				DWG NO. 27037640	
				SCALE: N:S	
				SHEET: 1 OF 1	



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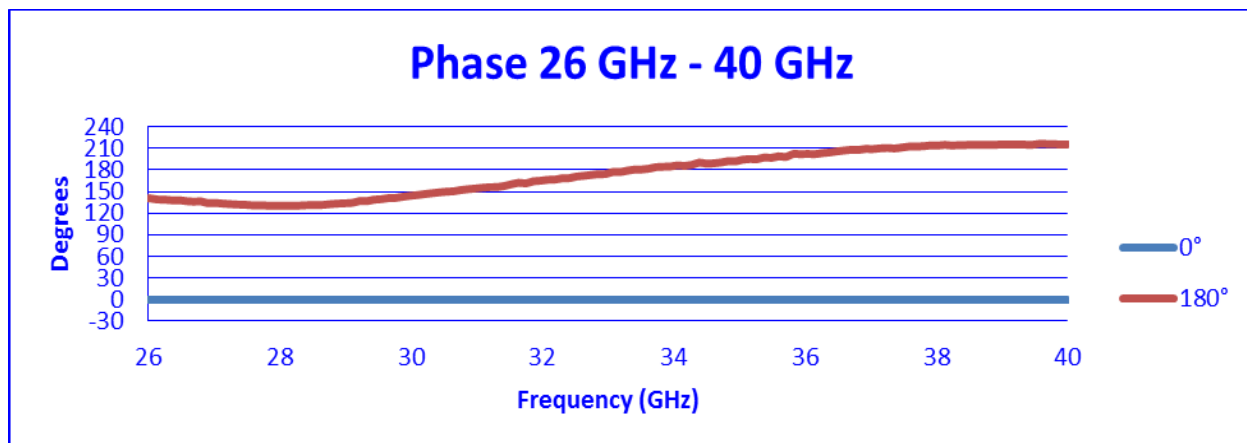
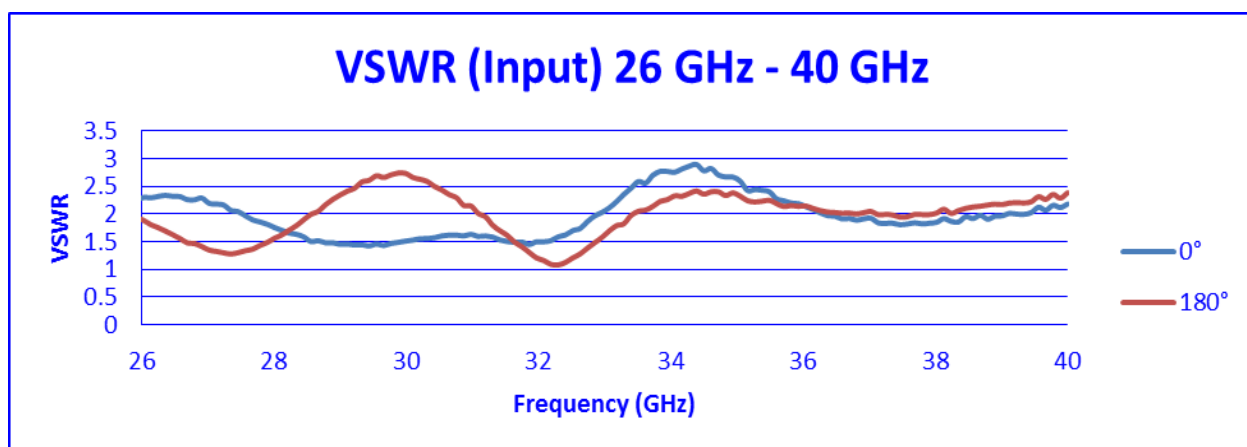
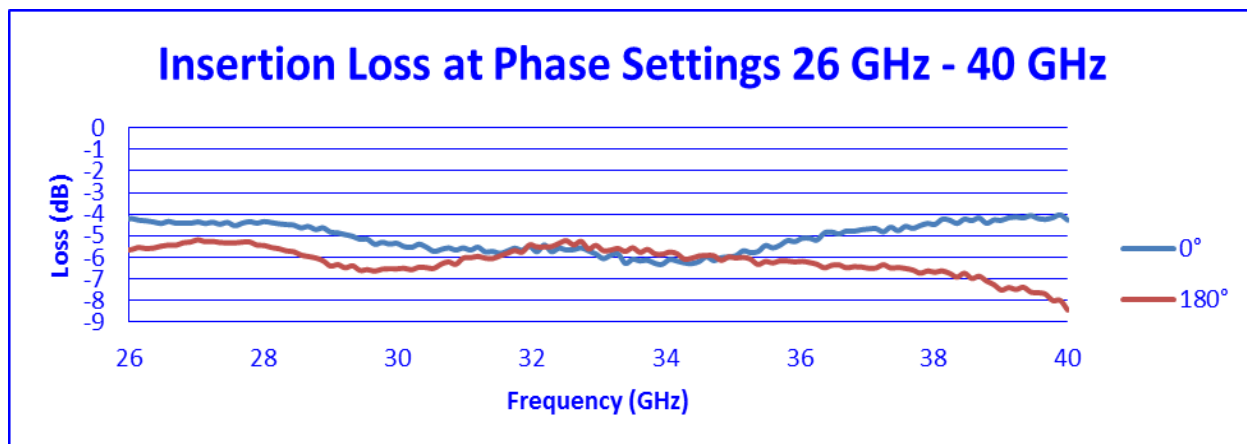
TEST RESULTS

