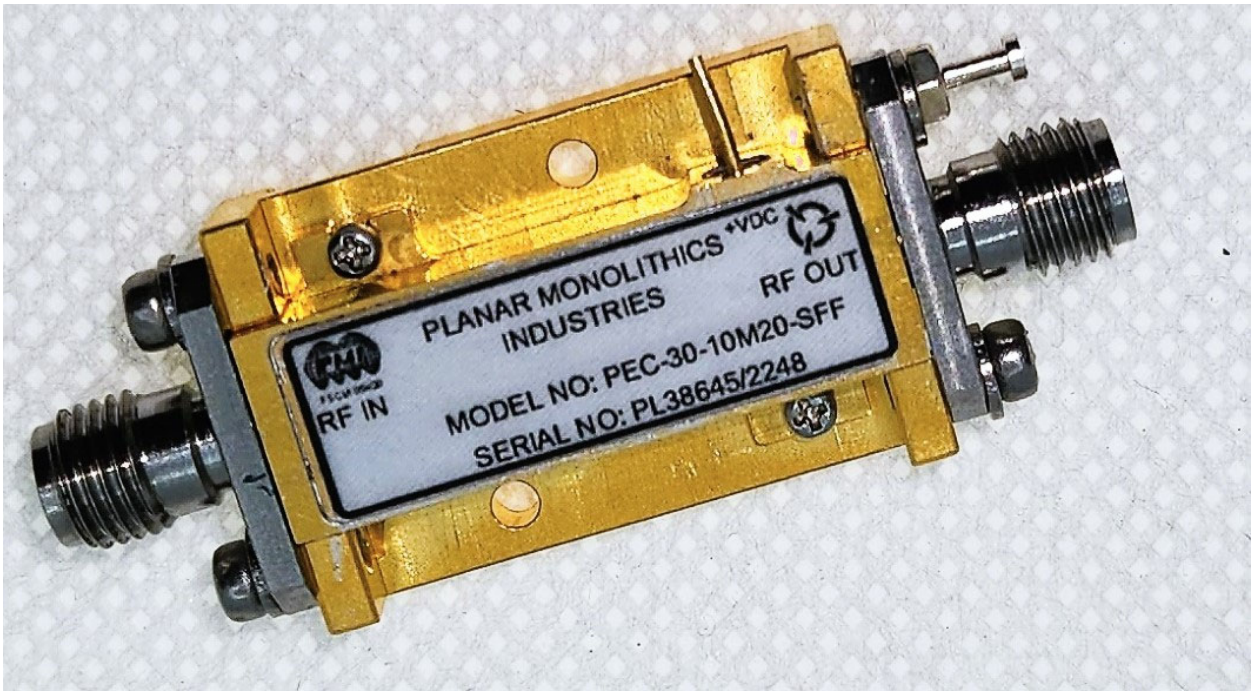
TYPICAL CHARACTERISTICS
ON
PEC-30-10M20-SFF

PMI MODEL NUMBER: PEC-30-10M20-SFF IS A VERY LOW NOISE AMPLIFIER WITH WORKING FREQUENCY RANGE OF 10 MHz TO 20 GHz. THIS AMPLIFIER IS SUPPLIED IN A HOUSING THAT CAN BE USED AS A SURFACE MOUNT OR CONNECTORIZED COMPONENT.



November 30, 2022

Tested By: E. Kretz

7309-A Grove Road Frederick, MD 21704 USA Phone: (301)662-5019 Fax: (301)662-1731
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TYPICAL CHARACTERISTICS
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Product Feature

DESCRIPTION:

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	5/16/2022	
	A3	ECN # 24-0008	12/6/2022	
	A4	ECN # 23-0100	6/30/2023	
	A5	ECN # 24-0203	7/29/2024	

SPECIFICATIONS:

- FREQUENCY RANGE:..... 10 MHz TO 20 GHz
- GAIN:..... +26 dB MIN. (10 MHz to 18 GHz)
  +28 dB MIN. (18 to 20 GHz)
- GAIN FLATNESS:..... AT ANY OPERATING TEMPERATURE
  ± 2.0 dB MAX. (10 MHz to 20 GHz)
  ± 2.5 dB TYP., ± 2.75 dB MAX. (18 GHz to 20 GHz)
- NOISE FIGURE:..... 4.5 dB MAX., (20 MHz to 0.5 GHz)
  3.5 dB MAX., (0.5 GHz to 18 GHz)
  4.0 dB MAX., (18 GHz to 20 GHz)
- OP1dB:..... +13.5 dBm MIN. (10 MHz to 18 GHz)
  +12 dBm MIN. (18 GHz to 20 GHz)
- Psat:..... +15 dBm MIN. (10 MHz to 18 GHz)
  +13 dBm MIN. (18 GHz to 20 GHz)
- OIP3:..... +20 dBm MIN. (10 MHz to 20 GHz) @ 25°C
  +14 dBm MIN. @ -40°C TO +85°C
- VSWR INPUT:..... 2.0:1 MAX (10 MHz to 18 GHz)
  2.2:1 MAX (18 GHz to 20 GHz)
- VSWR OUTPUT:..... 2.1:1 MAX (10 MHz to 18 GHz)
  2.4:1 MAX (18 GHz to 20 GHz)

ENVIRONMENTAL RATINGS:

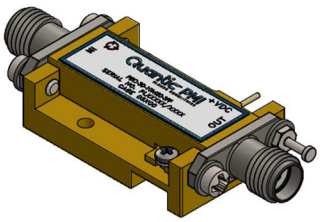
- TEMPERATURE:..... -40°C TO +85°C (OPERATING)
  -57°C TO +100°C (STORAGE)
- HUMIDITY:..... MIL-STD-202, METHOD 103B COND. B
- SHOCK:..... MIL-STD-202, METHOD 213B COND. B
- ALTITUDE:..... MIL-STD-202, METHOD 105C COND. B
- TEMPERATURE CYCLE:..... MIL-STD-202, METHOD 107D COND. A

SPECIFICATIONS:

SECOND HARMONIC:
(-30 dBm INPUT POWER)..... 40 dBc TYP, 30 dBc MIN.
(AT P1dB)..... 12 dBc TYP, 10 dBc MIN.
(+5dBm OVER P1dB)..... 12 dBc TYP, 9 dBc MIN.
(+10dBm OVER P1dB)..... 12 dBc TYP, 9 dBc MIN.
(+15dBm OVER P1dB)..... 12 dBc TYP, 9 dBc MIN.

REVERSE ISOLATION:..... 36 dB MIN. (10 MHz to 18 GHz)
35 dB MIN. (18 to 20 GHZ)

- DC SUPPLY:..... +12 TO +15 VDC @ 120 mA MA.
- CONNECTORS:..... SMA FEMALE (X2)
- FINISH:..... GOLD PLATED



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

PMI CONFIDENTIAL AND PROPRIETARY

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ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN: M. LAULIS	5/16/2022
TECHNICIAN	
ISSUED	

