Typical Characteristics
on
DBMX-618RF-418LO-DC4IF-20-SFF

PMI MODEL NO. DBMX-618RF-418LO-DC4IF-20-SFF IS A DOUBLE BALANCED MIXER THAT OPERATES OVER THE FREQUENCY RANGE OF 6.0 TO 20.0 GHz. THIS MODEL IS OUTFITTED WITH SMA FEMALE CONNECTORS.

Designed By: PMI Engineering

Tested By: Garrett Radtke

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Contents

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OUTLINE

DESCRIPTION

PMI MODEL NO. DBMX-618RF-418LO-DC4IF-20-SFF IS A DOUBLE BALANCED MIXER THAT OPERATES OVER THE FREQUENCY RANGE OF 6.0 TO 26.5 GHz. THIS MODEL IS OUTFITTED WITH SMA FEMALE CONNECTORS.

SPECIFICATIONS

PARAMETER	CONFIG.	CONDITIONS			SPECIFICATIONS
		LO (GHz)	RF (GHz)	IF (GHz)	
CONVERSION LOSS (dB):	A B	6.0 TO 26.5 6.0 TO 26.5	6.0 TO 26.5 6.0 TO 26.5	DC TO 9.0 DC TO 9.0	7.5 dB TYP 9 dB TYP
ISOLATION (dB)					
LO-RF:		6.0 TO 26.5	6.0 TO 26.5	DC TO 9.0	47 dB TYP
LO-IF:		6.0 TO 26.5	6.0 TO 26.5	DC TO 9.0	34 dB TYP
RF-IF:		6.0 TO 26.5	6.0 TO 26.5	DC TO 9.0	35 dB TYP
INPUT IP3 (dBm):	A B	6.0 TO 26.5 6.0 TO 26.5	6.0 TO 26.5 6.0 TO 26.5	DC TO 9.0 DC TO 9.0	+21 dBm TYP +23 dBm TYP
INPUT 1dB COMPRESSION	A B	6.0 TO 26.5 6.0 TO 26.5	6.0 TO 26.5 6.0 TO 26.5	DC TO 9.0 DC TO 9.0	+9 dBm TYP +9 dBm TYP
FINISH:					PAINTED BLUE
LO INPUT POWER					+13 TO +20 dBm

PORT	CONNECTOR
LO	SMA FEMALE
RF	SMA FEMALE
IF	SMA FEMALE
NOTE: PACKAGE CONNECTORS ARE NOT REMOVABLE.	

PORT	CONFIG A	CONFIG B
1	LO	RF
2	IF	IF
3	RF	LO

ENVIRONMENTAL RATINGS

- TEMPERATURE: -55 °C TO +100 °C (OPERATING)
- HUMIDITY: MIL-STD-202, METHOD 103B COND. B
- 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: ENVIRONMENTAL RATINGS HAVE NOT BEEN QUALIFIED BY PMI AND BASED ON BEST DESIGN PRACTICES

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

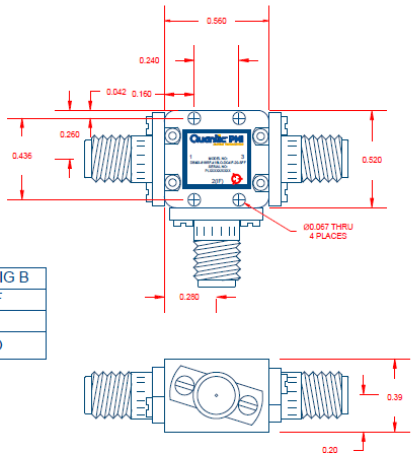
ALL DIMENSIONS ARE IN INCHES [mm]
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PMI CONFIDENTIAL AND PROPRIETARY

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	9/24/2020	
	B1	ECN # 24-0043	2/21/2024	
	C1	ECN # 24-0312	10/31/2024	

MECHANICAL OUTLINE



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ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN CW	01/28/20
REDRAWN	
ISSUED	