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	ENVIRONMENTAL PARAMETERS	26 GHz - 40 GHz
1	Insertion Loss:	8 dB Typ. See Plots	@ +25°C	8.4 dB
			@ -55°C	7.9 dB
			@ +85°C	8.7 dB
2	VSWR:	3.0:1 Max. 2.0:1 Goal.	@ +25°C	2.9:1
			@ -55°C	2.8:1
			@ +85°C	2.9:1
3	Speed:	100 ns Max On/Off	@ +25°C	44 ns
4	Phase Variation:	±40° Typ	@ +25°C	-49.9
			@ -55°C	-51.4
			@ +85°C	-48.8
5	Amplitude Balance:	±4.0 dB Typ	@ +25°C	-4.2
			@ -55°C	-3.8
			@ +85°C	-4.3
6	Phase Shift Control Input:	TTL "0" = 0° TTL "1" = 180°	@ +25°C	PASS
			@ -55°C	PASS
			@ +85°C	PASS
7	Power Handling	20 dBm Operational	@ +25°C	PASS
			@ -55°C	PASS
			@ +85°C	PASS
8	DC Supply:	+5 VDC @ 70 mA Max. -5 VDC @ 30 mA Max.	@ +25°C	5 VDC @ 40 mA -5VDC @ 7 mA
			@ -55°C	+5 VDC @ 39 mA -5VDC @ 9 mA
			@ +85°C	+5 VDC @ 43 mA -5VDC @ 10 mA



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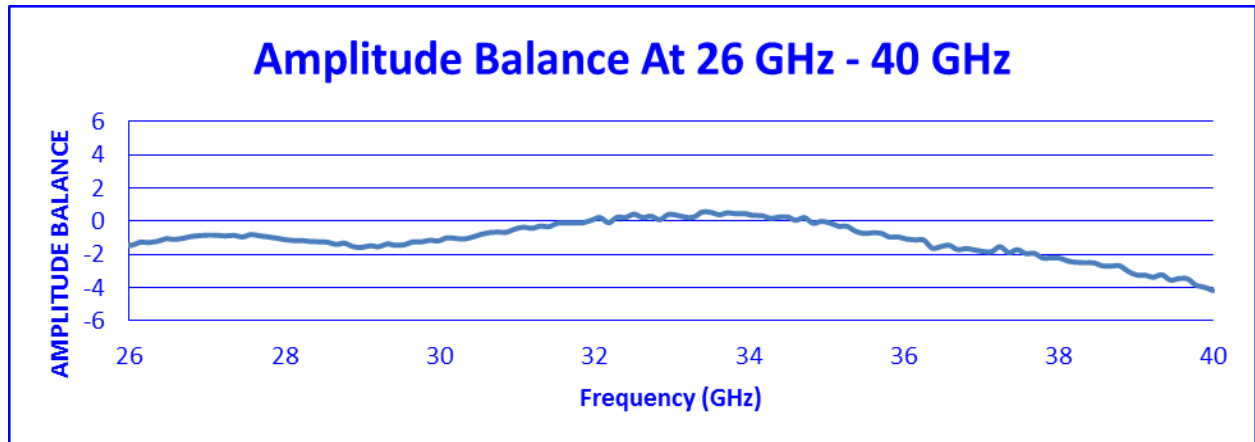
INSERTION LOSS, VSWR, AND PHASE AT 26 GHz - 40 GHz