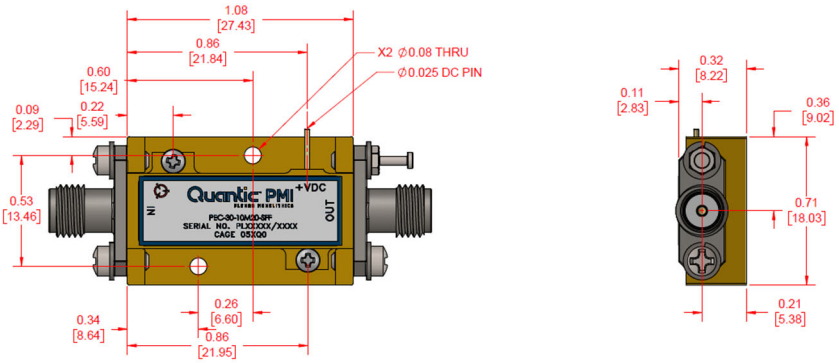
TITLE: OUTLINE
PEC-30-10M20-SFF

SIZE	FSCM NO.	DWG NO.	REV.
B	05XQ0	27044480	A5

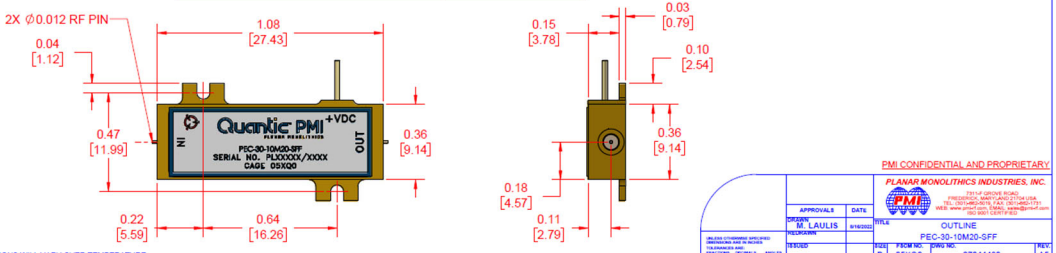
SCALE 2:1 SHEET 1 OF 2

MECHANICAL OUTLINE

PEC HOUSING WITH CARRIER



PEC HOUSING WITHOUT CARRIER (SURFACE MOUNT)



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SIZE	FSCM NO.	DWG NO.	REV.
B	05XQ0	27044480	A5

SCALE 2:1 SHEET 2 OF 2

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TYPICAL CHARACTERISTICS
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PEC-30-10M20-SFF

Test Data
25° C

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	Test Results	QA QC
1	Frequency Range:	10 MHz to 20.0 GHz	**10 MHz to 20.0 GHz**	
2	Gain:	26 dB Min. (10 MHz to 18 GHz) 28 dB Min. (18 GHz to 20 GHz)	**+27.09 dB Min.** **+29.43 dB Min.** **See Plot**	
3	Gain Flatness:	±2 dB MAX. (10 MHz to 18 GHz) ±2.5 dB Typ., ±2.75 dB Max. (18 GHz to 20 GHz)	**±1.54 dB** **±1.54 dB** **See Plot**	
4	Noise Figure:	4.5 dB Max. (20 MHz to 0.5 GHz) 3.5 dB Max. (0.5 GHz to 18 GHz) 4.0 dB Max. (18 GHz to 20 GHz)	**3.5 @ 20 MHz to 0.5 GHz** **2.79 @ 0.5 to 18 GHz** **3.52 @ 18 to 20 GHz**	
5	OP1dB:	+13.5 dBm Min. (10 MHz to 18 GHz) +12 dBm Min. (18 GHz to 20 GHz)	**+14.1 dBm (10 MHz to 18 GHz)** **+12.7 dBm (18 to 20 GHz)**	
6	VSWR Input	2:1 Max. (10 MHz to 18 GHz) 2.2:1 Max. (18 GHz to 20 GHz)	**1.7:1 (10 MHz to 18 GHz)** **1.4:1 (18 to 20 GHz)** **See Plot**	
7	VSWR Output:	2.1:1 Max. (10 MHz to 18 GHz) 2.4:1 Max. (18 GHz to 20 GHz)	**2:1 (10 MHz to 18 GHz)** **1.7:1 (18 to 20 GHz)** **See Plot**	
8	DC Supply:	+12 to +15 VDC @ 170 mA MAX.	**+12 to +15 VDC @ 158 mA**	

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TYPICAL CHARACTERISTICS
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85° C

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	Test Results	QA QC
1	Frequency Range:	10 MHz to 20.0 GHz	**10 MHz to 20.0 GHz**	
2	Gain:	26 dB Min. (10 MHz to 18 GHz) 28 dB Min. (18 GHz to 20 GHz)	**+26.34 dB Min.** **+28.18 dB Min.** **See Plot**	
3	Gain Flatness:	±2 dB MAX. (10 MHz to 18 GHz) ±2.5 dB Typ., ±2.75 dB Max. (18 GHz to 20 GHz)	**±1.36 dB** **±1.36 dB** **See Plot**	
4	Noise Figure:	4.5 dB Max. (20 MHz to 0.5 GHz) 3.5 dB Max. (0.5 GHz to 18 GHz) 4.0 dB Max. (18 GHz to 20 GHz)	**4.38 @ 20 MHz to 0.5 GHz** **3.28 @ 0.5 to 18 GHz** **3.83 @ 18 to 20 GHz**	
5	OP1dB:	+13.5 dBm Min. (10 MHz to 18 GHz) +12 dBm Min. (18 GHz to 20 GHz)	**+13.9 dBm (10 MHz to 18 GHz)** **+12.3 dBm (18 to 20 GHz)**	
6	VSWR Input	2:1 Max. (10 MHz to 18 GHz) 2.2:1 Max. (18 GHz to 20 GHz)	**1.8:1 (10 MHz to 18 GHz)** **1.3:1 (18 to 20 GHz)** **See Plot**	
7	VSWR Output:	2.1:1 Max. (10 MHz to 18 GHz) 2.4:1 Max. (18 GHz to 20 GHz)	**1.9:1 (10 MHz to 18 GHz)** **1.6:1 (18 to 20 GHz)** **See Plot**	
8	DC Supply:	+12 to +15 VDC @ 170 mA MAX.	**+12 to +15 VDC @ 158 mA**	

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TYPICAL CHARACTERISTICS
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-40° C

	PARAMETERS	SPECIFIED VALUE	Test Results	QA QC
1	Frequency Range:	10 MHz to 20.0 GHz	**10 MHz to 20.0 GHz**	
2	Gain:	26 dB Min. (10 MHz to 18 GHz) 28 dB Min. (18 GHz to 20 GHz)	**+27.63 dB Min.** **+30.63 dB Min.** **See Plot**	
3	Gain Flatness:	±2 dB MAX. (10 MHz to 18 GHz) ±2.5 dB Typ., ±2.75 dB Max. (18 GHz to 20 GHz)	**±1.87 dB** **±1.87 dB** **See Plot**	
4	Noise Figure:	4.5 dB Max. (20 MHz to 0.5 GHz) 3.5 dB Max. (0.5 GHz to 18 GHz) 4.0 dB Max. (18 GHz to 20 GHz)	**3.47 @ 20 MHz to 0.5 GHz** **2.65 @ 0.5 to 18 GHz** **3.15 @ 18 to 20 GHz**	
5	OP1dB:	+13.5 dBm Min. (10 MHz to 18 GHz) +12 dBm Min. (18 GHz to 20 GHz)	**+14.4 dBm (10 MHz to 18 GHz)** **+13.1 dBm (18 to 20 GHz)**	
6	VSWR Input	2:1 Max. (10 MHz to 18 GHz) 2.2:1 Max. (18 GHz to 20 GHz)	**1.9:1 (10 MHz to 18 GHz)** **1.6:1 (18 to 20 GHz)** **See Plot**	
7	VSWR Output:	2.1:1 Max. (10 MHz to 18 GHz) 2.4:1 Max. (18 GHz to 20 GHz)	**2.1:1 (10 MHz to 18 GHz)** **1.9:1 (18 to 20 GHz)** **See Plot**	
8	DC Supply:	+12 to +15 VDC @ 170 mA MAX.	**+12 to +15 VDC @ 158 mA**	