TITLE: OUTLINE
DBMX-618RF-418LO-DC4IF-20-SFF

SIZE	FSCM NO.	DWG NO.	REV.
A	05XQ0	27038220	C1

SCALE N:S SHEET 1 OF 1

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TEST DATA RESULTS

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	ENVIRONMENTAL PARAMETERS	TEST RESULT
1	Conversion Loss @ IF DC-3.0 GHz	5.5 TYP. 7.5 MAX.	+25°C	7.48 dB
	Conversion Loss @ IF 3.0-6.0 GHz	6.5 TYP. 8.5 MAX.		8.3 dB
	Conversion Loss @ IF DC-3.0 GHz	5.5 TYP. 7.5 MAX.	-55°C	7.5 dB
	Conversion Loss @ IF 3.0-6.0 GHz	6.5 TYP. 8.5 MAX.		8.5 dB
	Conversion Loss @ IF DC-3.0 GHz	5.5 TYP. 7.5 MAX.	+100°C	7.5 dB
	Conversion Loss @ IF 3.0-6.0 GHz	6.5 TYP. 8.5 MAX.		8.5 dB
2	Isolation LO-RF	30 dB MIN. 40 dB TYP.	+25°C	34.58 dB
			-55°C	34.83 dB
			+100°C	34.64 dB
3	Isolation LO-IF	20 dB TYP.	+25°C	17.64 dB
			-55°C	16.25 dB
			+100°C	16.66 dB
4	Isolation RF-IF	25 dB TYP.	+25°C	22.3 dB
			-55°C	22.47 dB
			+100°C	21.72 dB
6	Input 1dB Compression (P1dB)	+8 dBm TYP.	+25°C	9 dBm
7	IIP3	+18 dBm TYP.	+25°C	16.05 dBm