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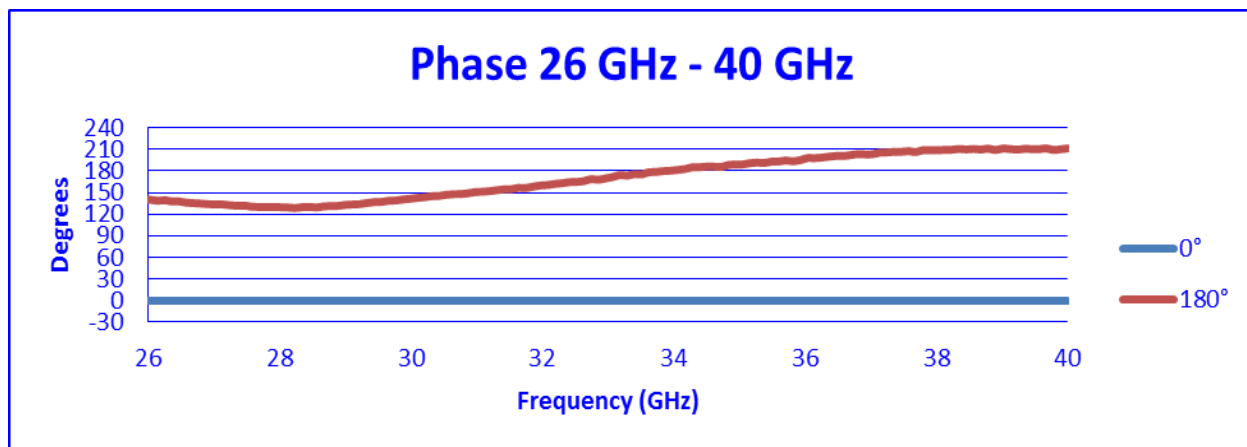
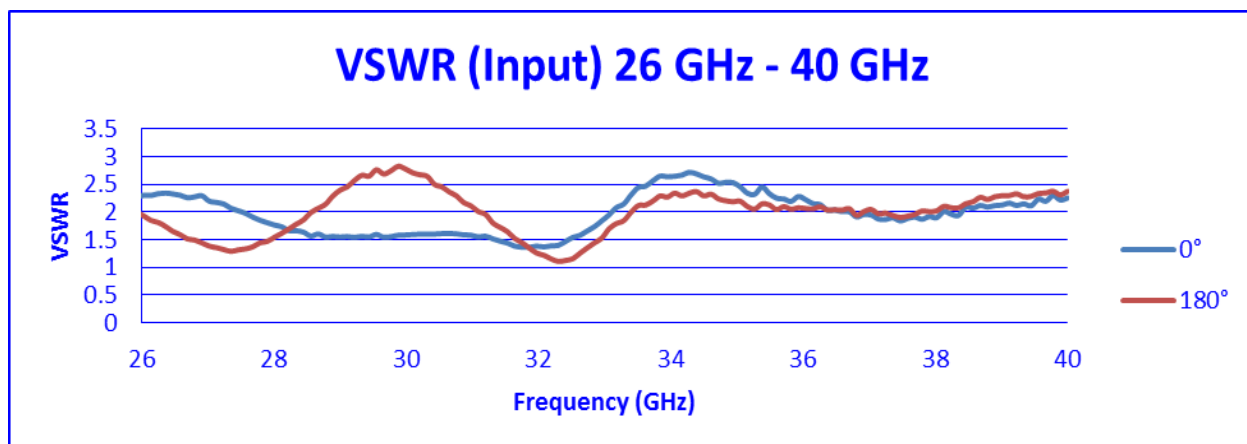
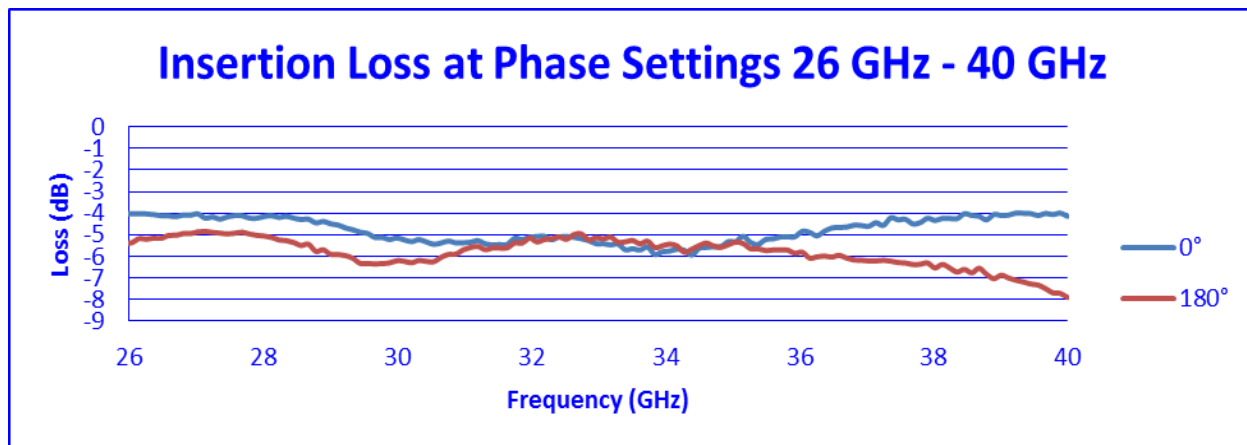
AMPLITUDE BALANCE AT 26 GHz - 40 GHz





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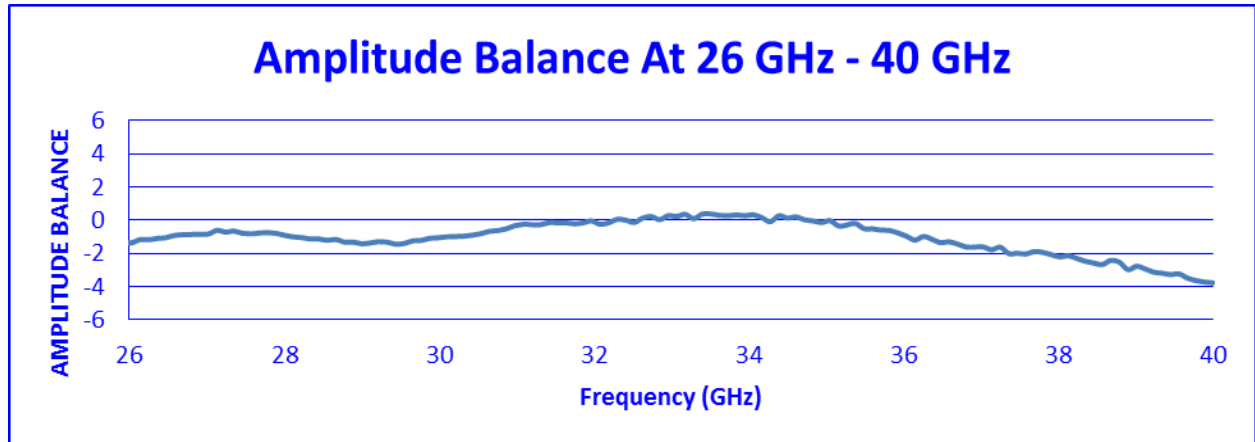
-55° C INSERTION LOSS, VSWR, AND PHASE AT 26 GHz - 40 GHz