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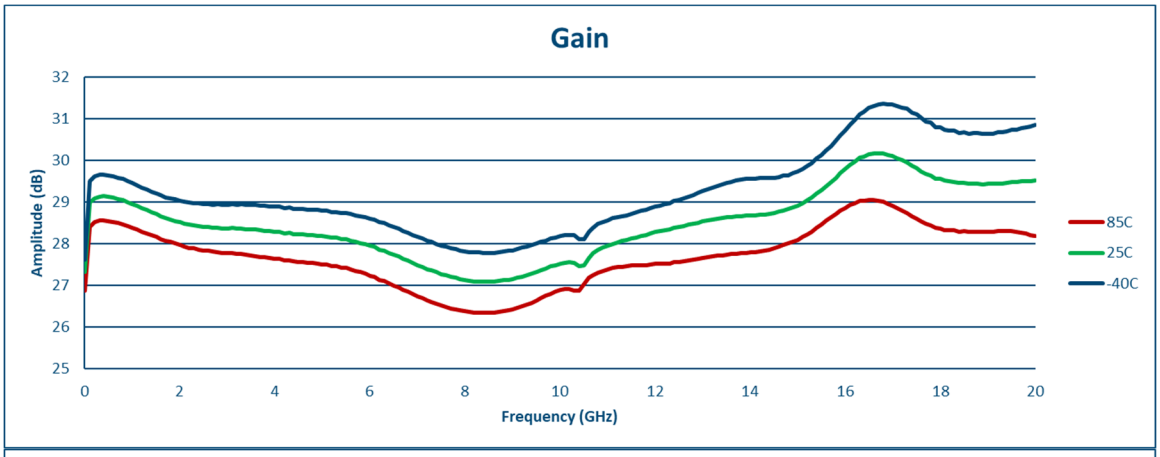

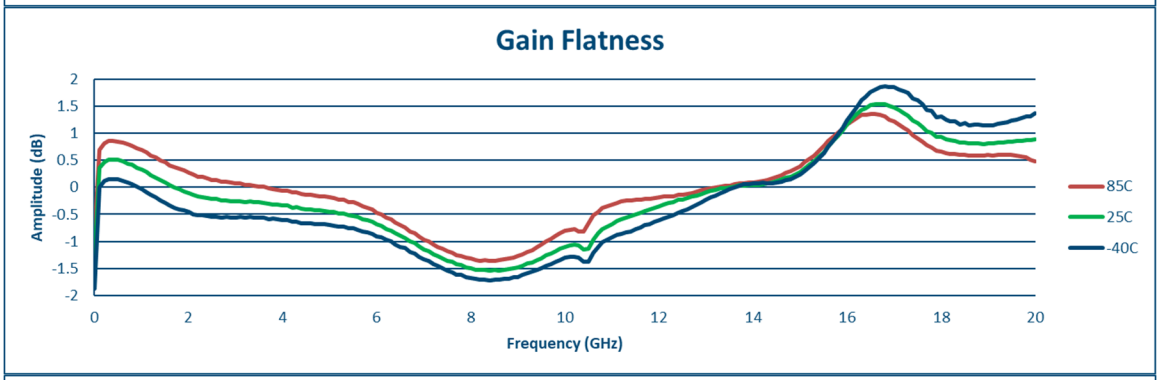

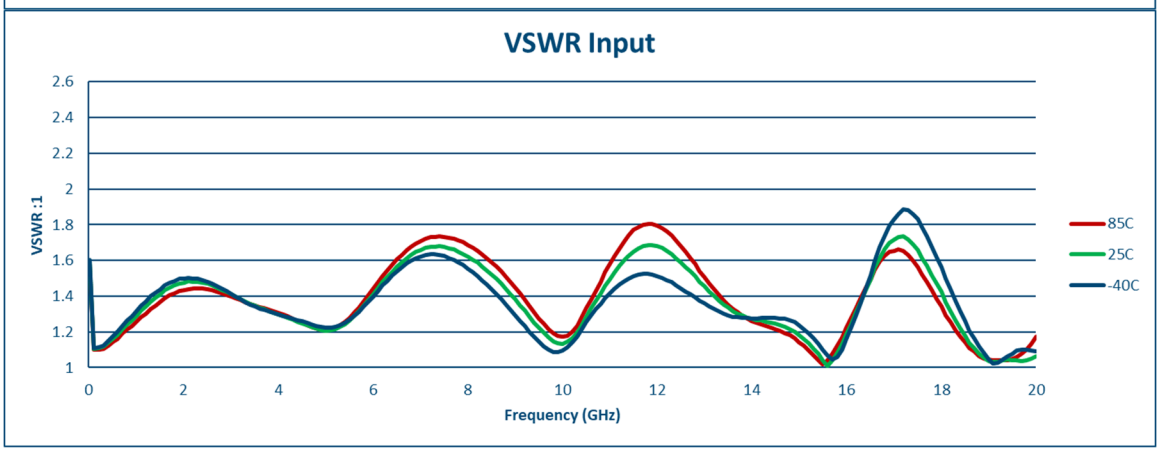

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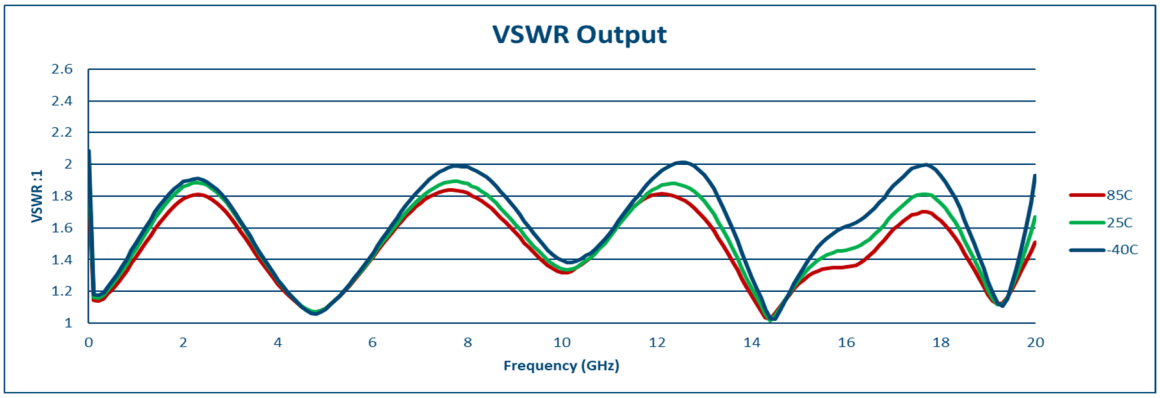