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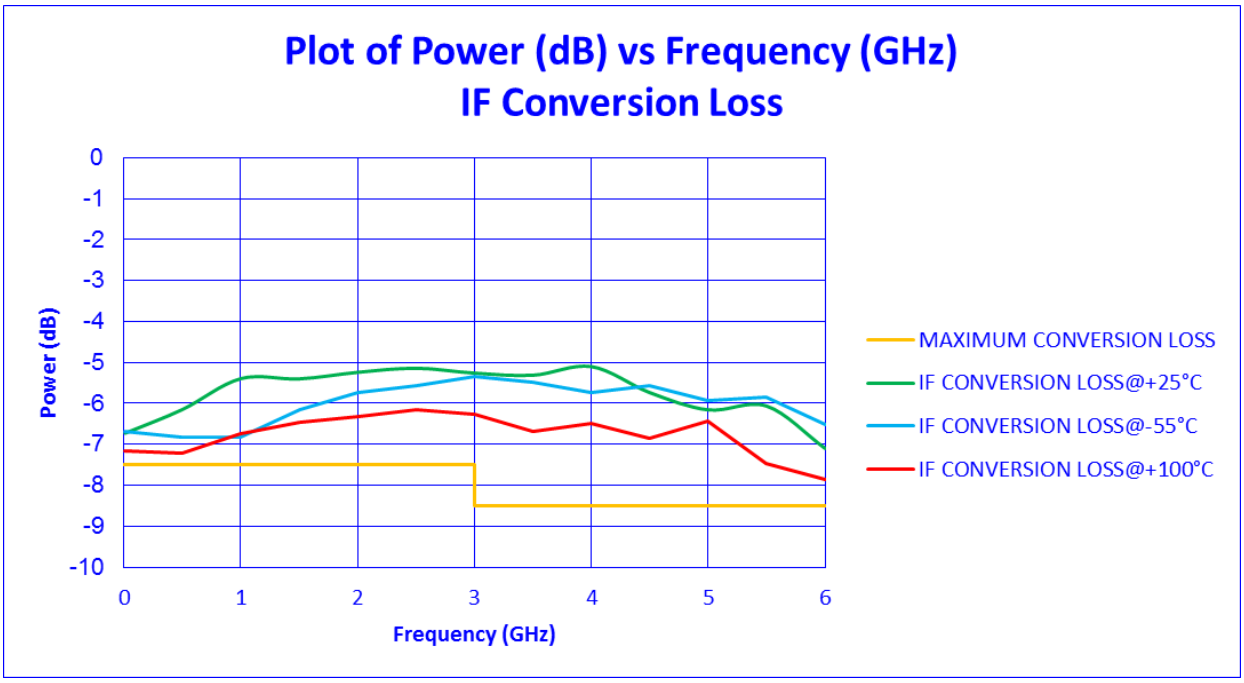
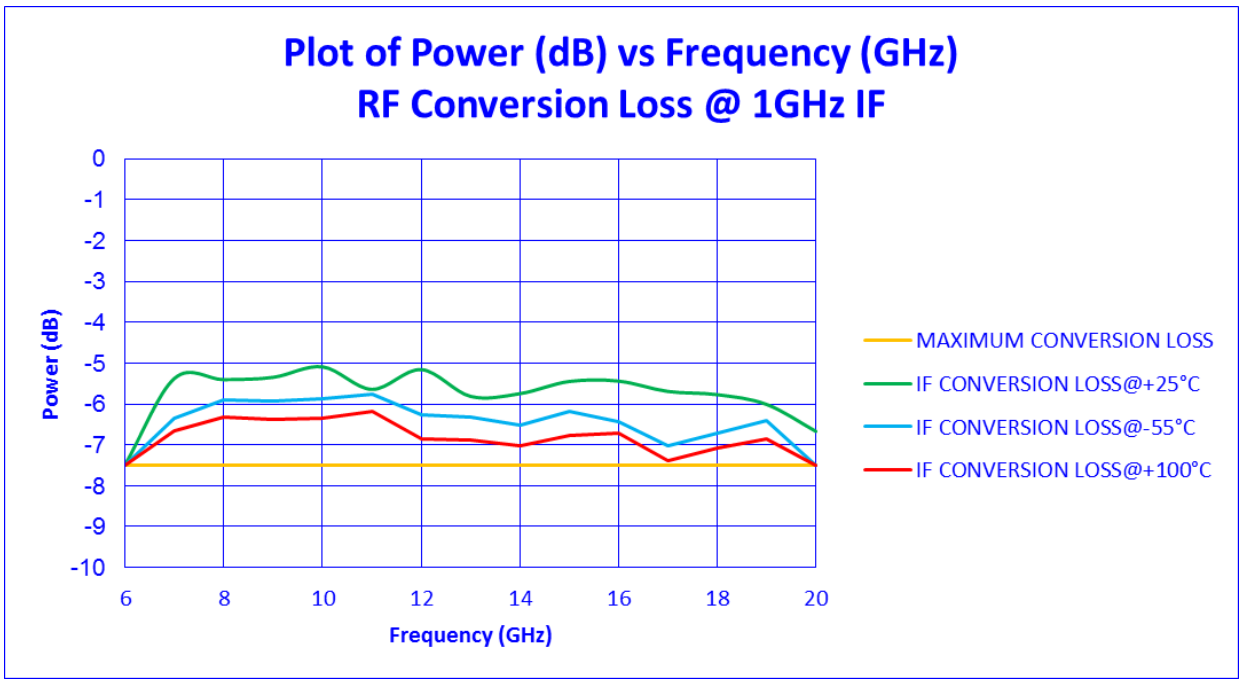
CONVERSION LOSS





