

**TYPICAL CHARACTERISTICS
ON
DD-0R5G18G-NEG-RAD-MF-ROHS**

**PMI MODEL NUMBER DD-0R5G18G-NEG-RAD-MF-ROHS IS A 0.5 GHz TO 18.0 GHz,
HIGH SPEED, HIGH SENSITIVITY DIODE DETECTOR REQUIRING NO BIAS AND
OFFERING A RESPONSE TIME OF LESS THAN 20 ns.**



August 26, 2026

**Tested and Reported by:
V. Pratap & V. Vasquez**

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PRODUCT FEATURE

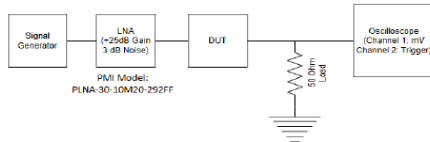
DESCRIPTION:

PMI MODEL NUMBER DD-0R5G18G-NEG-RAD-MF-ROHS IS A 0.5 GHz TO 18.0 GHz, HIGH SPEED, HIGH SENSITIVITY DIODE DETECTOR REQUIRING NO BIAS AND OFFERING A RESPONSE TIME OF LESS THAN 20 ns.

SPECIFICATIONS:

- FREQUENCY RANGE: 0.5 GHz TO 18.0 GHz
- VSWR (INPUT): 3.5 : 1 MAX (MEASURED @ -10dBm)
- FREQUENCY FLATNESS: ± 1.5 dB MAX WITH 10 M Ω LOAD
 ± 1.5 dB MAX WITH 1 M Ω LOAD
- VOLTAGE SENSITIVITY: 700 mV/mW TYP. WITH 10 M Ω LOAD
(SQUARE-LAW REGION)
300 mV/mW TYP. WITH 1 M Ω LOAD
- TANGENTIAL SENSITIVITY¹: -40 dBm @ 500 MHz VIDEO BANDWIDTH
- OUTPUT VOLTAGE: NEGATIVE
- MAX INPUT POWER: +20 dBm MAX
- RISE/FALL TIME: 5 ns TYP. 10 ns MAX @ 0 dBm INPUT POWER WITH 50 Ω load
20 ns MAX @ -5 dBm INPUT POWER WITH 100 Ω LOAD (HIGH IMPEDANCE)
- DYNAMIC RANGE: -40 dBm TO +20 dBm
- CONNECTORS: 2.92mm MALE (IN) 2.92mm FEMALE (OUT)
- FINISH: ALBALOY PLATED

- TSS MEASUREMENTS PERFORMED WITH LNA THAT HAS 20 dB GAIN AND 3 dB NOISE AT DIODE DETECTOR INPUT
- PULSED MEASUREMENTS PERFORMED USING AN EXTERNAL 50 Ω TERMINATION (OR 100 Ω TERMINATION FOR HIGH IMPEDANCE) THROUGH A T-CONNECTOR FOR PROPER PULSE SHAPING. OUTPUT VOLTAGE MEASURED AT 50 Ω OSCILLOSCOPE INPUT.

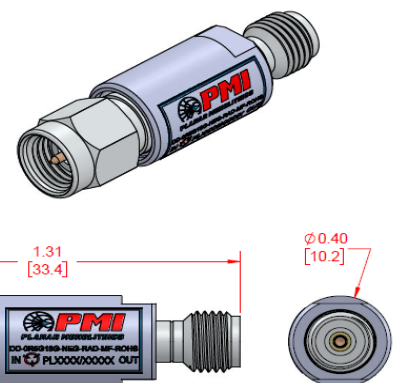


ENVIRONMENTAL RATINGS:

- TEMPERATURE: -20°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202, METHOD 103 COND. B
- SHOCK: MIL-STD-202, METHOD 213 COND. B
- VIBRATION: MIL-STD-202, METHOD 204 COND. B
- ALTITUDE: MIL-STD-202, METHOD 105 COND. B
- TEMPERATURE CYCLE: MIL-STD-202, METHOD 107 COND. A

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

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	9/19/2005	



APPROVALS		DATE	TITLE	
DRAWN	VP	9/19/2005	OUTLINE	
DESIGNED	VP		DD-0R5G18G-NEG-RAD-MF-ROHS	
TESTED	B		SIZE	750X100
			SCALE	27054160
				1

TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

TECHNICAL SPECIFICATIONS

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	TEST RESULTS		
			+25°C	-20°C	+85°C
1	Frequency Range:	0.5 GHz to 18 GHz	0.5 GHz to 18 GHz		
2	VSWR (Input):	3.5:1 Max. (MEASURED @ -10dBm)	2.94 :1 See Graph	2.96 :1 See Graph	2.91 :1 See Graph
3	Polarity/Output Voltage	NEGATIVE	NEGATIVE		
4	Frequency Flatness:	±1.5 dB Max. WITH 10 MΩ LOAD	±0.28 dB @ 10MΩ. Load See Graph	±0.28 dB @ 10MΩ. Load See Graph	±0.32 dB @ 10MΩ. Load See Graph
		±1.5 dB Max. WITH 1 MΩ LOAD	±0.29 dB @ 1MΩ. Load See Graph	±0.4 dB @ 1MΩ. Load See Graph	±0.33 dB @ 1MΩ. Load See Graph
		Not Specified	±0.74 dB @ 10kΩ. Load See Graph	±1.07 dB @ 10kΩ. Load See Graph	±0.39 dB @ 10kΩ. Load See Graph
			±0.9 dB @ 100Ω. Load See Graph	±1.41 dB @ 100Ω. Load See Graph	±0.62 dB @ 100Ω. Load See Graph
5	Voltage Sensitivity: (SQUARE-LAW REGION)	700 mV/mW TYP. WITH 10 MΩ LOAD	1331.79 mV/mW @ 10MΩ. Load See Graph.	1054.79 mV/mW @ 10MΩ. Load See Graph.	1246.09 mV/mW @ 10MΩ. Load See Graph.
		300 mV/mW TYP. WITH 1 MΩ LOAD	845.91 mV/mW @ 1MΩ. Load See Graph.	314 mV/mW @ 1MΩ. Load See Graph.	1226.67 mV/mW @ 1MΩ. Load See Graph.
		Not Specified	100.53 mV/mW @ 10kΩ. Load See Graph.	104.67 mV/mW @ 10kΩ. Load See Graph.	215.67 mV/mW @ 10kΩ. Load See Graph.
			1.25 mV/mW @ 100Ω. Load See Graph.	2.2 mV/mW @ 100Ω. Load See Graph.	2.19 mV/mW @ 100Ω. Load See Graph.

Note 1: TSS measurements performed with LNA that has 20 dB gain and 3 dB noise at diode detector input.

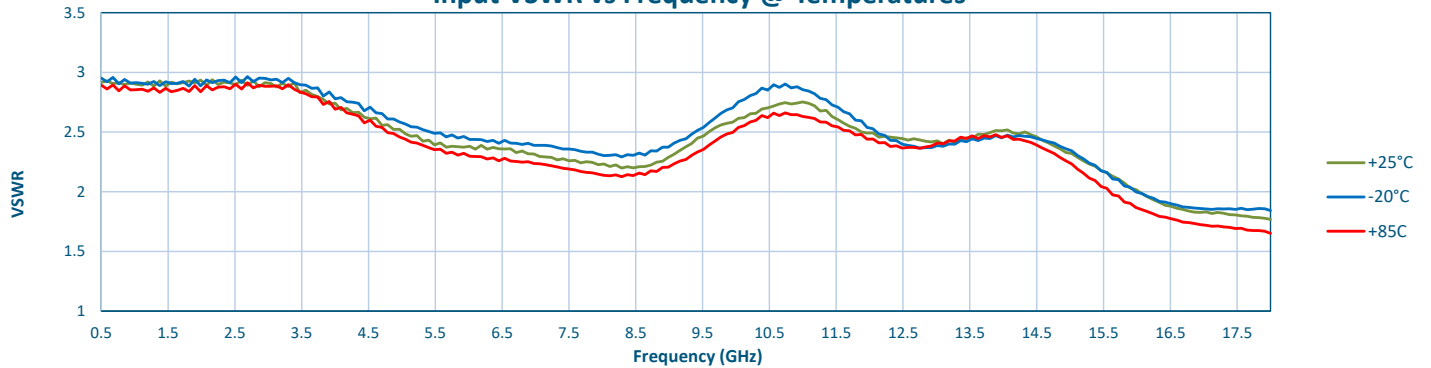
Note 2: 2. PULSED MEASUREMENTS PERFORMED USING AN EXTERNAL 50 Ω TERMINATION (OR 100 Ω TERMINATION FOR HIGH IMPEDANCE) THROUGH A T-CONNECTOR FOR PROPER PULSE SHAPING. OUTPUT VOLTAGE MEASURED AT 50Ω OSCILLOSCOPE INPUT.

TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

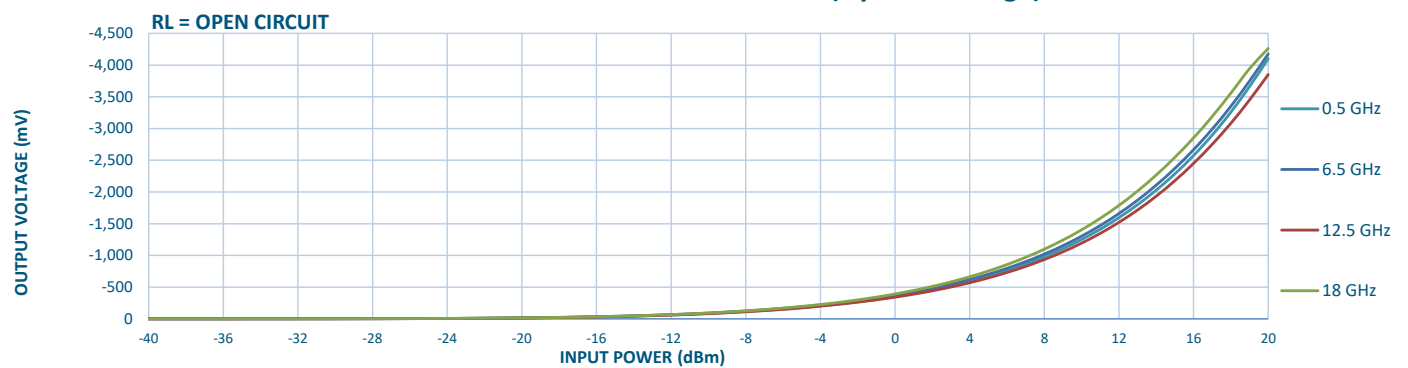
6	Maximum Input Power:	+20 dBm	+20 dBm See Graphs		
7	Tangential Sensitivity ¹ :	-40dBm @ 500 MHz Video Bandwidth	-40 dBm See Graph		
8	Rise/Fall Time:	10 ns Max. @ 50 Ω Impedence 20 ns Max. @ High Impedence (100 Ω)		50 Ω	High Impedence
			Rise	4.1ns @ 0 dBm 7.0ns @ -5 dBm	8.0ns @ 0 dBm 18.2ns @ -5 dBm
			Fall	1.8ns @ 0 dBm 2.0ns @ -5 dBm	8.4ns @ 0 dBm 8.6ns @ -5 dBm
9	Dynamic Range:	-40 dBm to +20 dBm.	-40 dBm to +20 dBm See Graphs		

TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

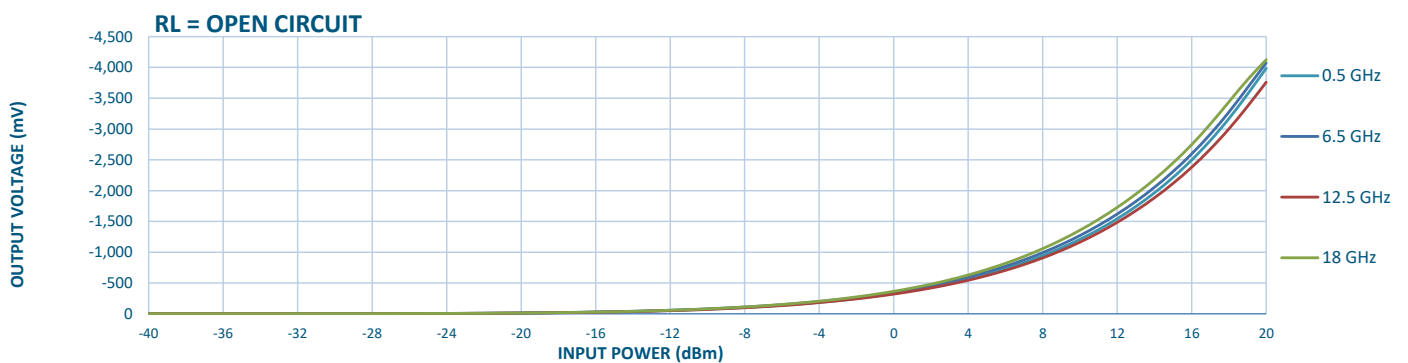
Input VSWR vs Frequency @ Temperatures



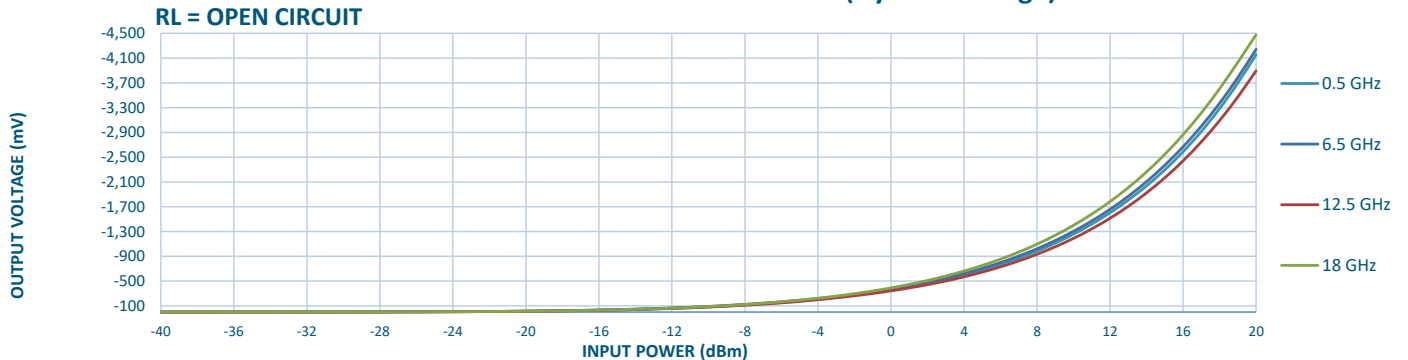
Transfer Curve with 10MΩ at 25°C (Dynamic Range)



Transfer Curve with 10MΩ at -20°C (Dynamic Range)

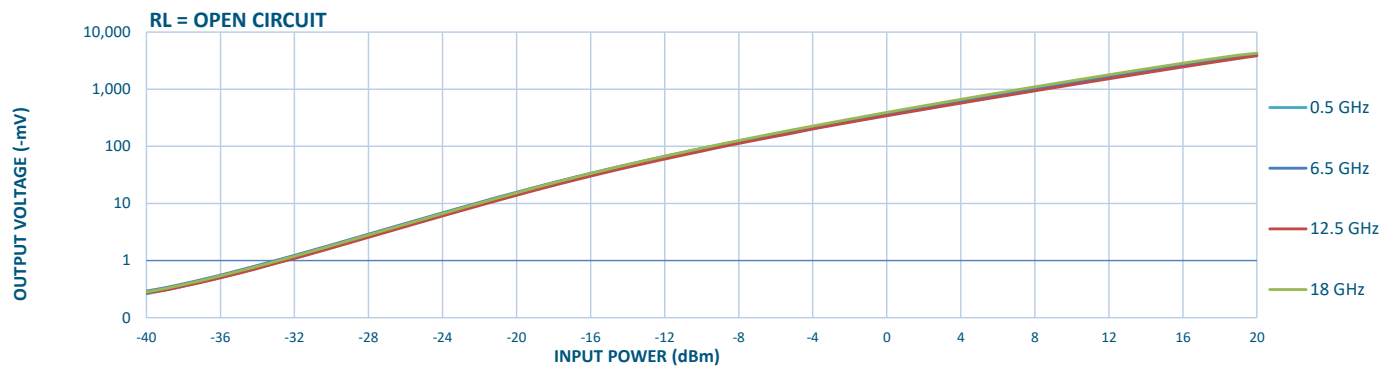


Transfer Curve with 10MΩ at +85°C (Dynamic Range)

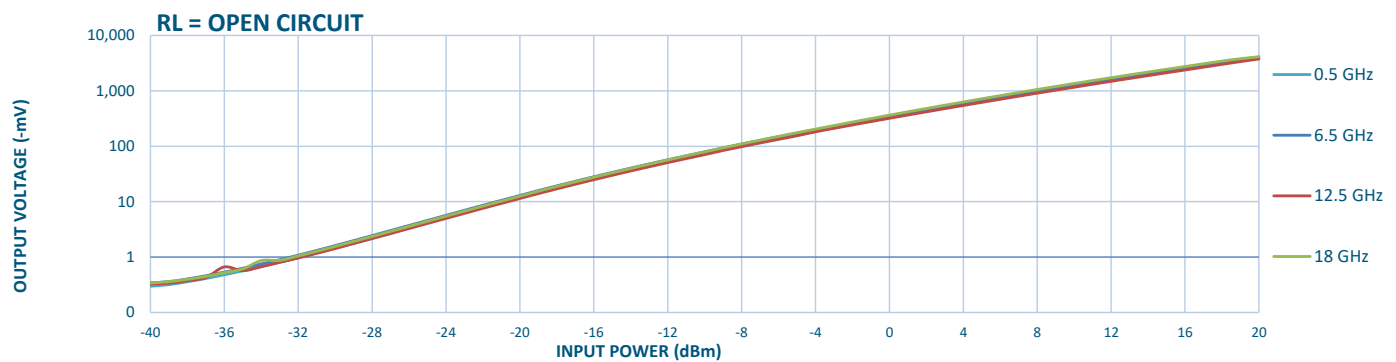


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

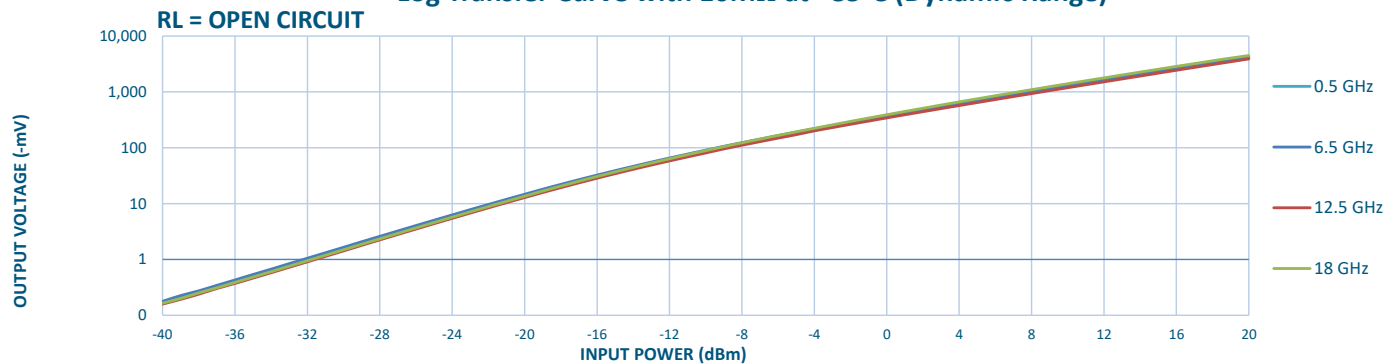
Log Transfer Curve with 10MΩ at 25°C (Dynamic Range)



Log Transfer Curve with 10MΩ at -20°C (Dynamic Range)