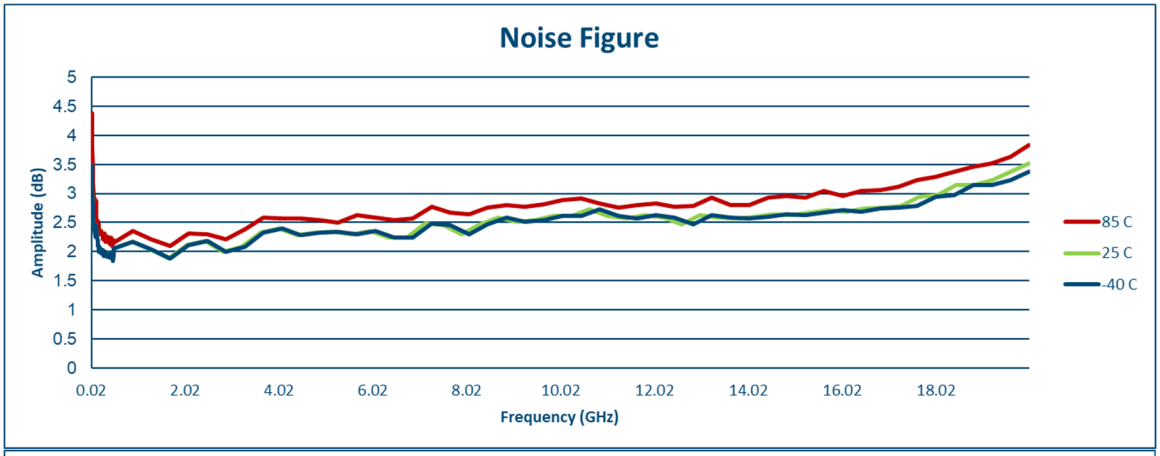

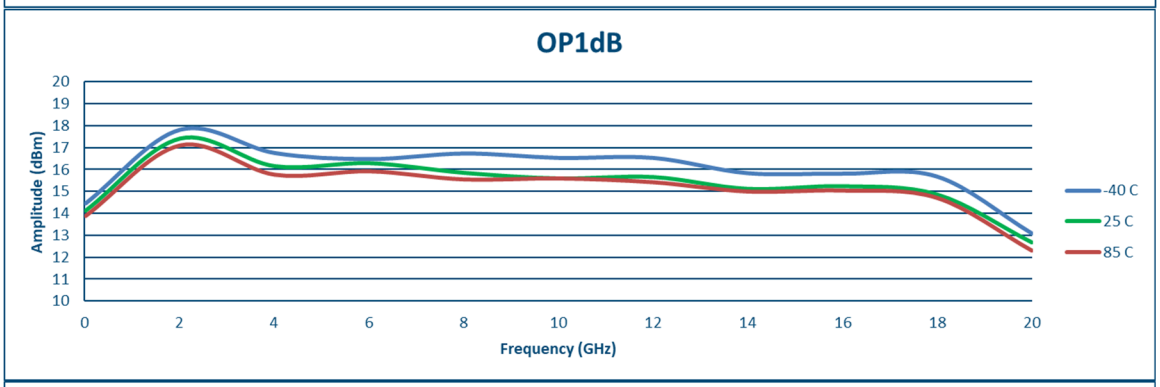

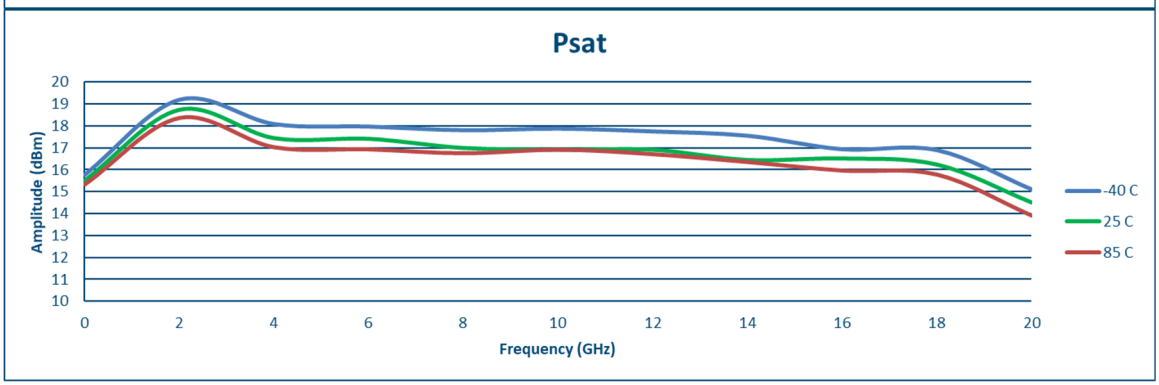

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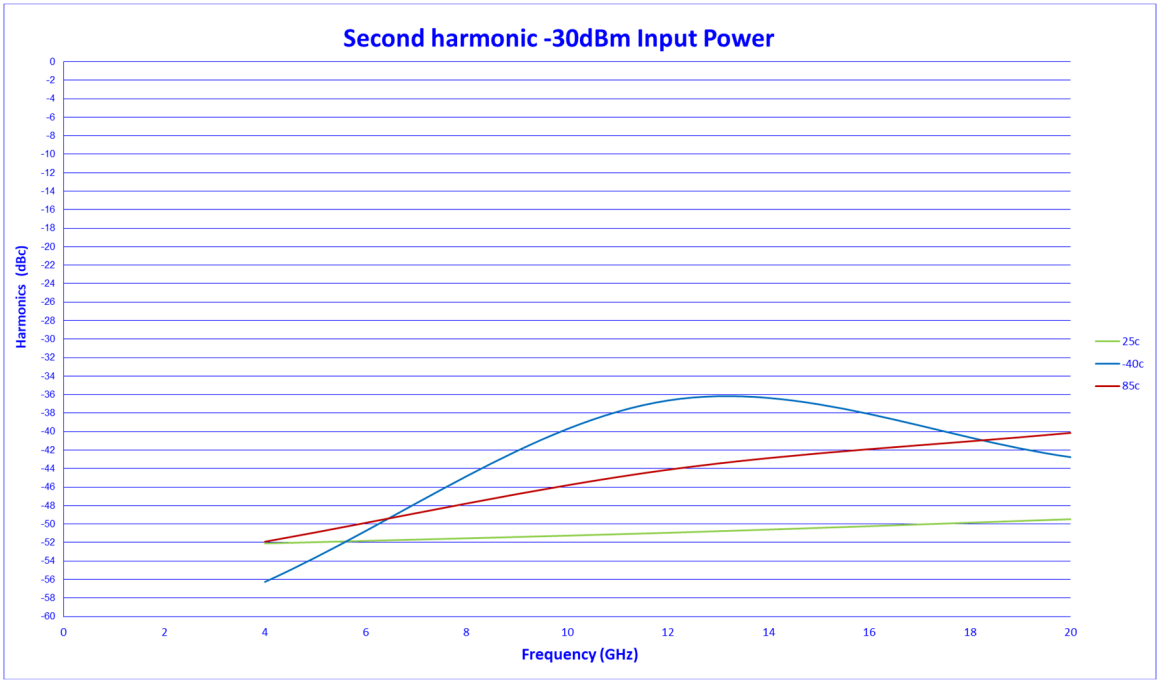

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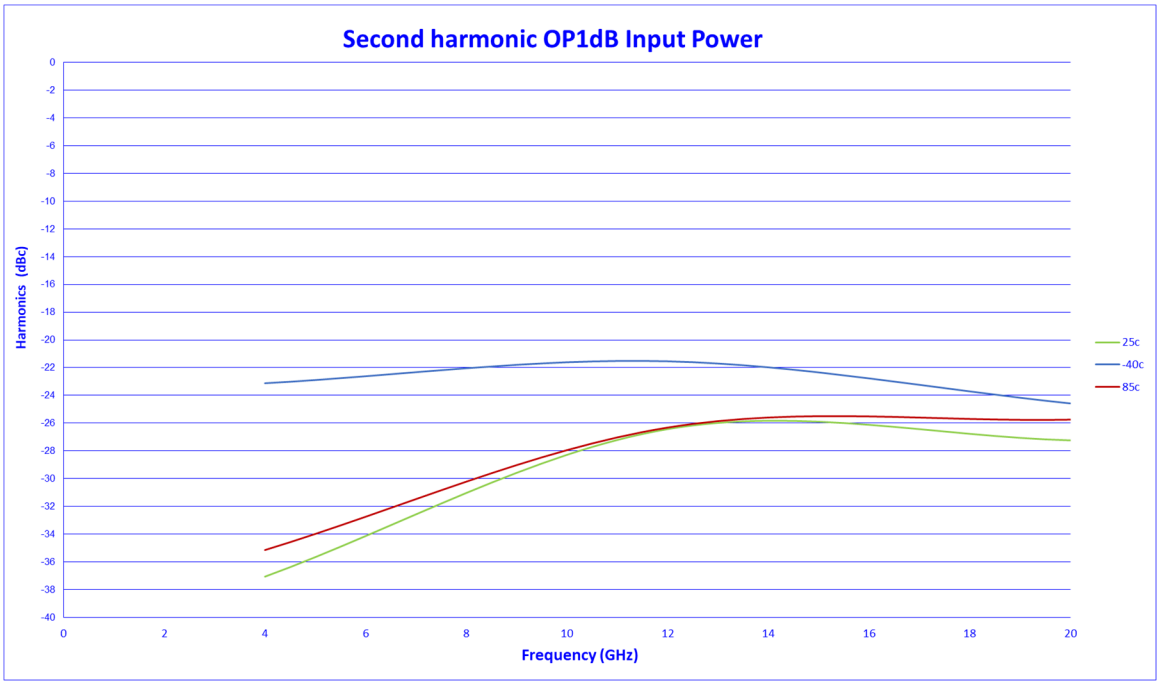