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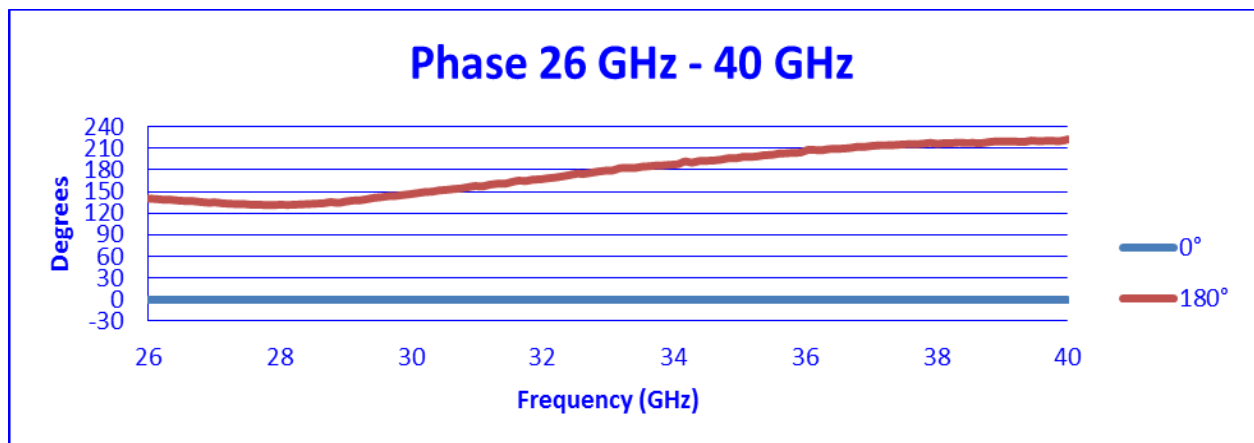
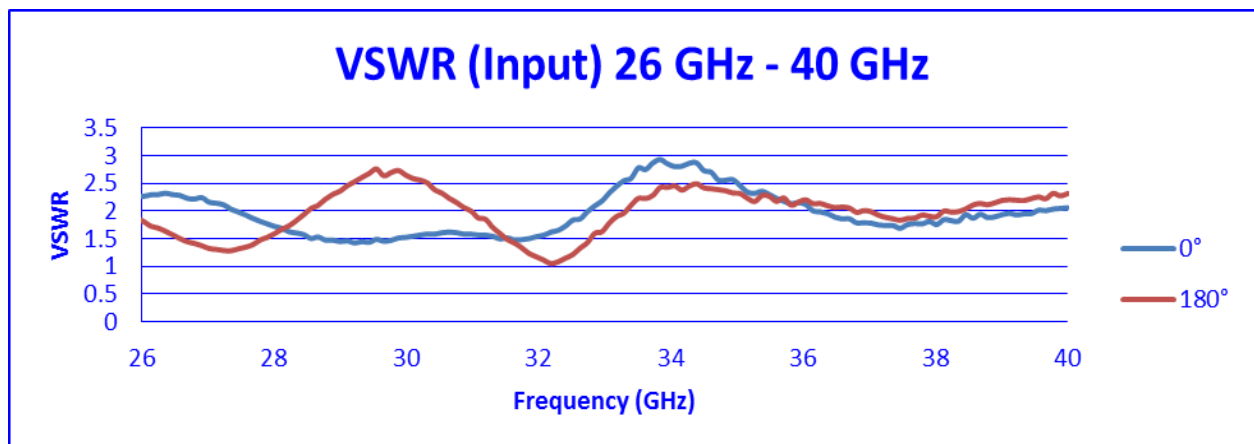
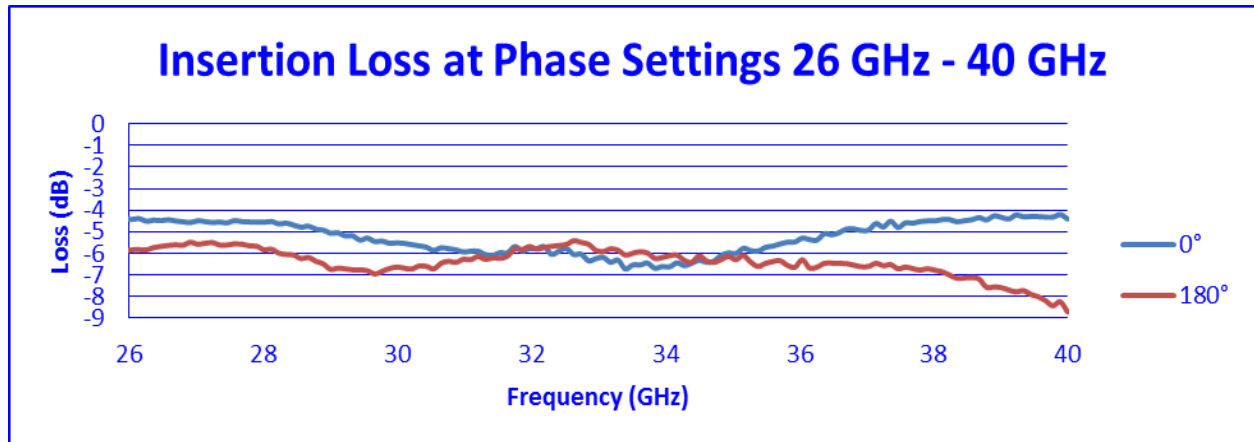
-55° C AMPLITUDE BALANCE AT 26 GHz - 40 GHz