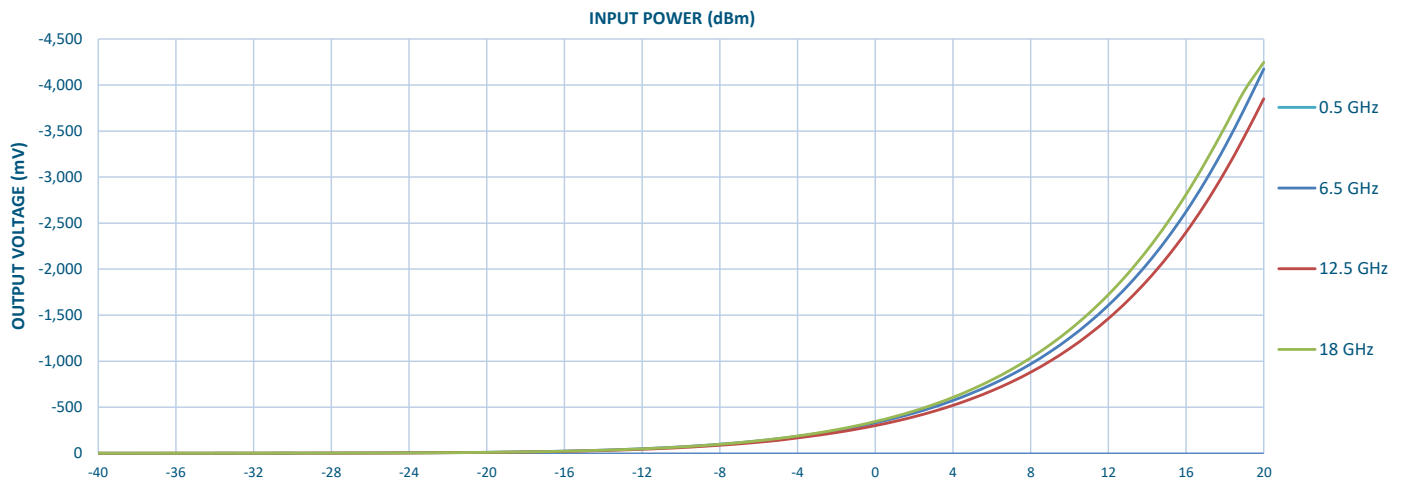


Log Transfer Curve with 10MΩ at +85°C (Dynamic Range)

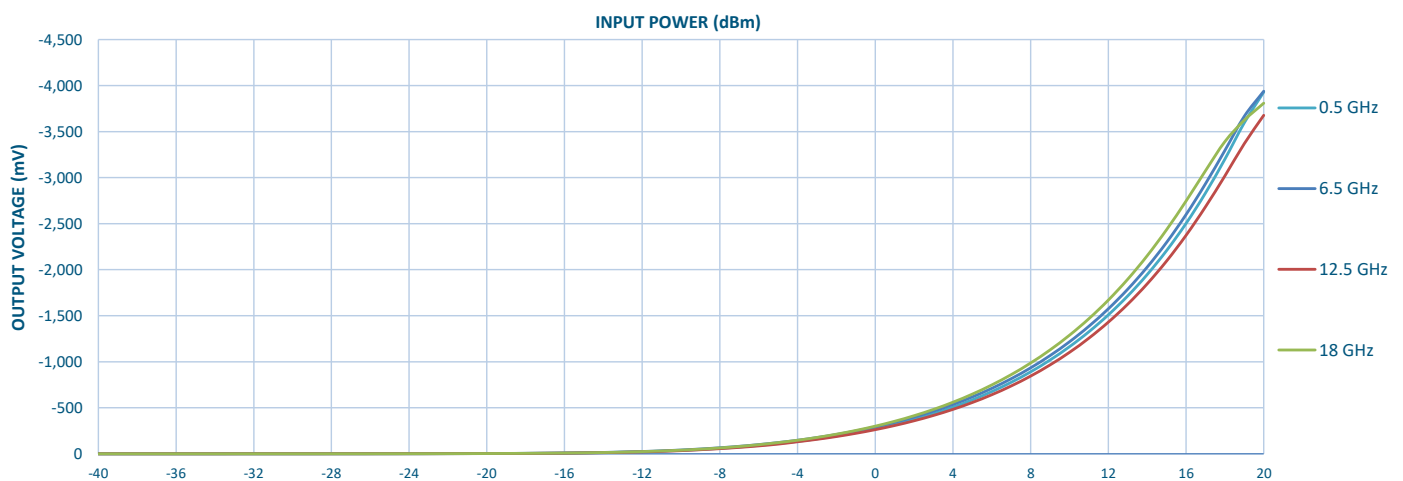


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

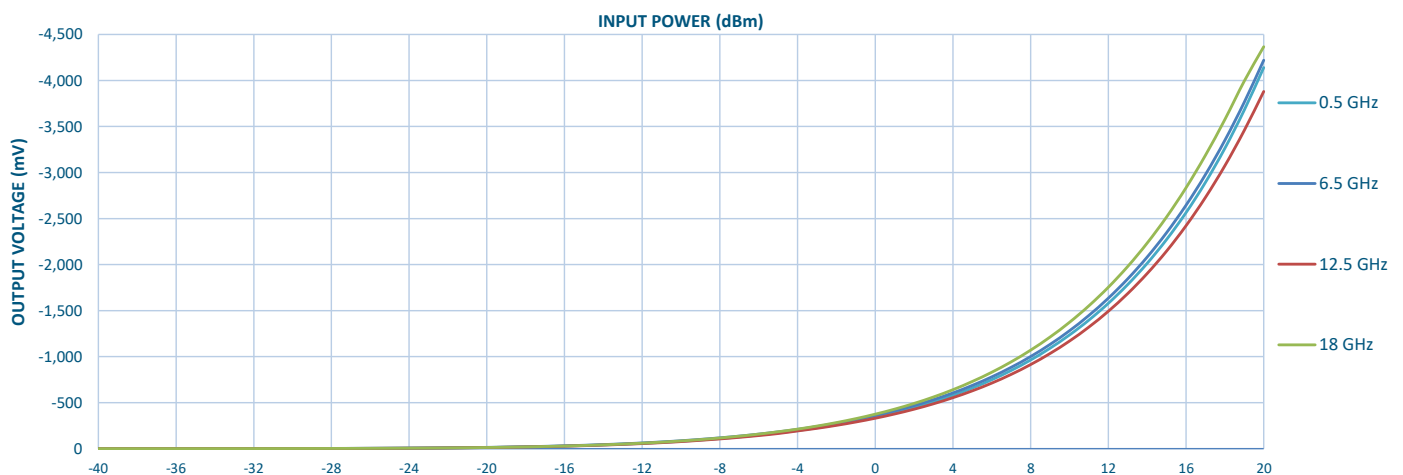
Transfer Curve with 1M Ω at 25°C (Dynamic Range)



Transfer Curve with 1M Ω at -20°C (Dynamic Range)

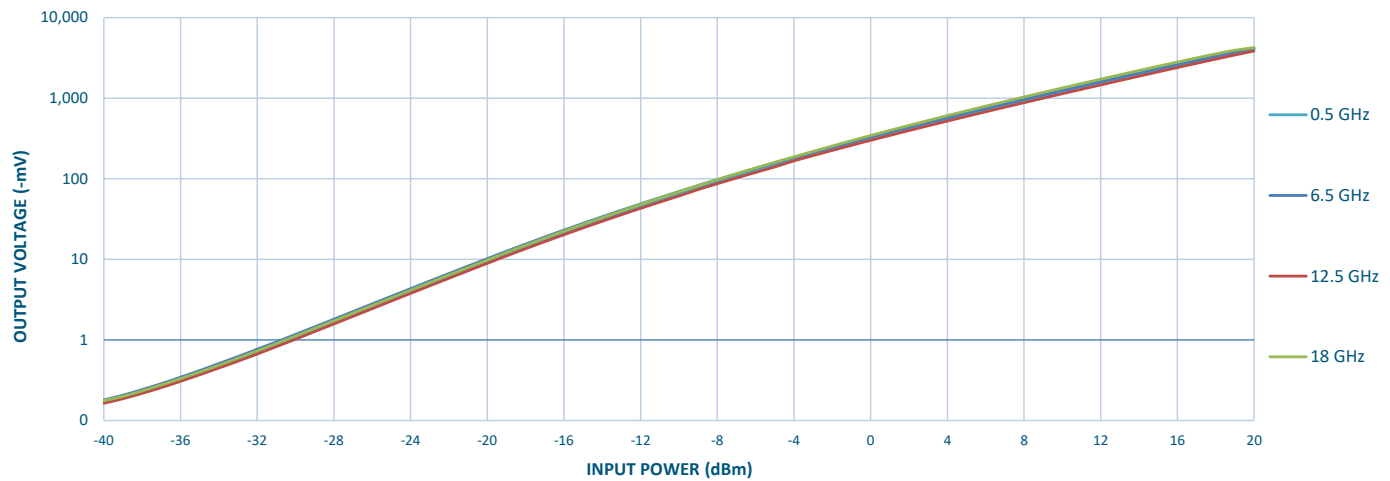


Transfer Curve with 1M Ω at +85°C (Dynamic Range)