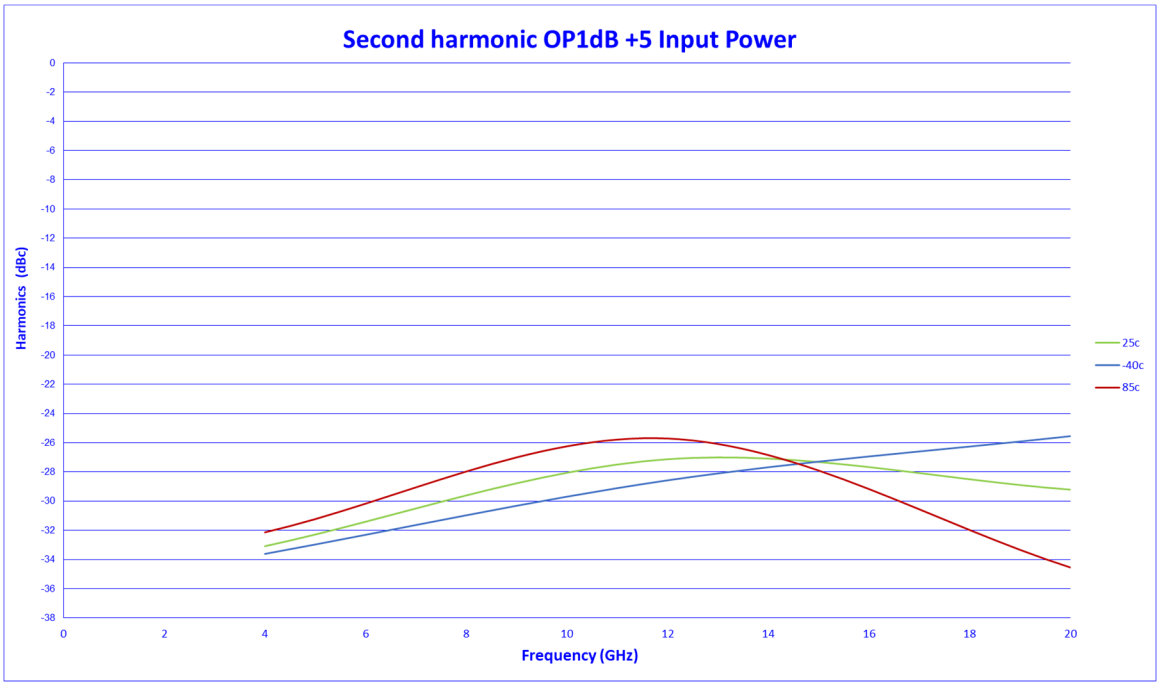

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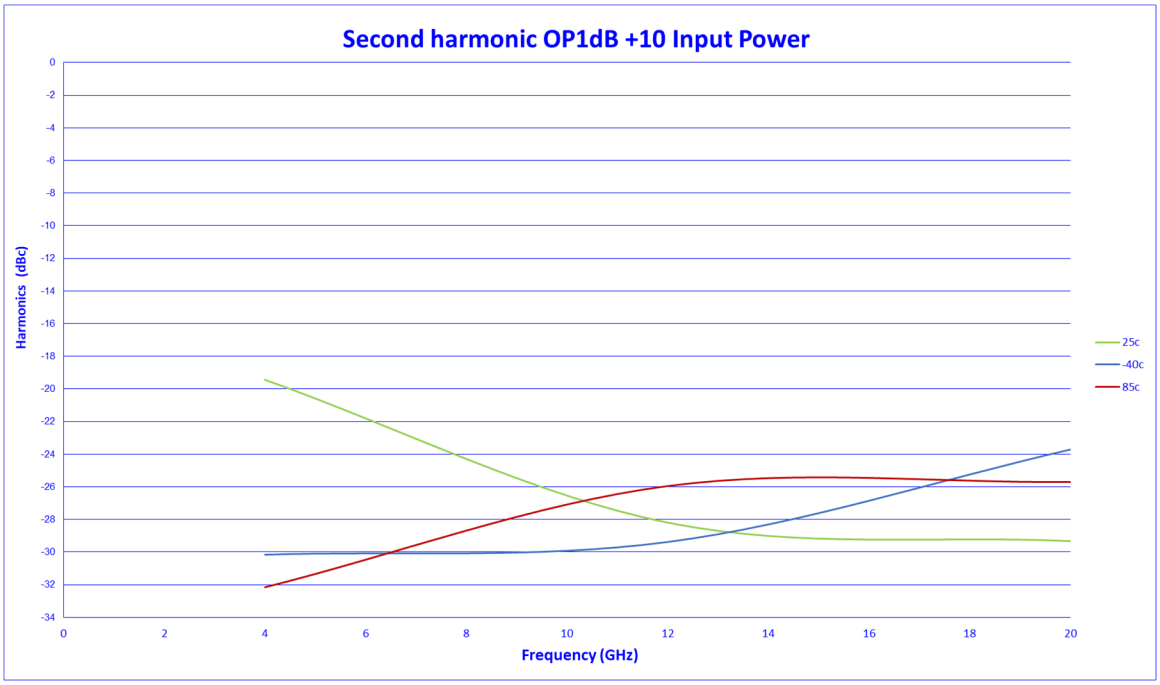

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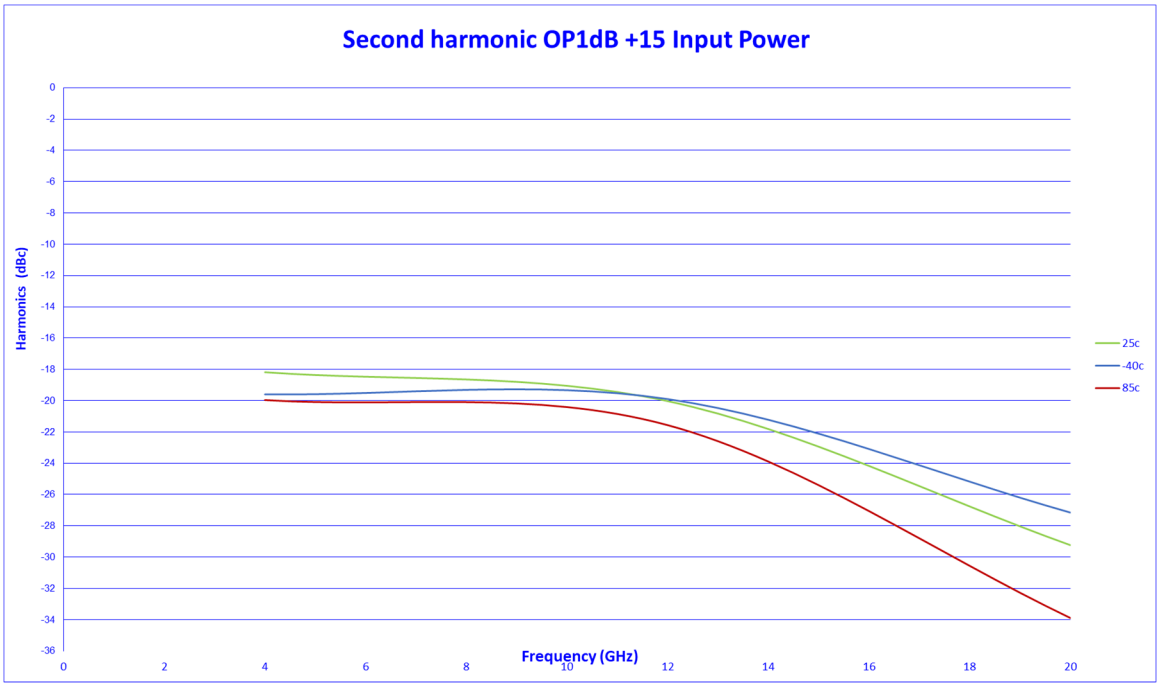