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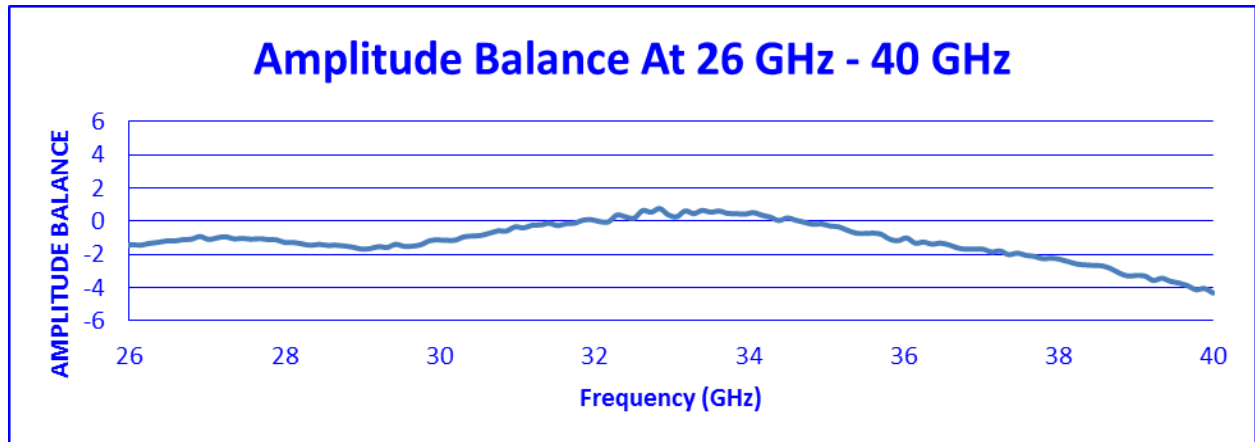
85° C INSERTION LOSS, VSWR, AND PHASE AT 26 GHz - 40 GHz





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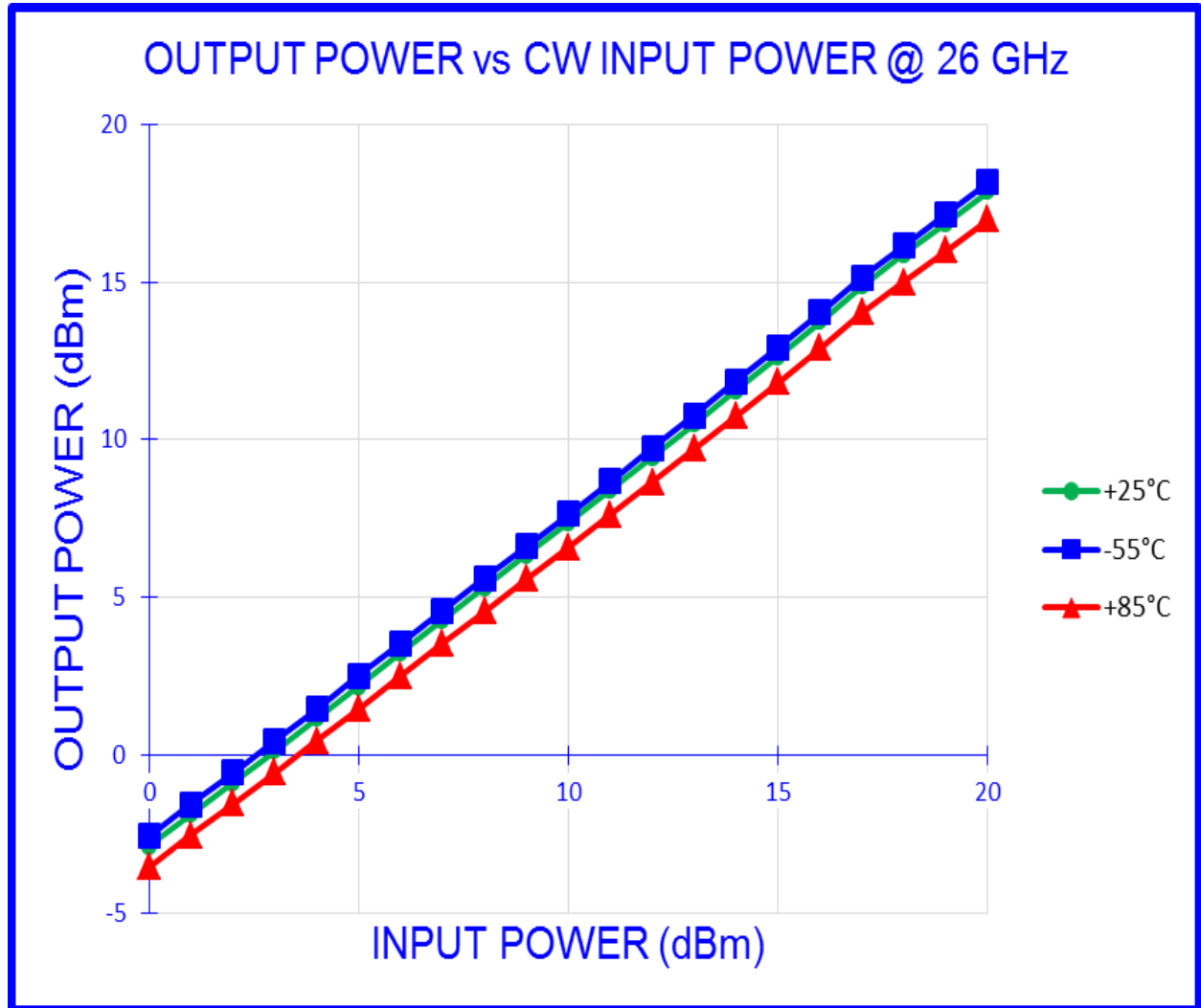
85° C AMPLITUDE BALANCE AT 26 GHz - 40 GHz