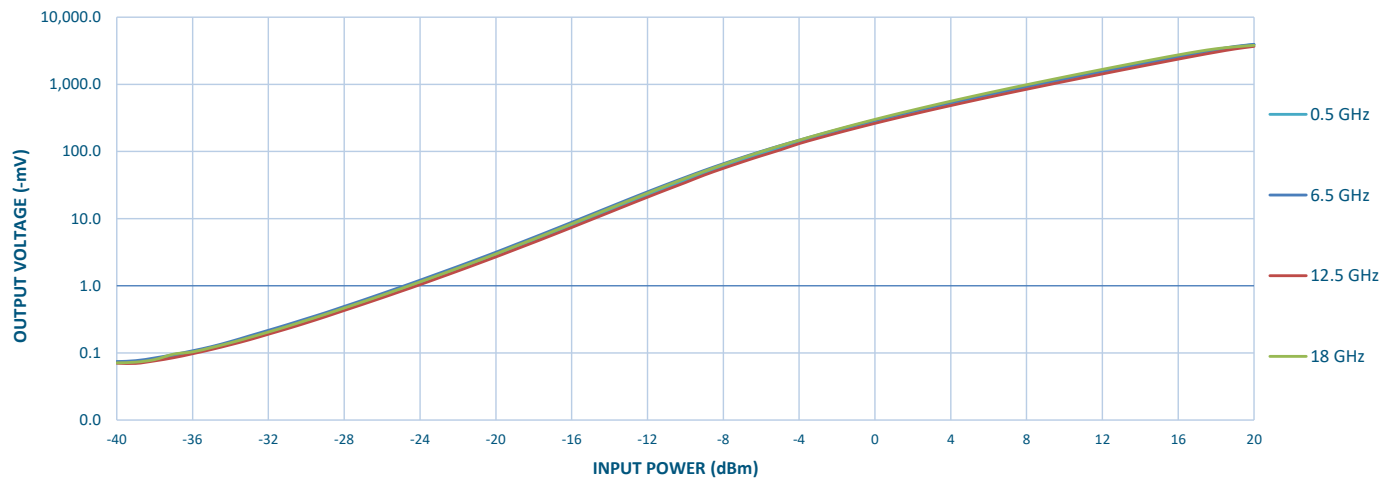


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

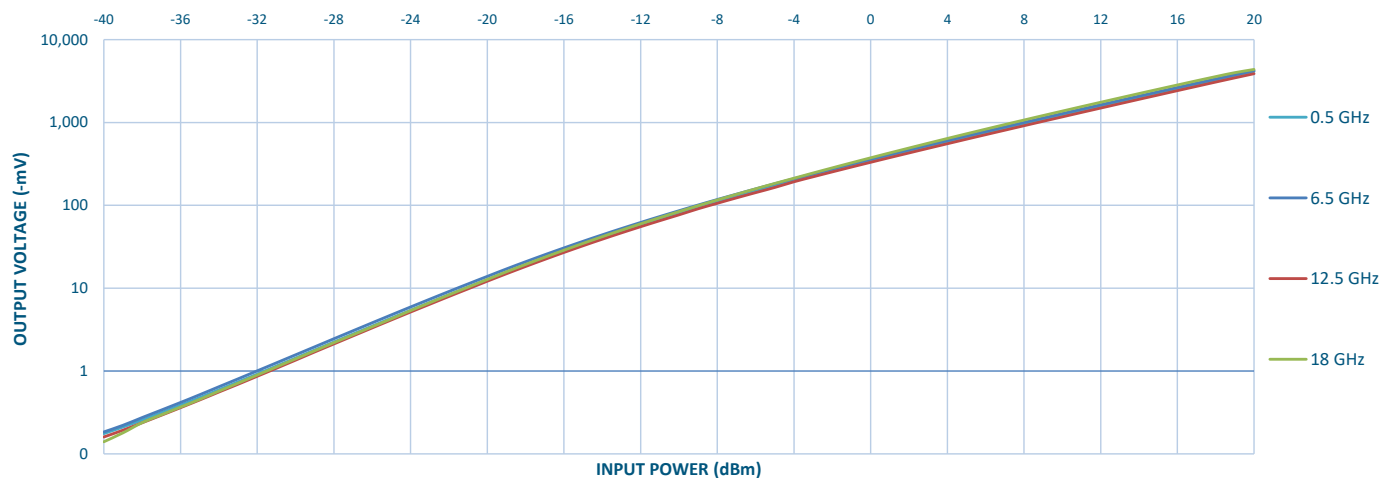
Log Transfer Curve with 1M Ω at 25°C (Dynamic Range)



Log Transfer Curve with 1M Ω at -20°C (Dynamic Range)

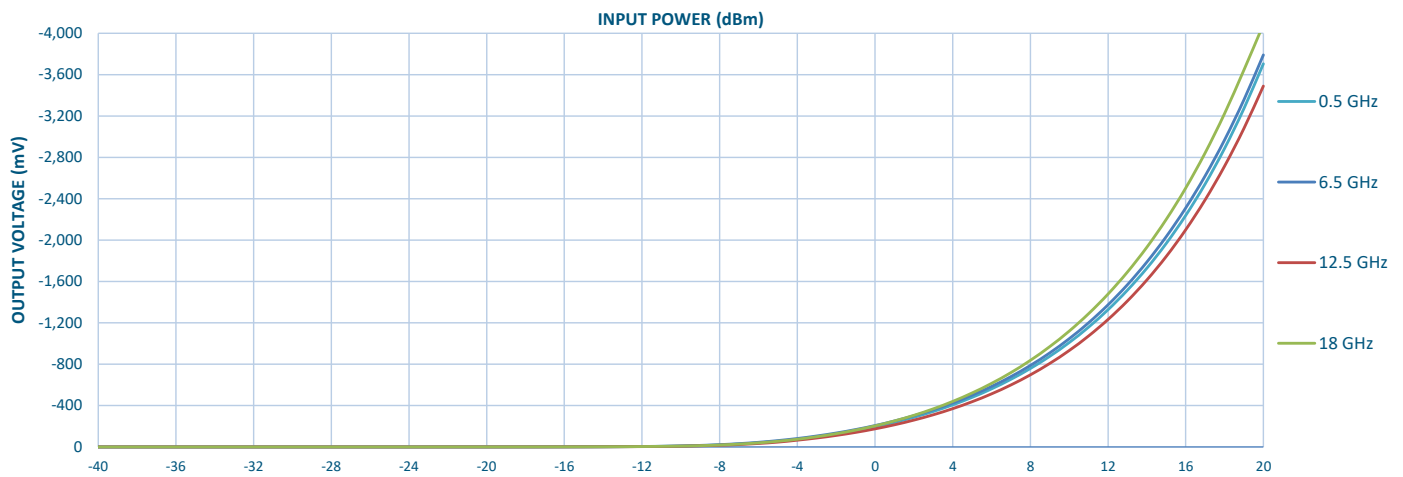


Log Transfer Curve with 1M Ω at +85°C (Dynamic Range)

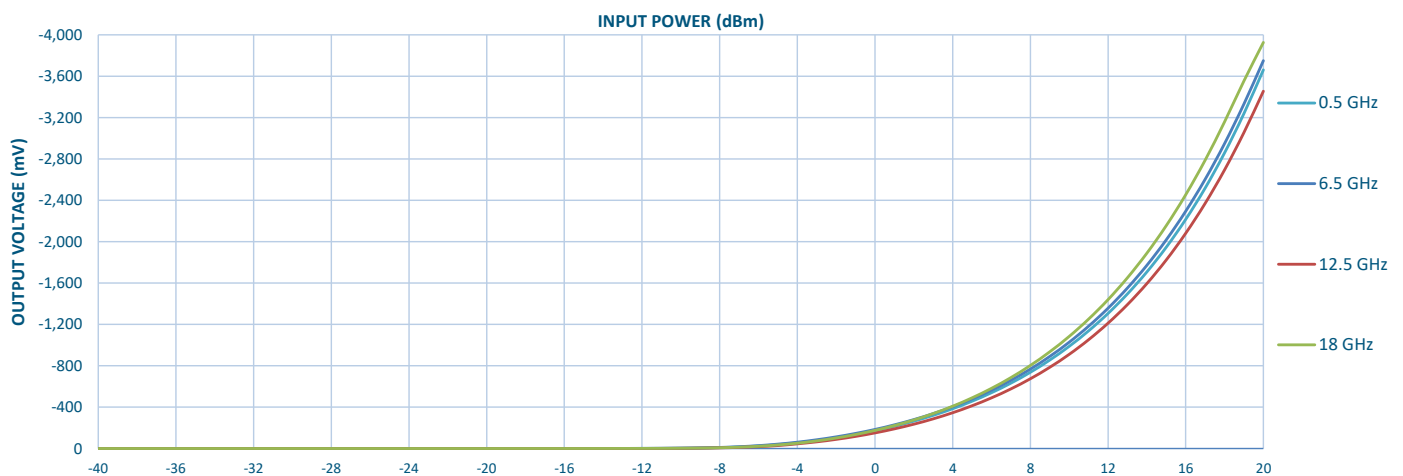


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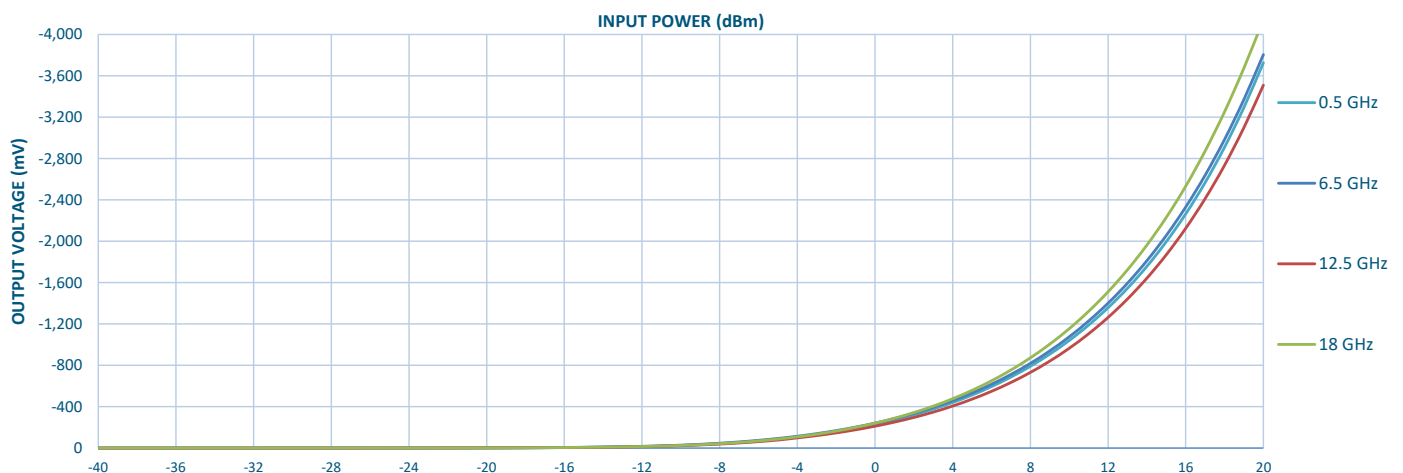
Transfer Curve with 10KΩ at 25°C (Dynamic Range)



Transfer Curve with 10KΩ at -20°C (Dynamic Range)