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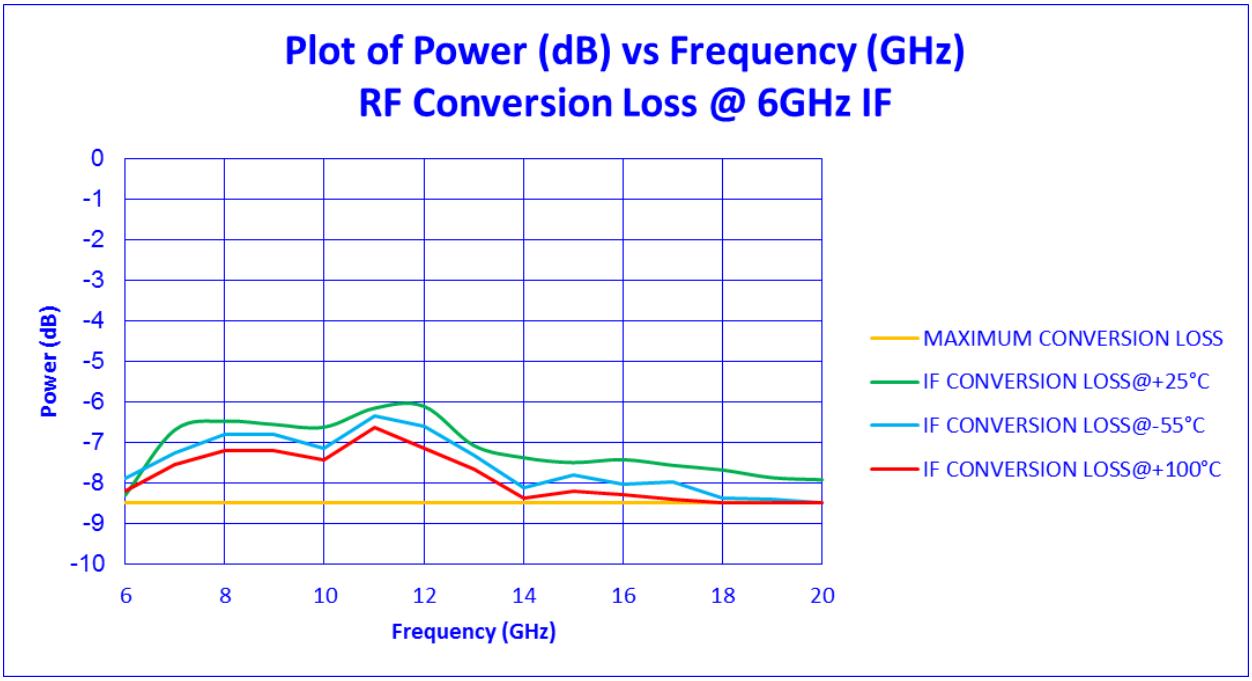