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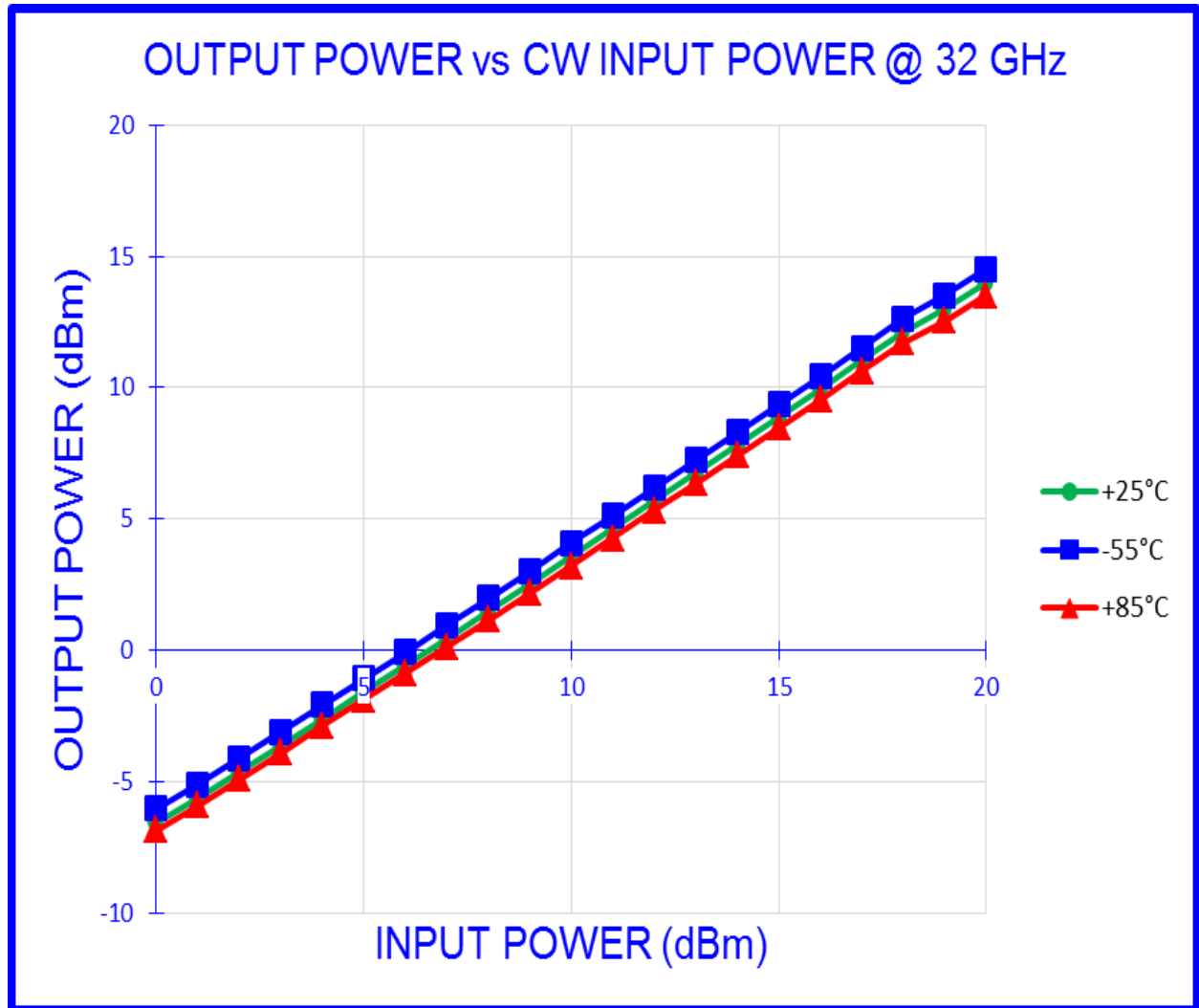
POWER TESTING @ 26 GHz





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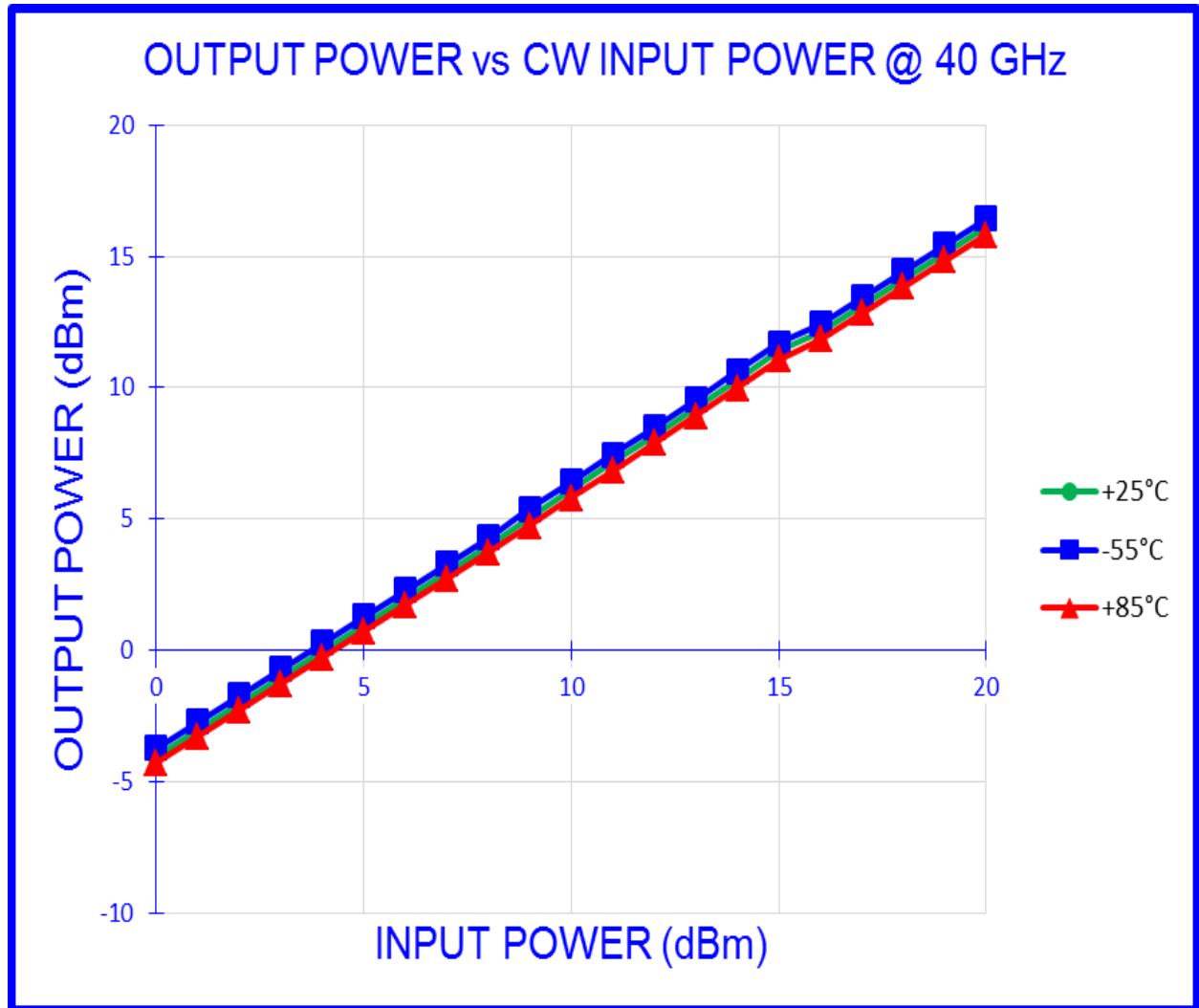
POWER TESTING @ 32 GHz