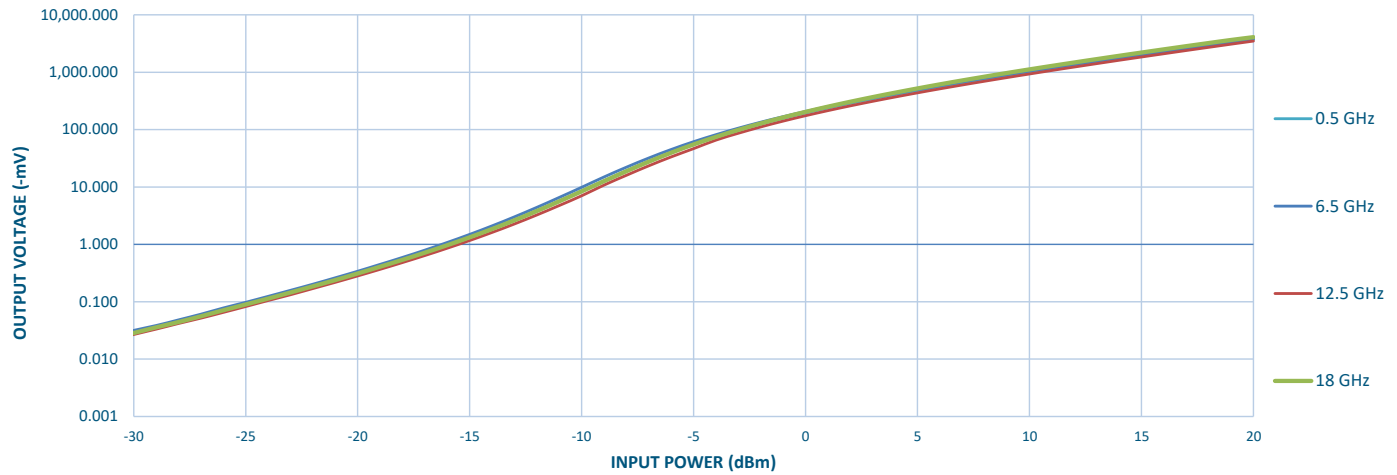


Transfer Curve with 10KΩ at 85°C (Dynamic Range)

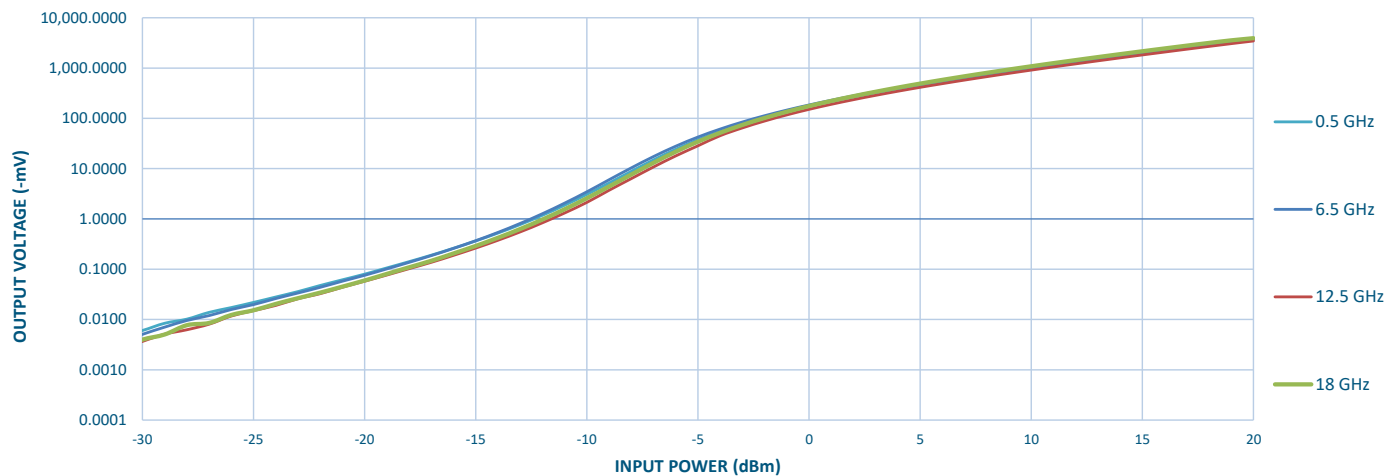


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

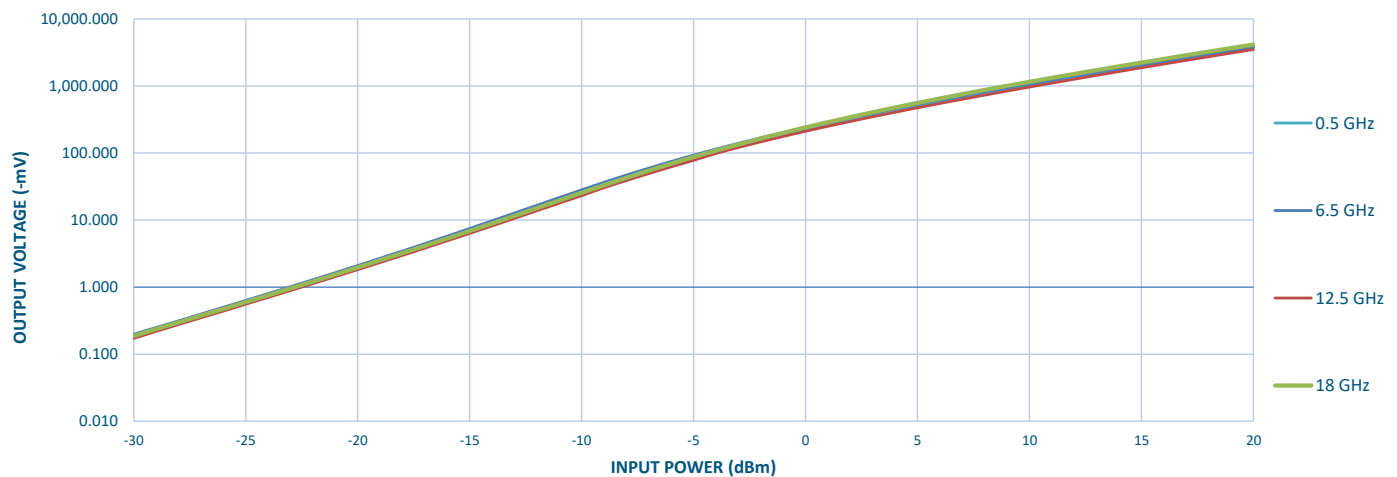
Log Transfer Curve with 10K Ω at 25°C (Dynamic Range)



Log Transfer Curve with 10K Ω at -20°C (Dynamic Range)

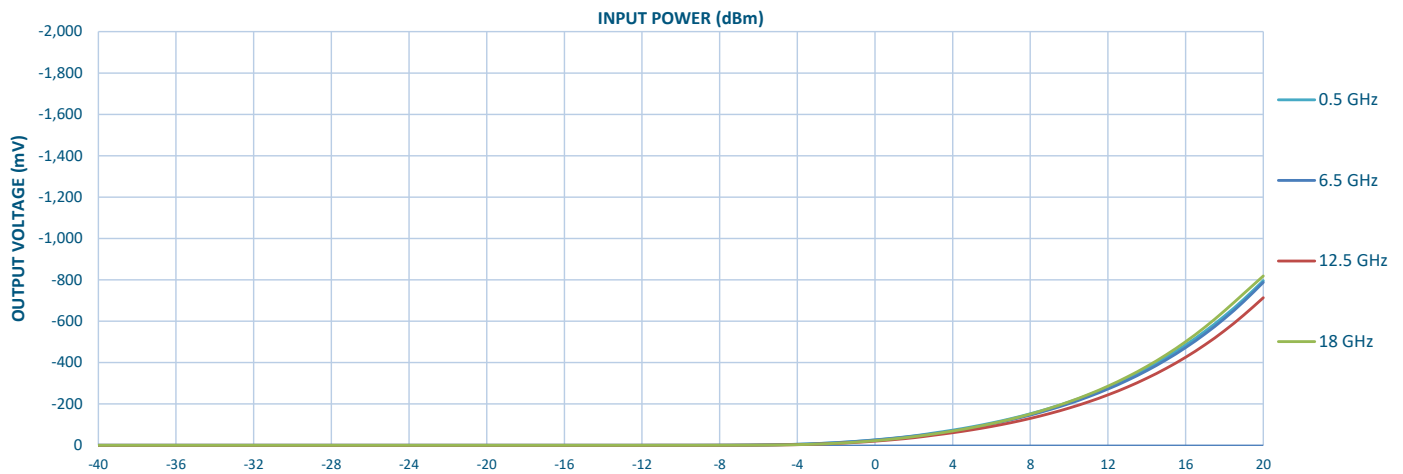


Log Transfer Curve with 10K Ω at 85°C (Dynamic Range)