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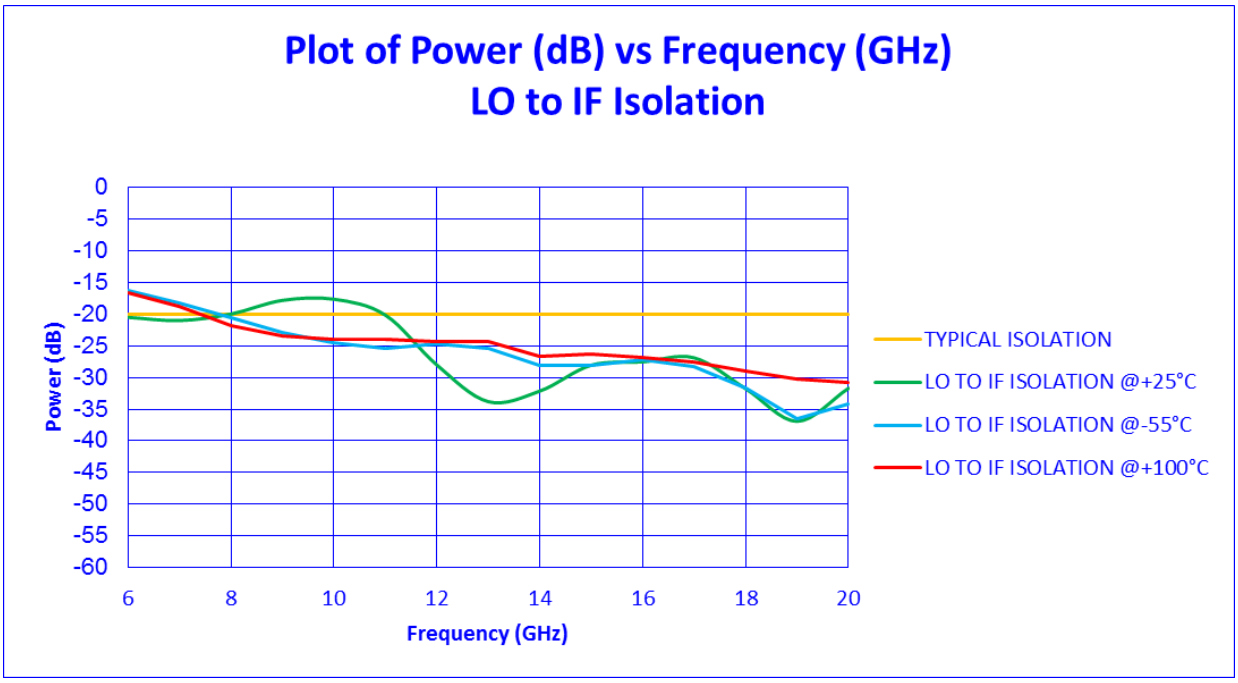
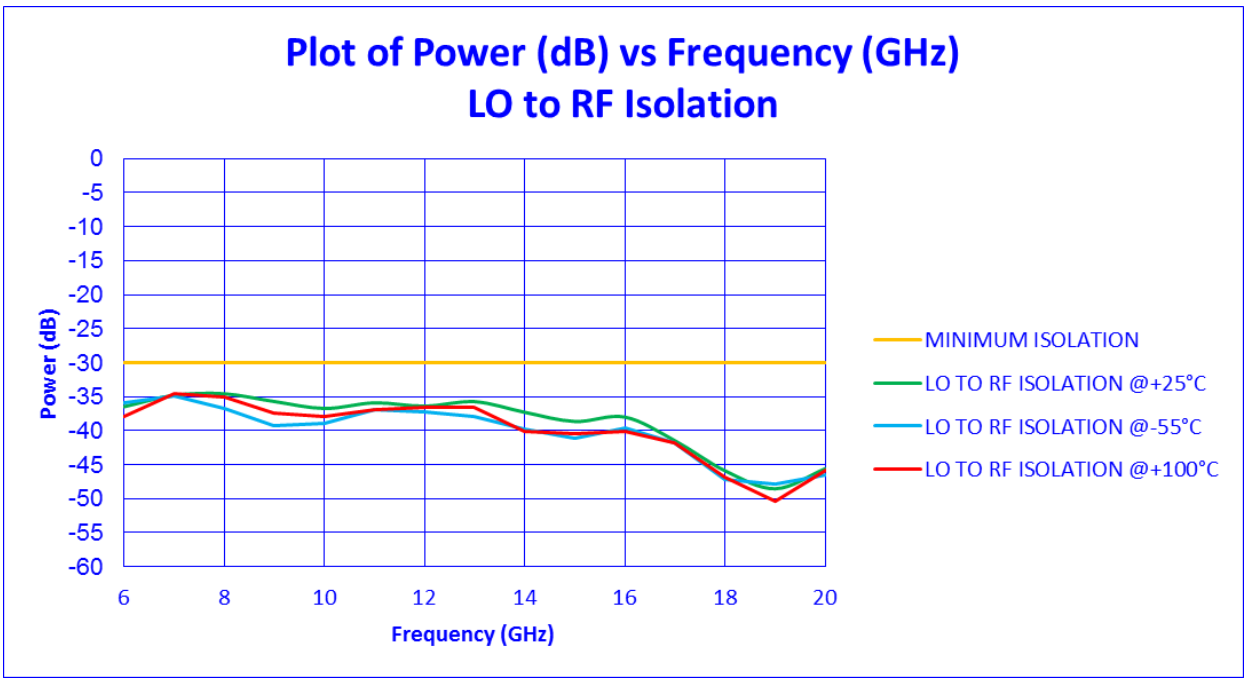
ISOLATION