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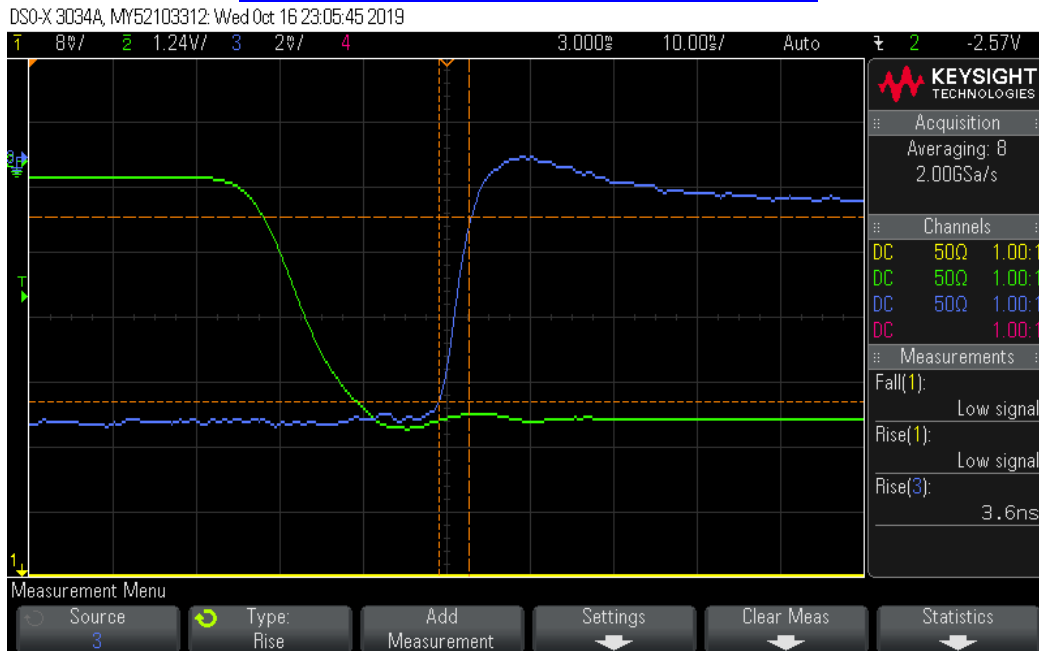
POWER TESTING @ 40 GHz



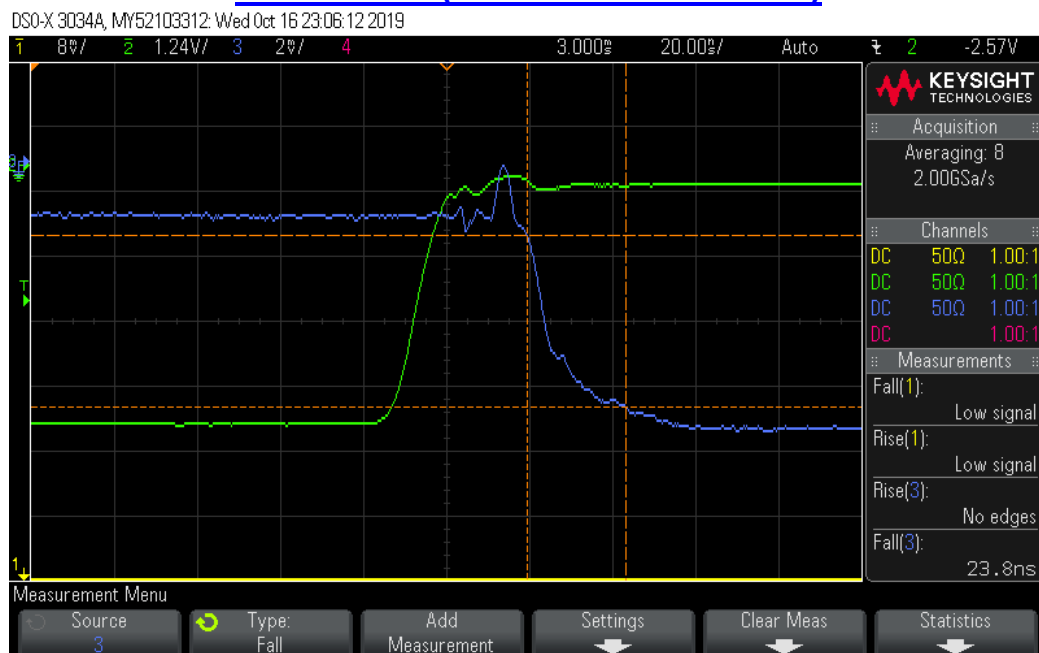


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RISE TIME (10 ns PER DIVISION)