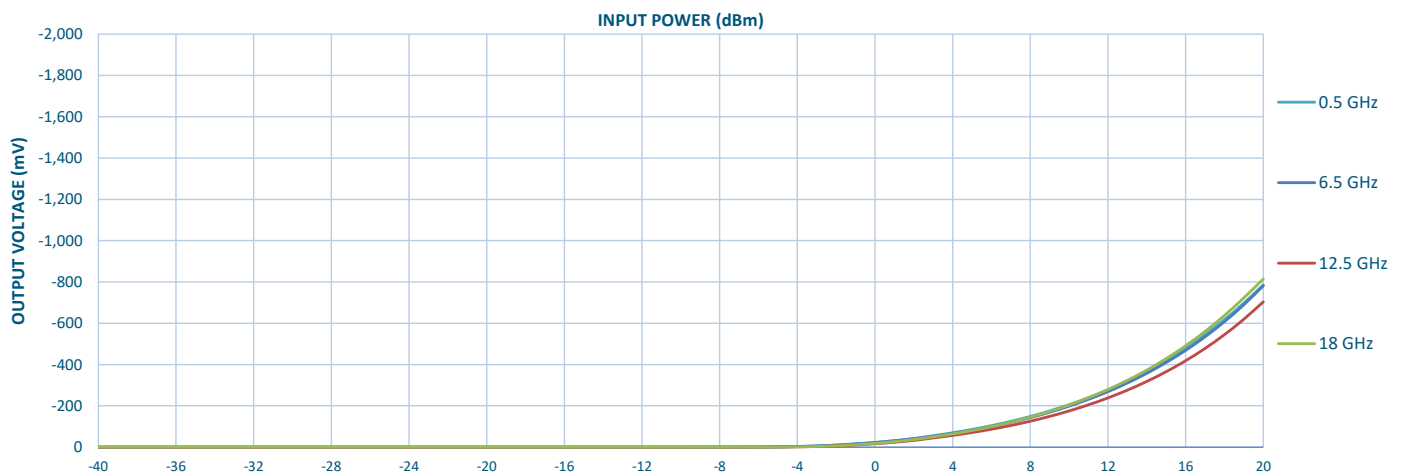


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

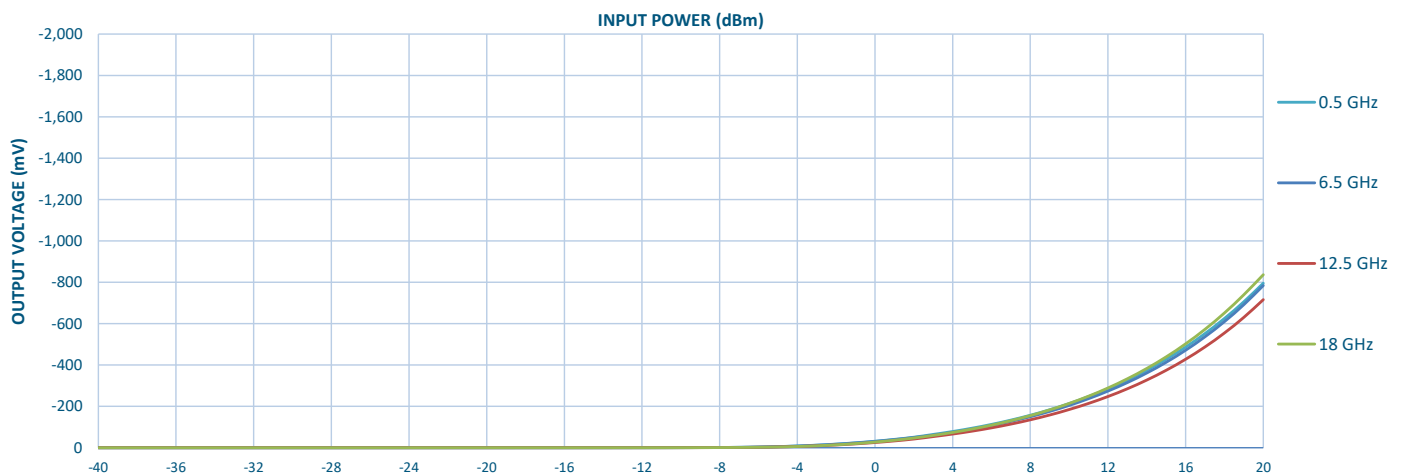
Transfer Curve with 100Ω at 25°C (Dynamic Range)



Transfer Curve with 100Ω at -20°C (Dynamic Range)

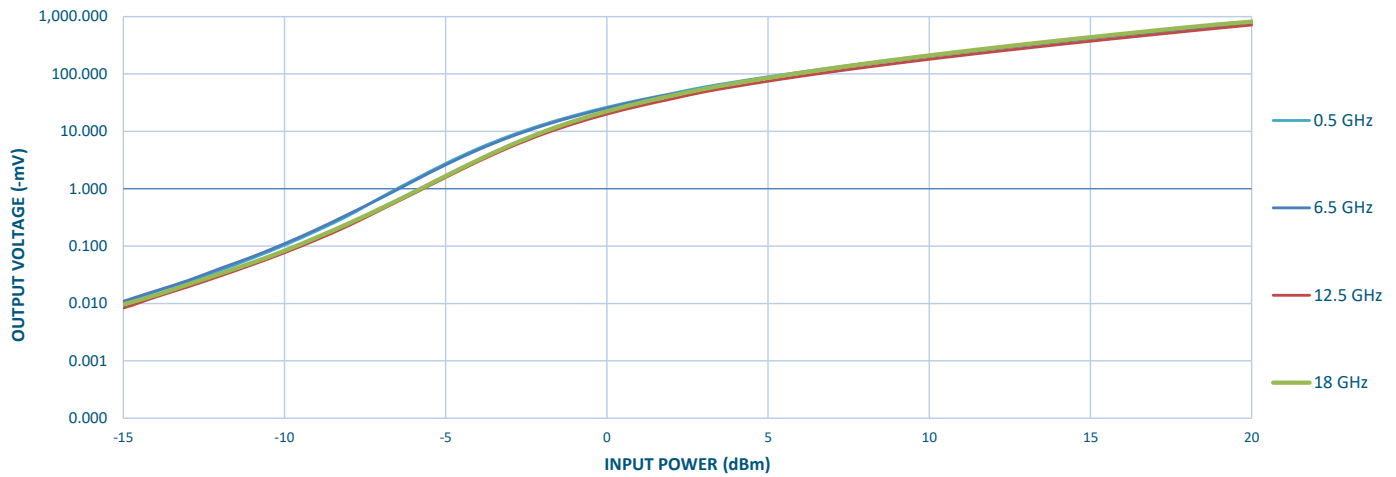


Transfer Curve with 100Ω at 85°C (Dynamic Range)

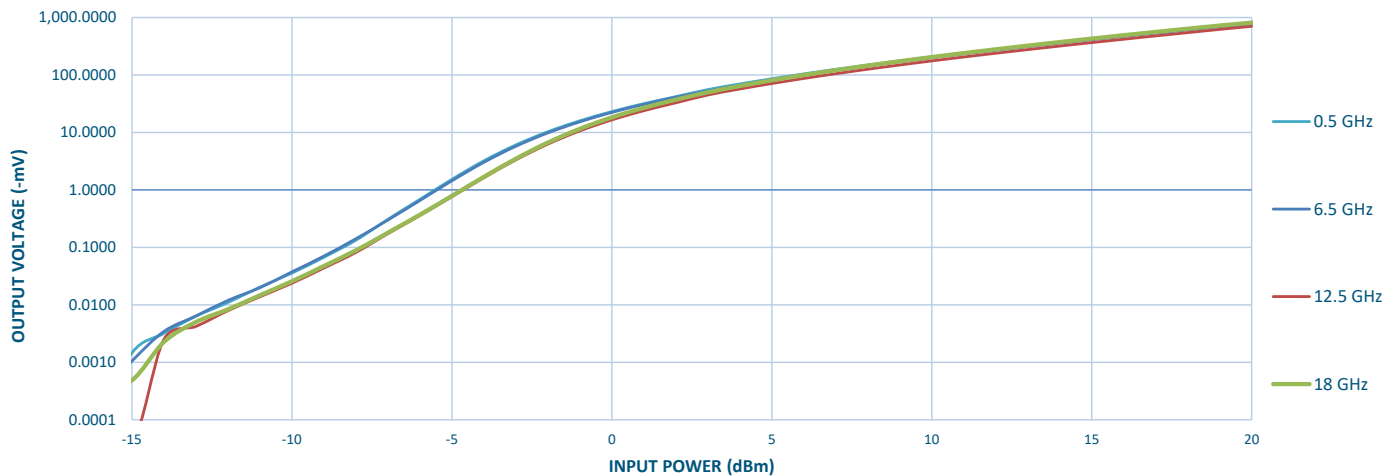


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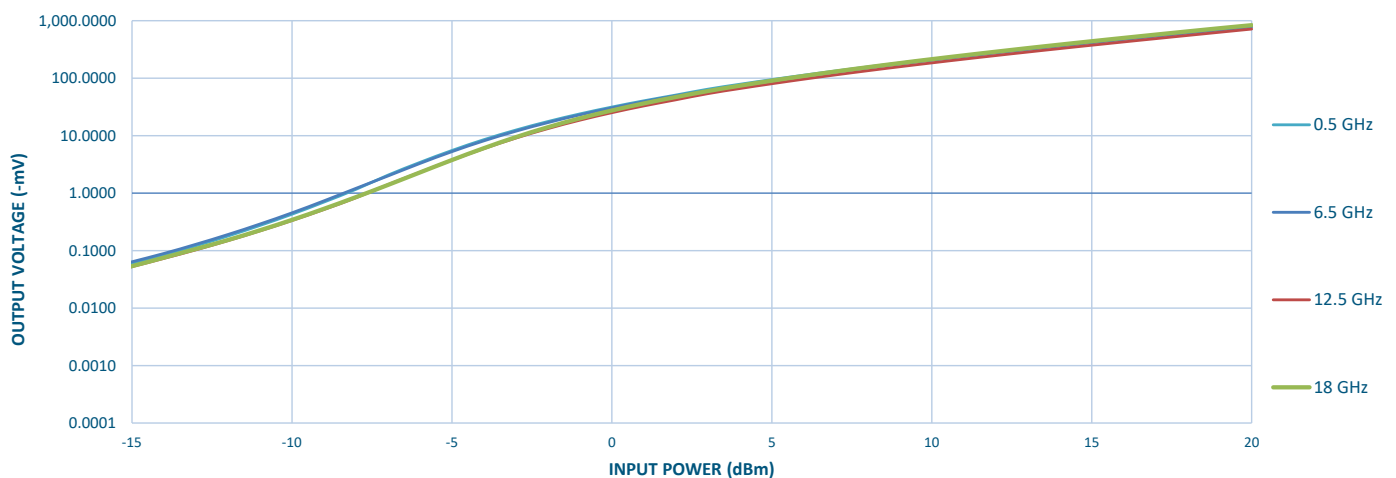
Log Transfer Curve with 100Ω at 25°C (Dynamic Range)



Log Transfer Curve with 100Ω at -20°C (Dynamic Range)

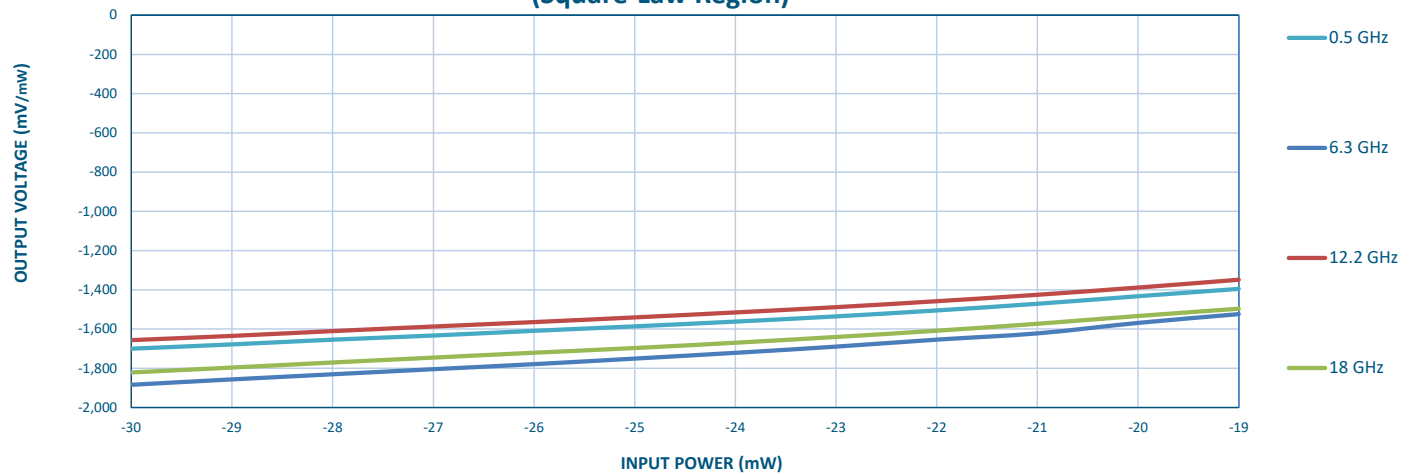


Log Transfer Curve with 100Ω at 85°C (Dynamic Range)