Output IP3 @ 1 GHz +25° C

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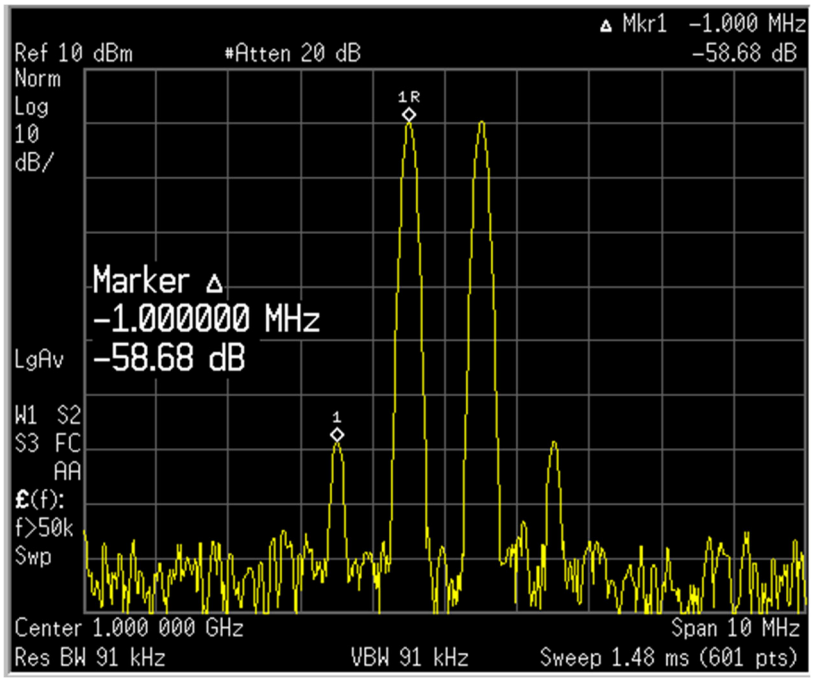
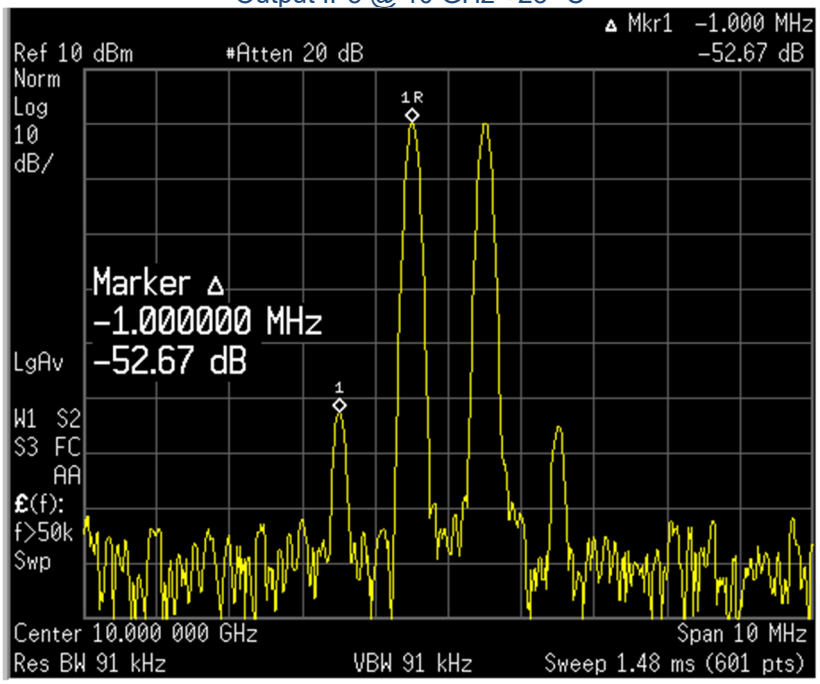


IP3 = Pout +dBc/2 = 28.3

Output IP3 @ 10 GHz +25° C



IP3 = Pout +dBc/2 = 26.3

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TYPICAL CHARACTERISTICS
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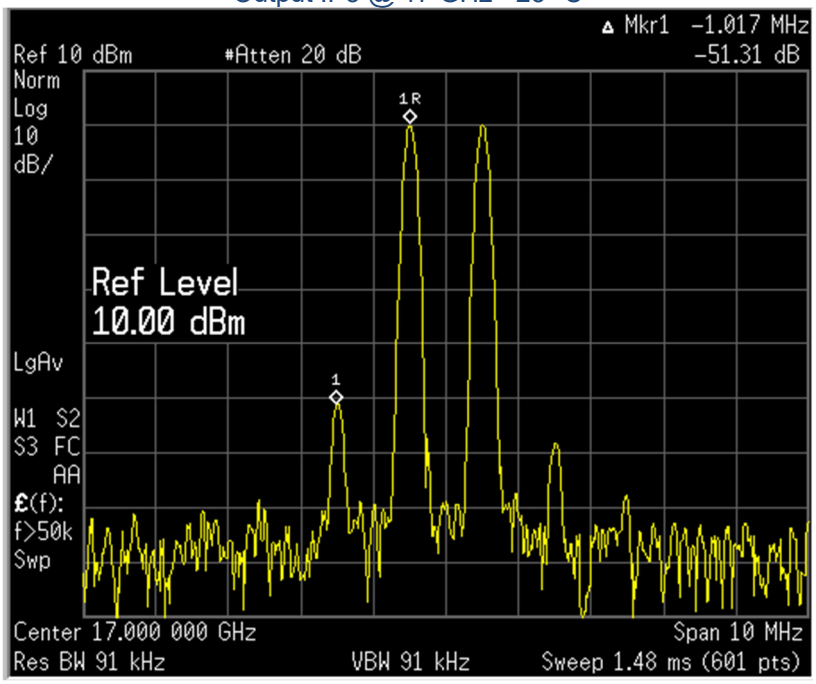
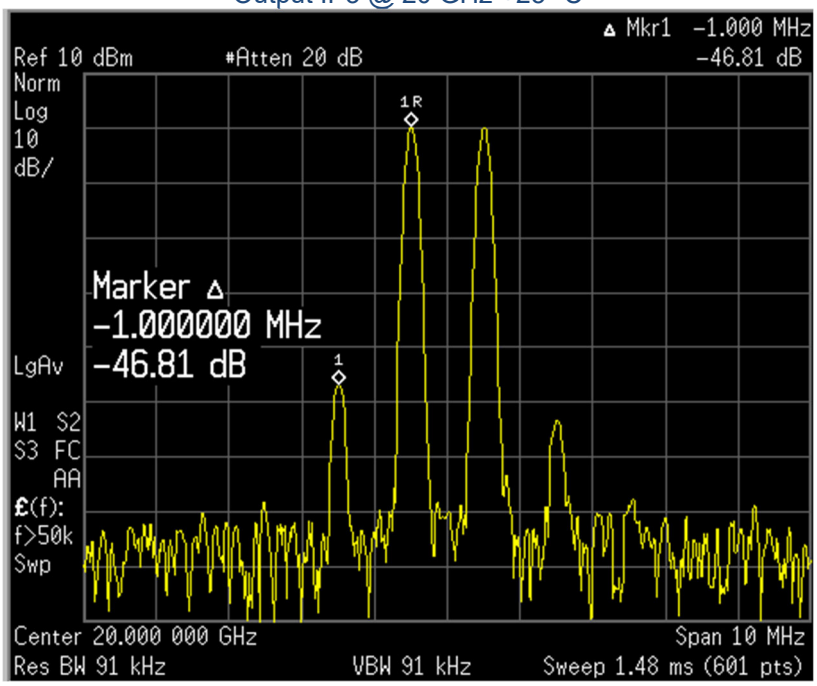
Output IP3 @ 17 GHz +25° C