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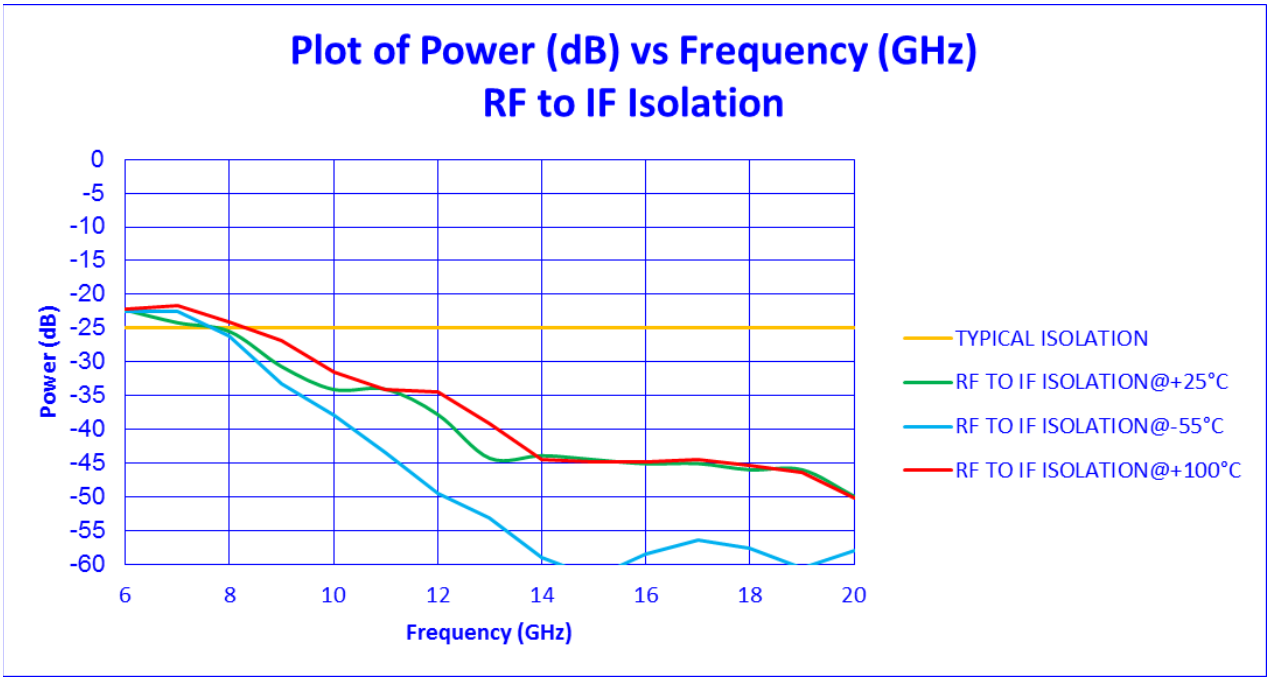

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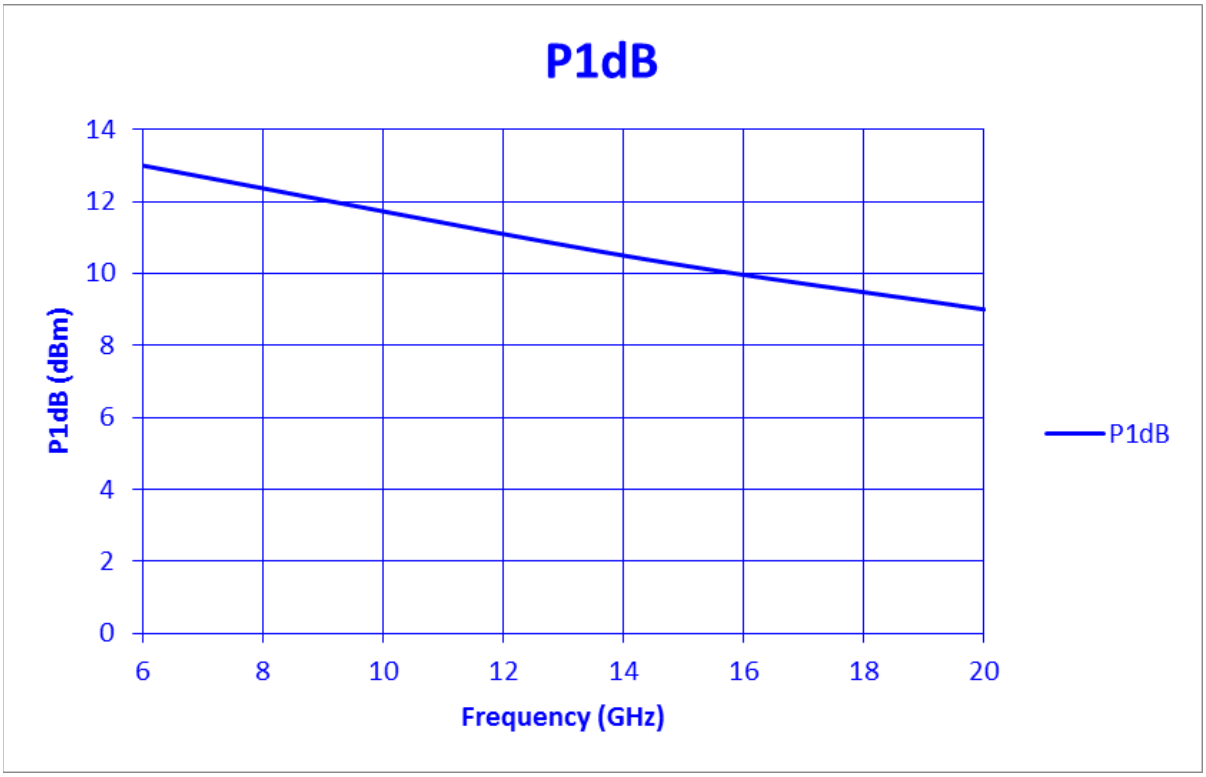
P1dB