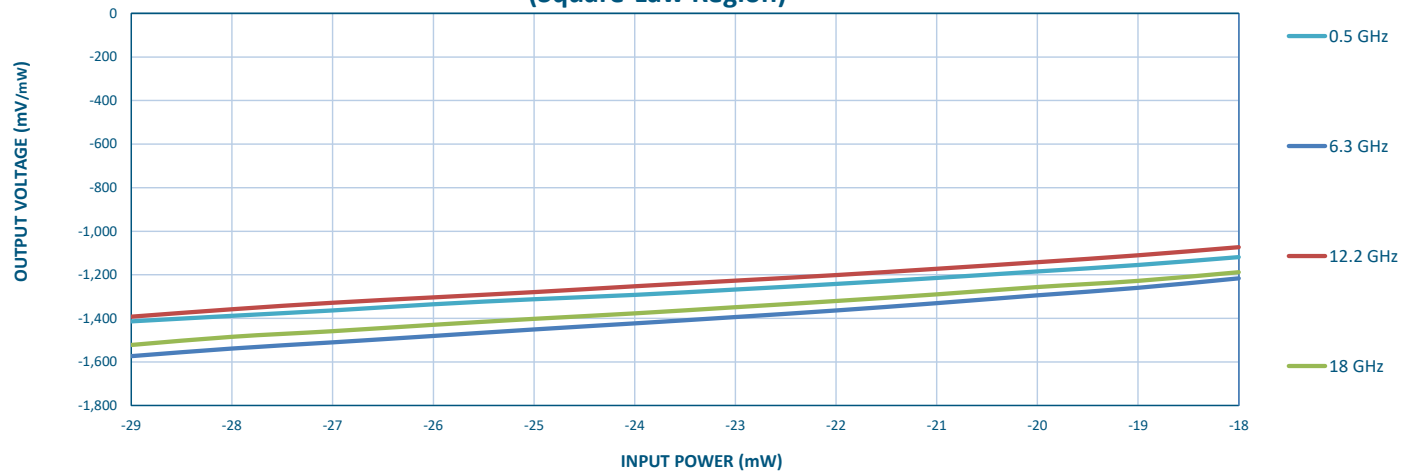


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

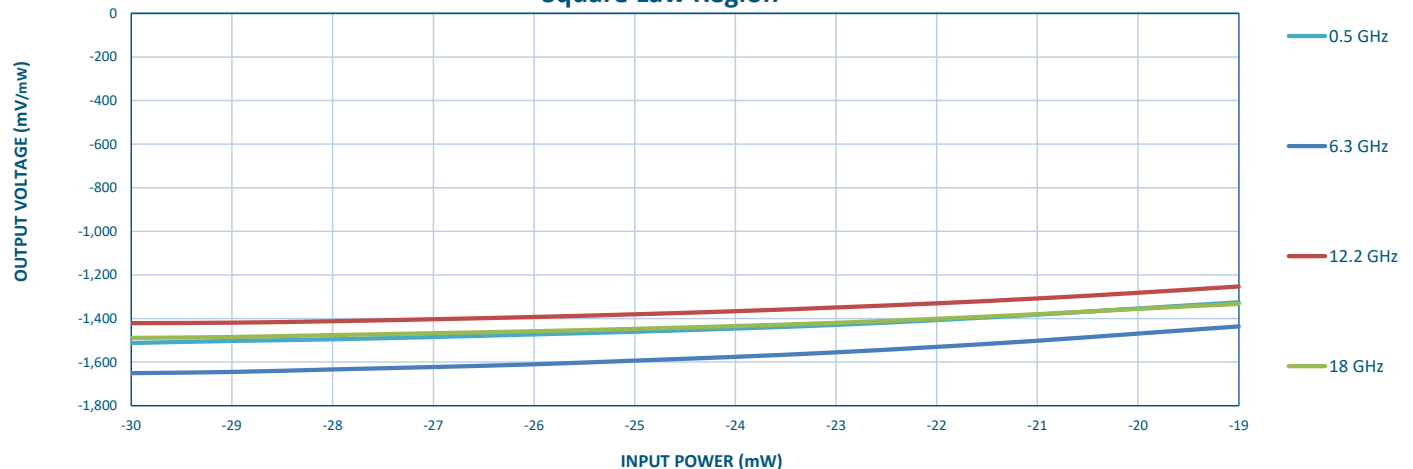
Sensitivity with 10M Ω at +25°C
(Square-Law Region)



Sensitivity with 10M Ω at -20°C
(Square-Law Region)

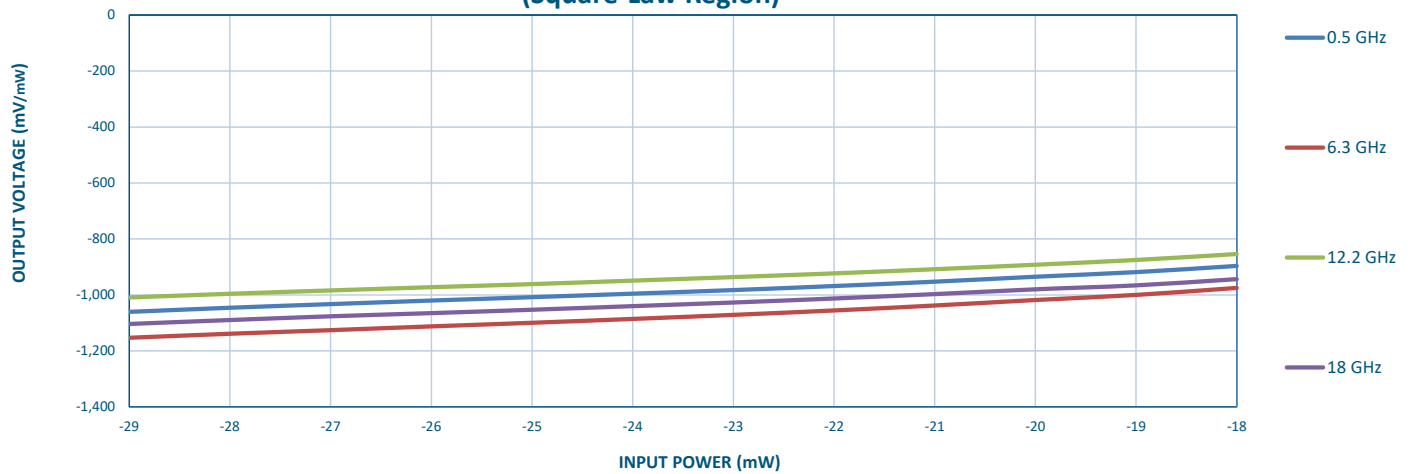


Sensitivity with 10M Ω at +85°C
Square Law Region

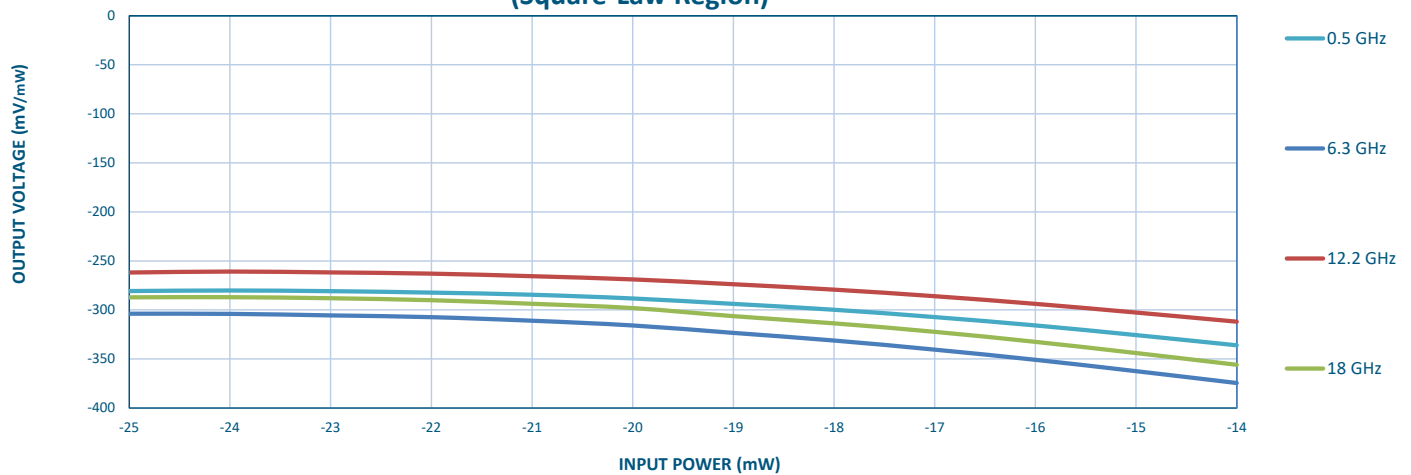


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

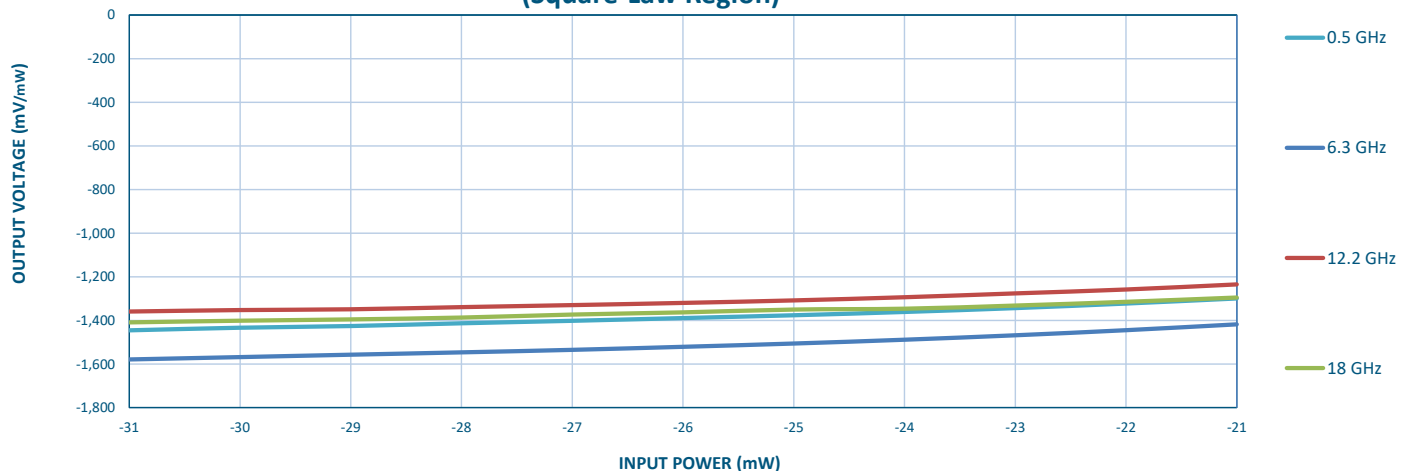
Sensitivity with 1M Ω at +25°C
(Square-Law Region)