IP3 = Pout +dBc/2 = 25.7

Output IP3 @ 20 GHz +25° C



IP3 = Pout +dBc/2 = 23.4

Output IP3 @ 1 GHz +85° C

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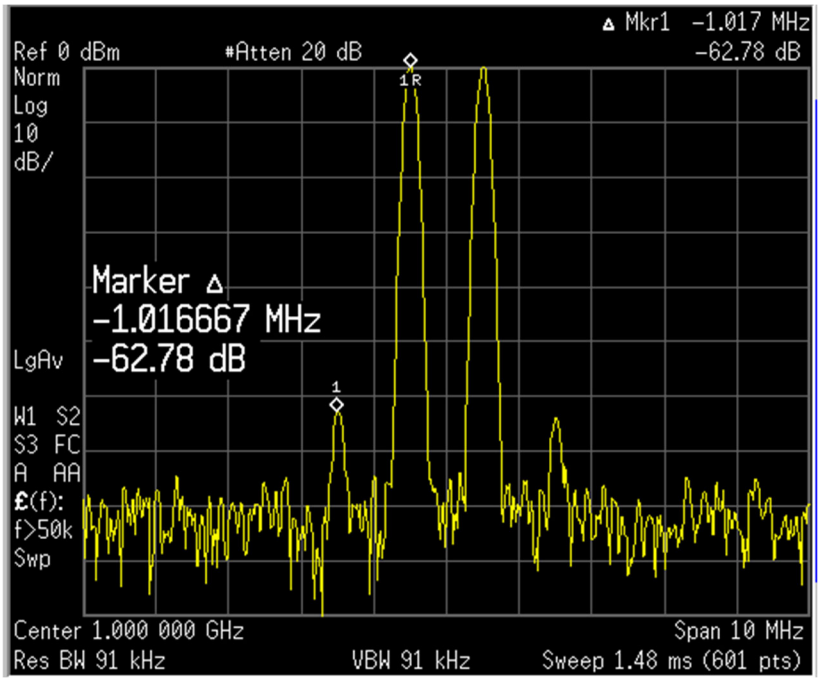
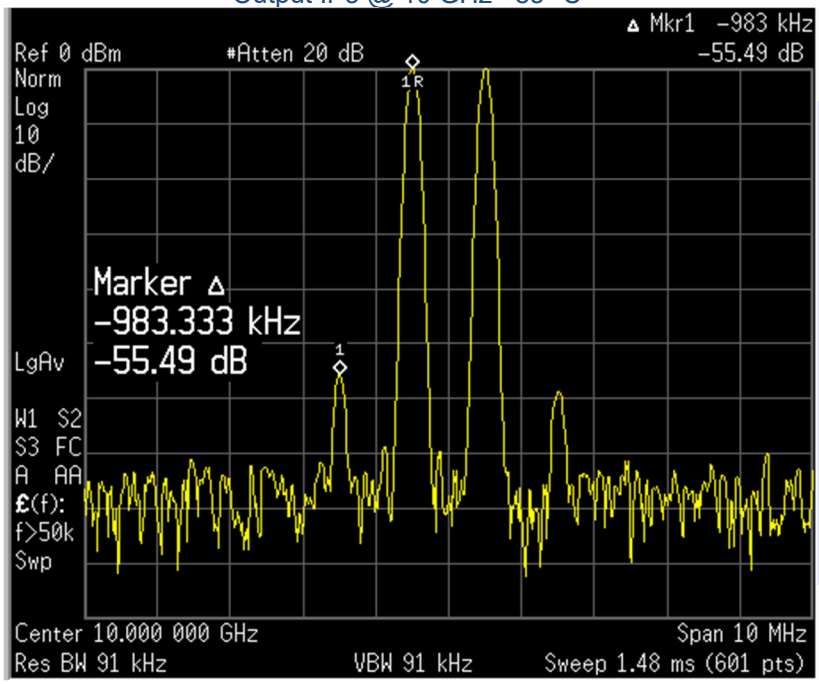


IP3 = Pout +dBc/2 = 31.4

Output IP3 @ 10 GHz +85° C



IP3 = Pout +dBc/2 = 27.7

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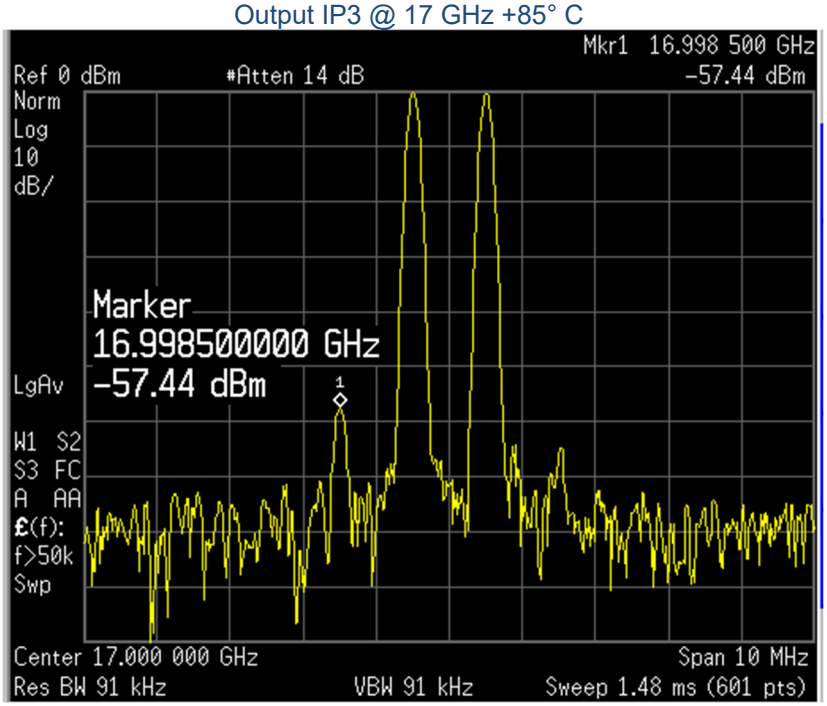
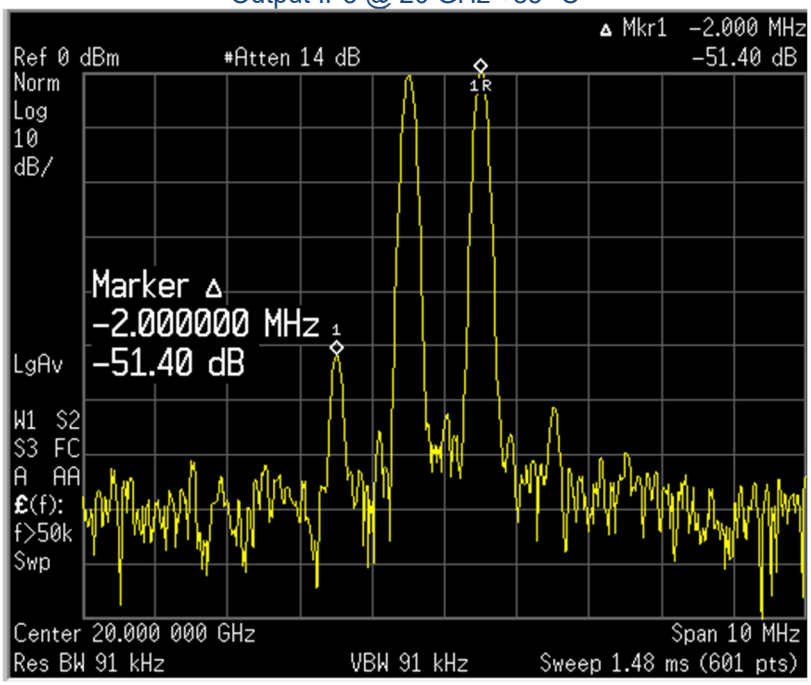
TYPICAL CHARACTERISTICS ON PEC-30-10M20-SFF