FALL TIME (20 ns PER DIVISION)



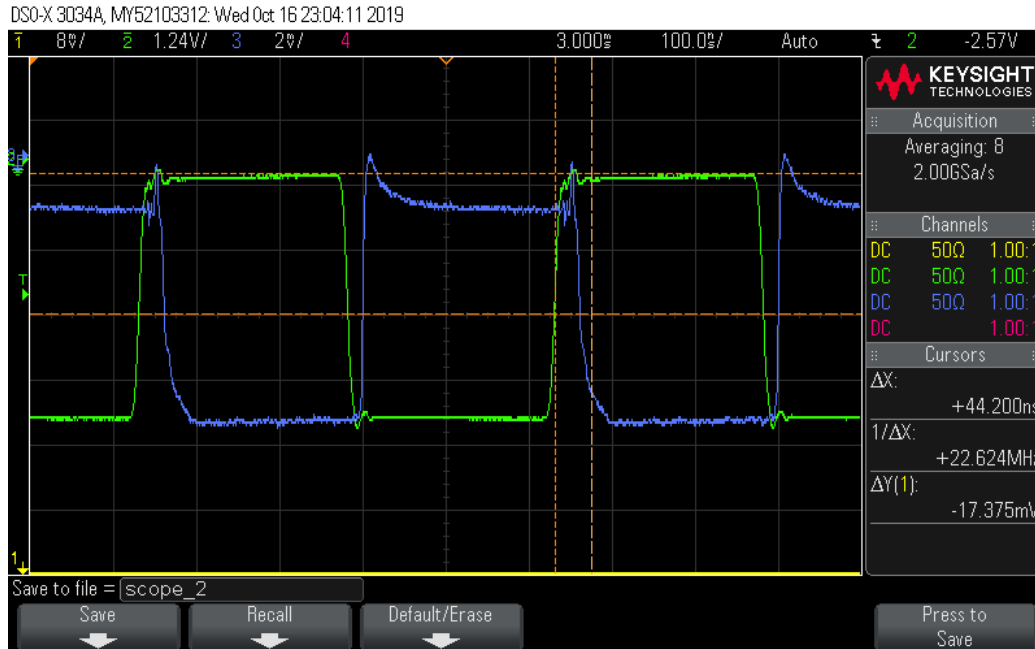
GREEN TRACE – TTL SIGNAL

**BLUE TRACE – RF SIGNAL (AMPLITUDE VARIATION BETWEEN PHASES,
MEASURED WITH TUNEL DIODE DETECTOR).**

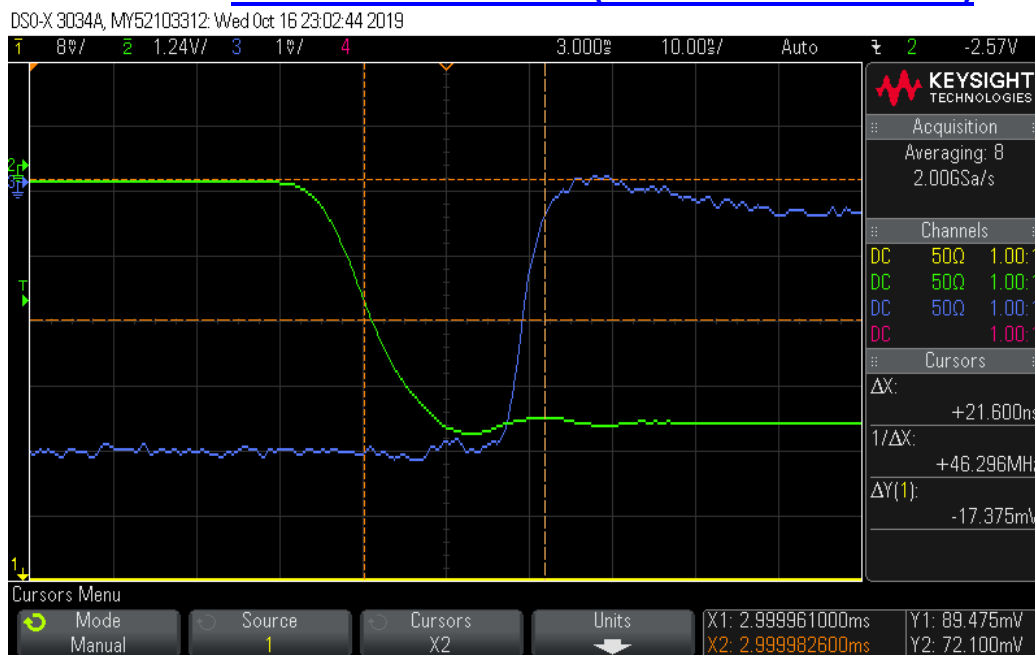


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FULL PULSE (100 ns PER DIVISION)



SWITCHING SPEED (10 ns PER DIVISION)



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BLUE TRACE – RF SIGNAL (AMPLITUDE VARIATION BETWEEN PHASES,
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