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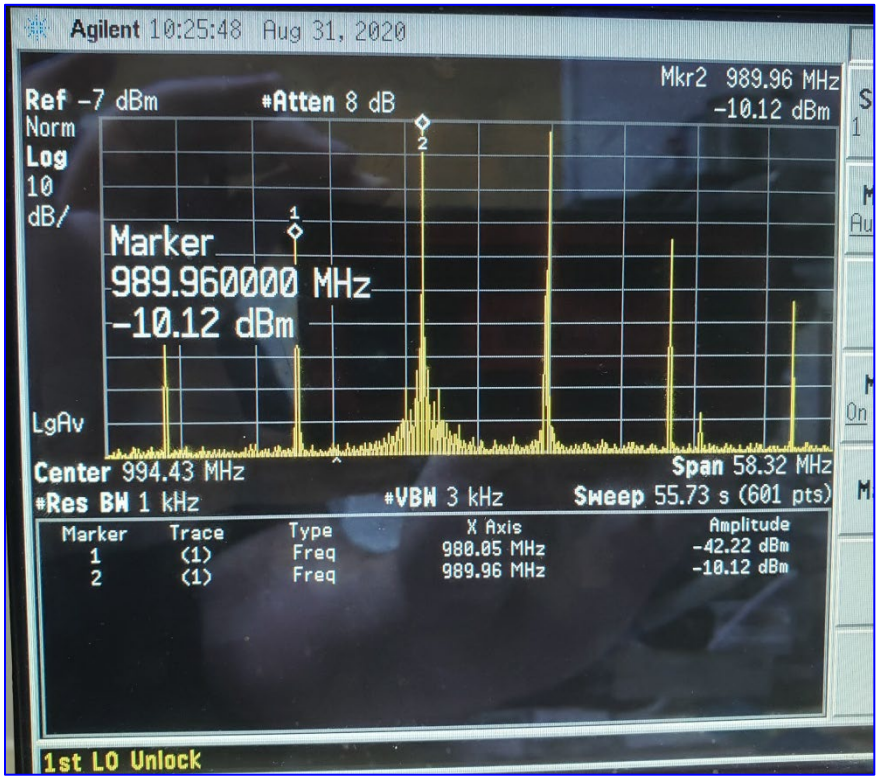
IIP3 & OIP3 AT 6 GHz