Output IP3 @ 17 GHz +85° C



IP3 = Pout +dBc/2 = 28.7

Output IP3 @ 20 GHz +85° C



IP3 = Pout +dBc/2 = 25.7

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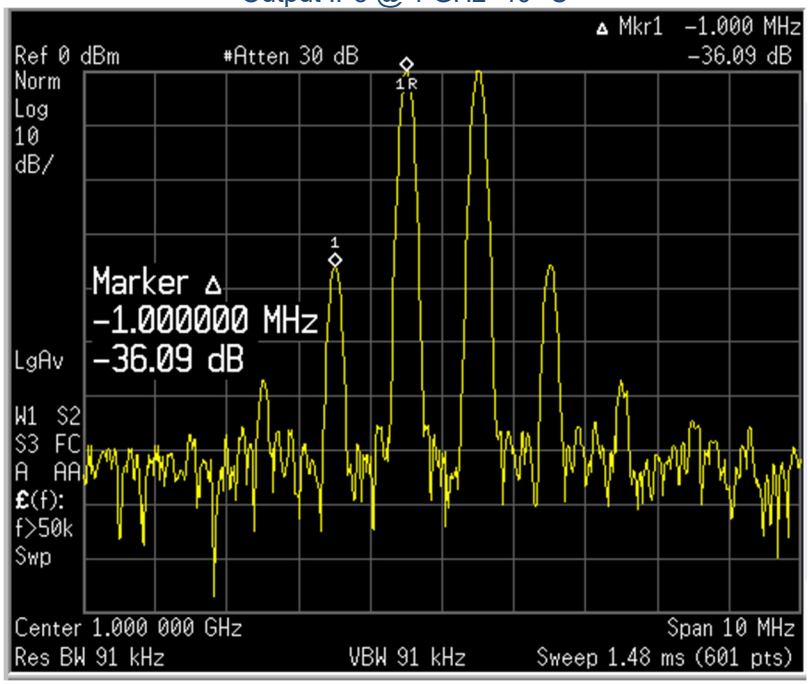
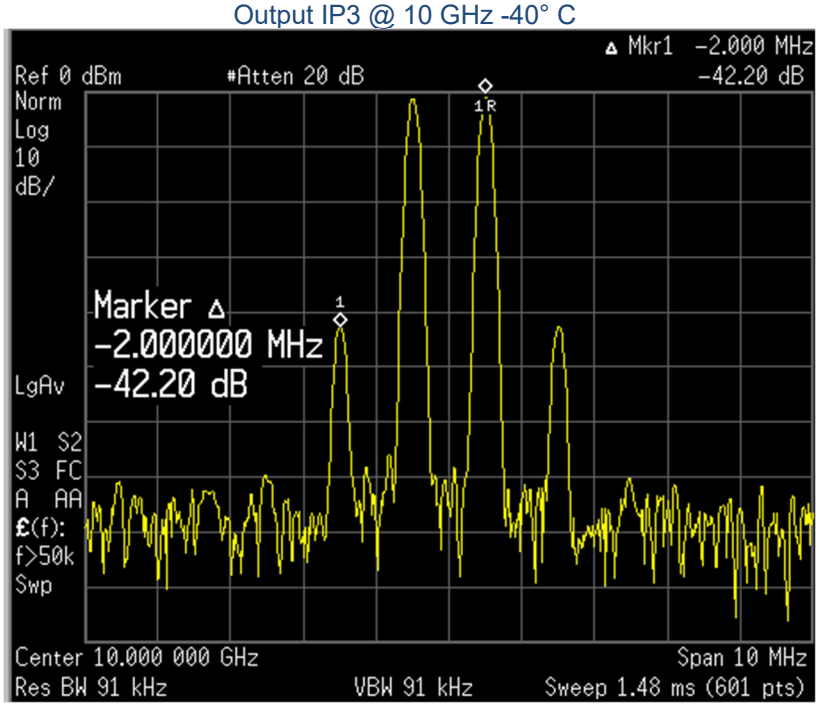
TYPICAL CHARACTERISTICS ON PEC-30-10M20-SFF

Output IP3 @ 1 GHz -40° C



IP3 = Pout +dBc/2 = 18

Output IP3 @ 10 GHz -40° C



IP3 = Pout +dBc/2 = 21.1

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TYPICAL CHARACTERISTICS
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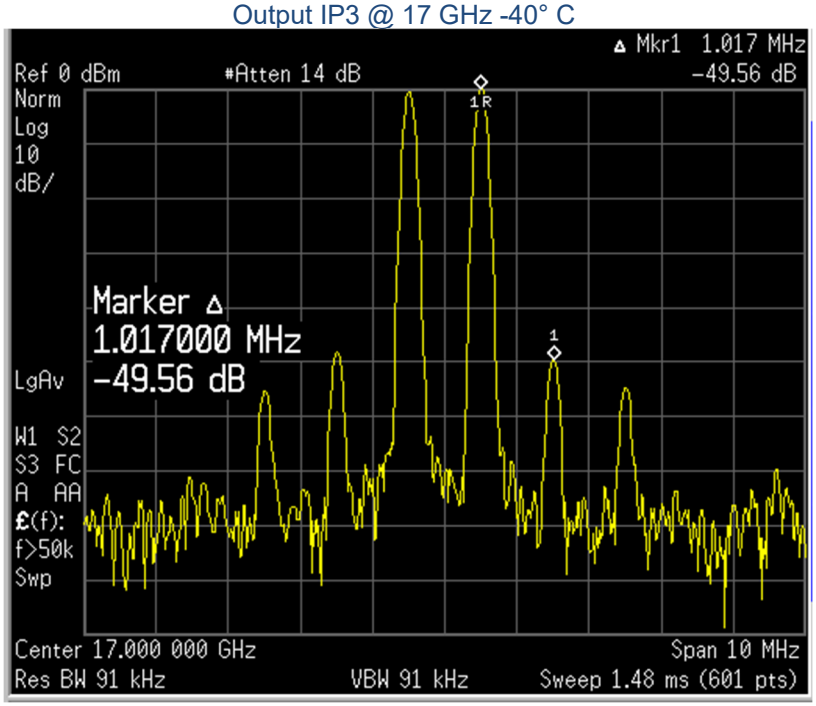
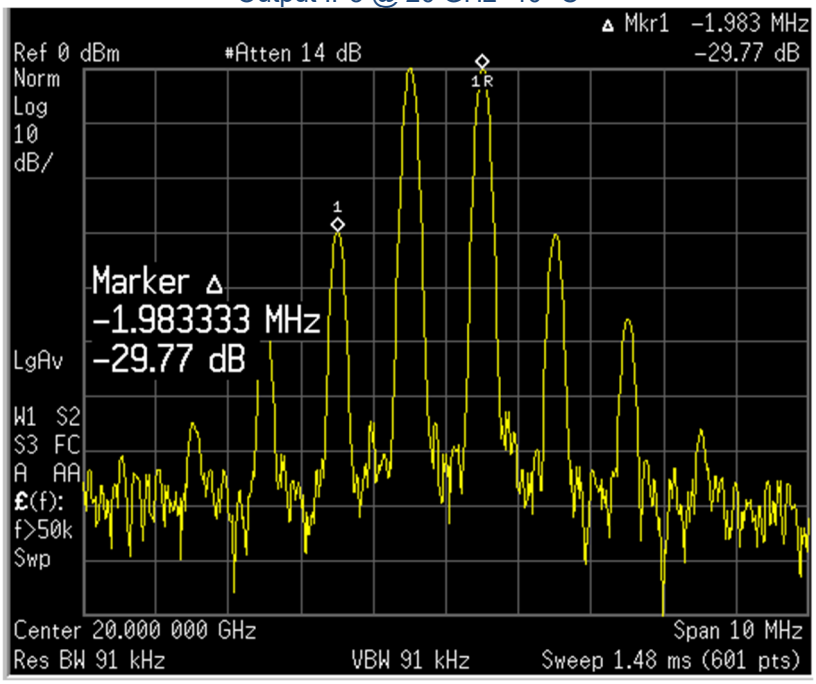
PEC-30-10M20-SFF

Output IP3 @ 17 GHz -40° C



IP3 = Pout +dBc/2 = 24.7

Output IP3 @ 20 GHz -40° C



IP3 = Pout +dBc/2 = 14.9

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