$$OIP3 = P_{Fundamental} - \frac{P_{Fundamental} - P_{Harmonic}}{2}$$

$$OIP3 = -10.12 - \frac{-10.12 + 42.22}{2}$$

$$OIP3 = 5.93$$

$$IIP3 = OIP3 - Conversion\ Loss$$

$$IIP3 = 5.93 + 10.12$$

$$IIP3 = 16.05$$

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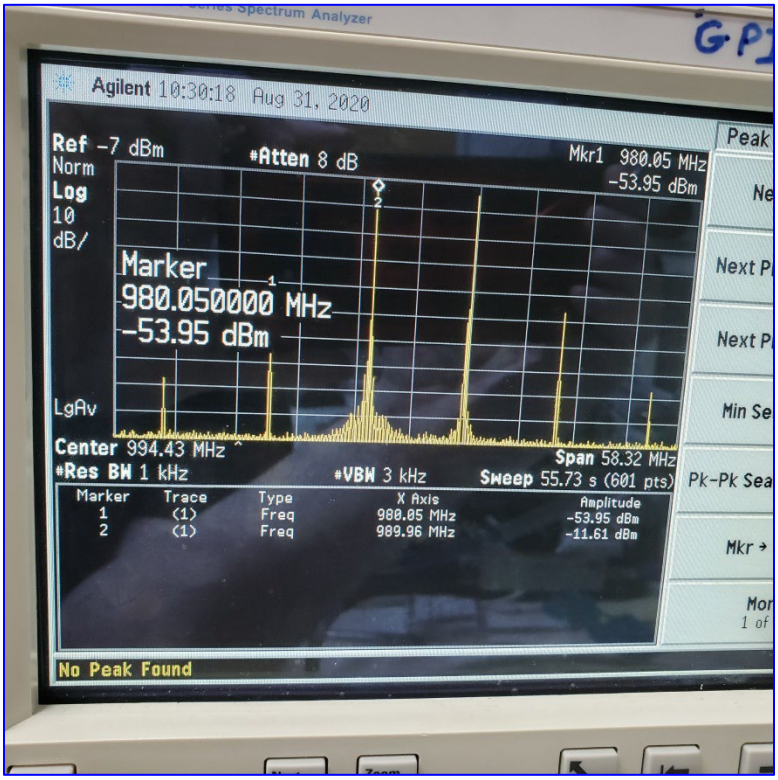
IIP3 & OIP3 AT 12 GHz



$$OIP3 = P_{Fundamental} - \frac{P_{Fundamental} - P_{Harmonic}}{2}$$

$$OIP3 = -11.61 - \frac{-11.61 + 53.95}{2}$$

$$OIP3 = 9.56$$

$$IIP3 = OIP3 - Conversion\ Loss$$

$$IIP3 = 9.56 + 11.56$$

$$IIP3 = 21.12$$

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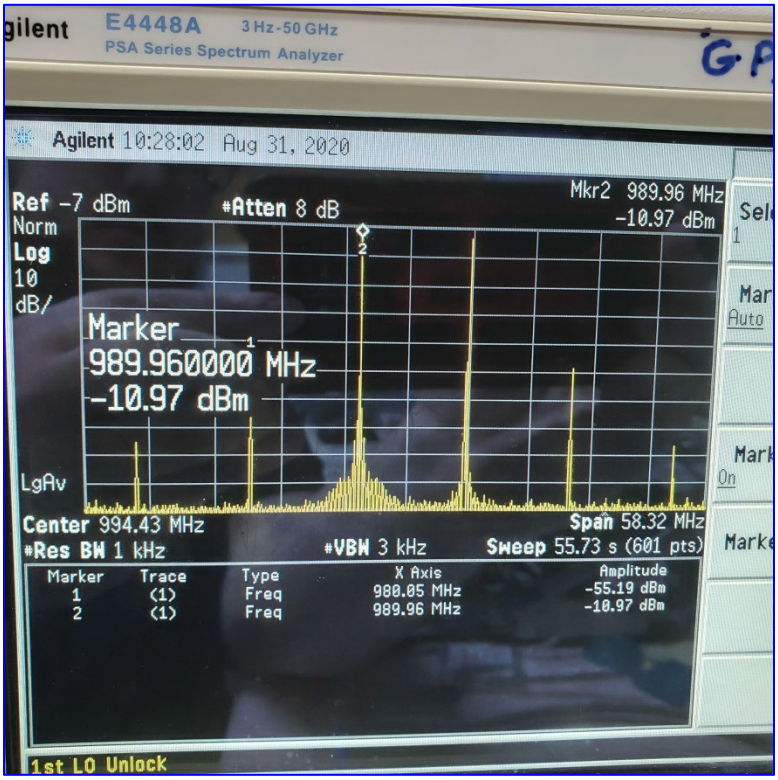
IIP3 & OIP3 AT 18 GHz



$$OIP3 = P_{Fundamental} - \frac{P_{Fundamental} - P_{Harmonic}}{2}$$

$$OIP3 = -10.97 - \frac{-10.97 + 55.19}{2}$$

$$OIP3 = 11.14$$

$$IIP3 = OIP3 - Conversion\ Loss$$

$$IIP3 = 11.14 + 10.97$$

$$IIP3 = 22.11$$

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