Sensitivity with 1M Ω at -20°
(Square-Law Region)

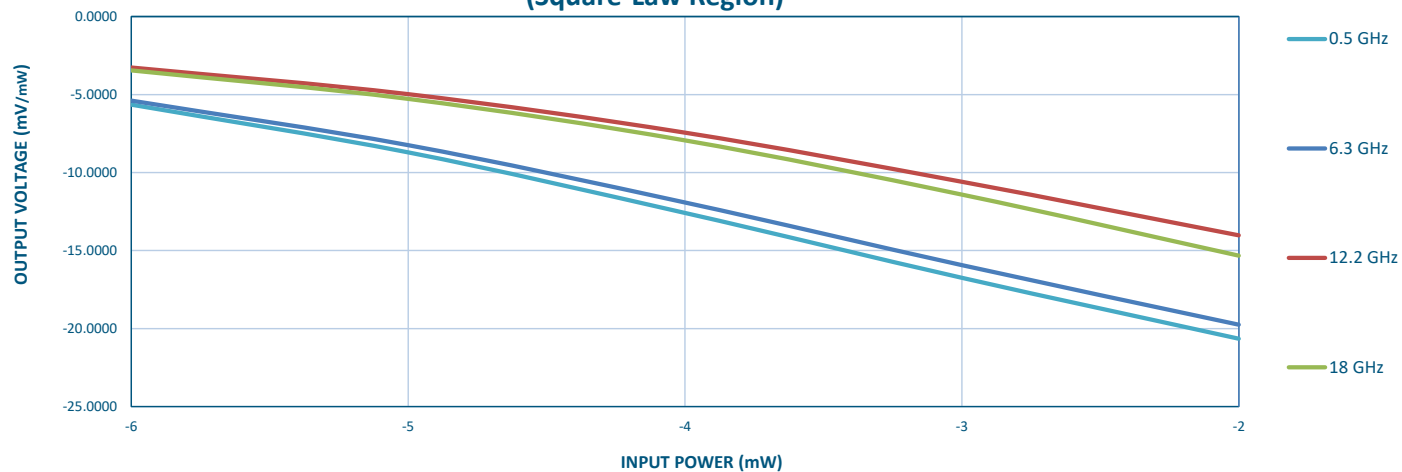


Sensitivity with 1M Ω at +85°C
(Square-Law Region)

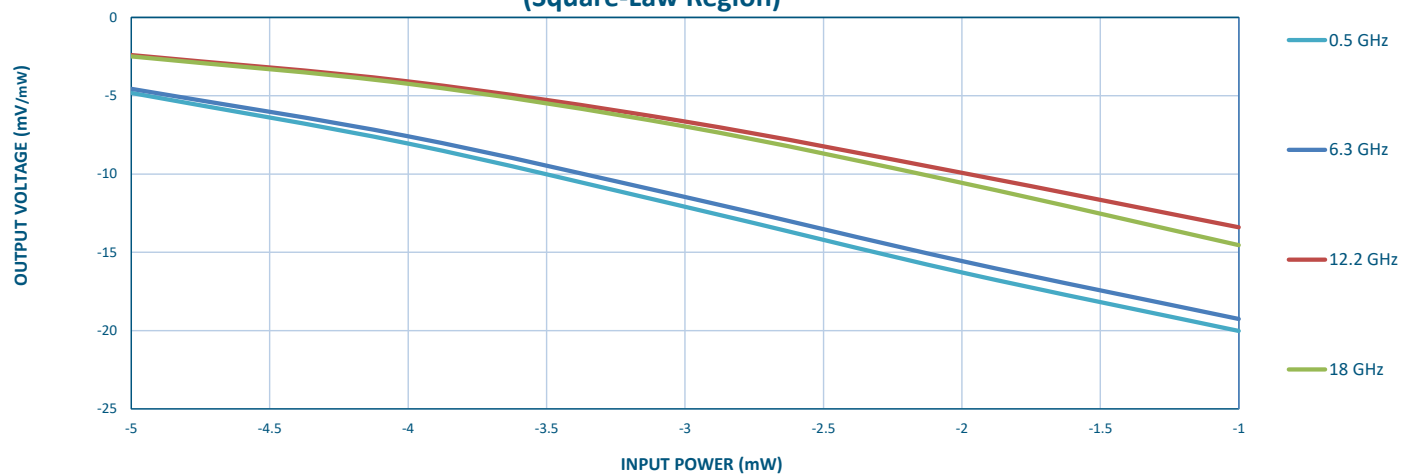


TYPICAL CHARACTERISTICS ON DD-0R5G18G-NFG-RAD-MF-ROHS

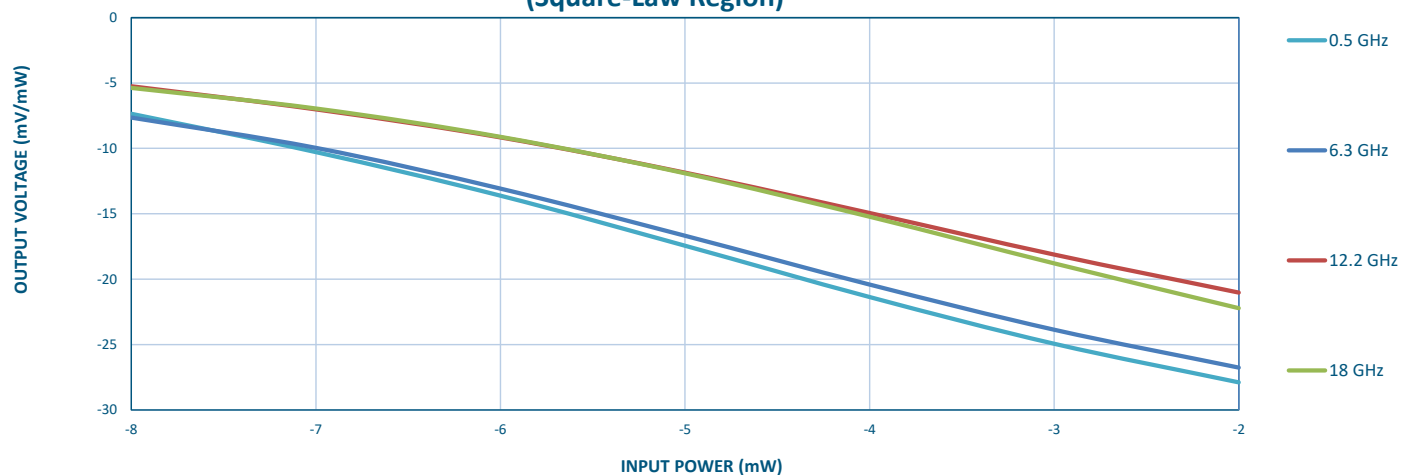
Sensitivity with 100Ω at +25°C
(Square-Law Region)



Sensitivity with 100Ω at -20°C
(Square-Law Region)

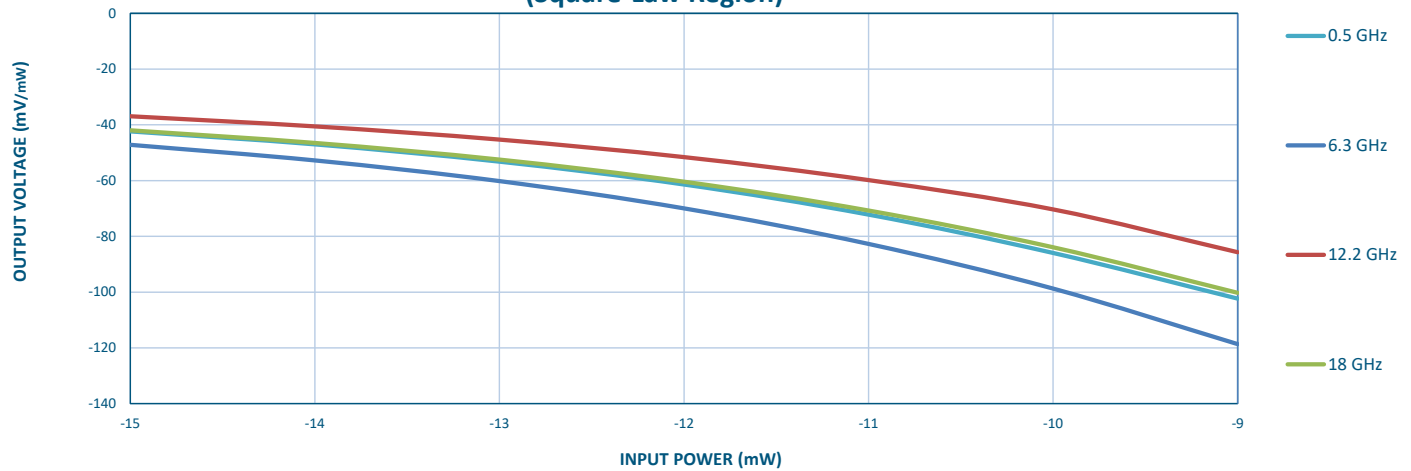


Sensitivity with 100Ω at +85°C
(Square-Law Region)

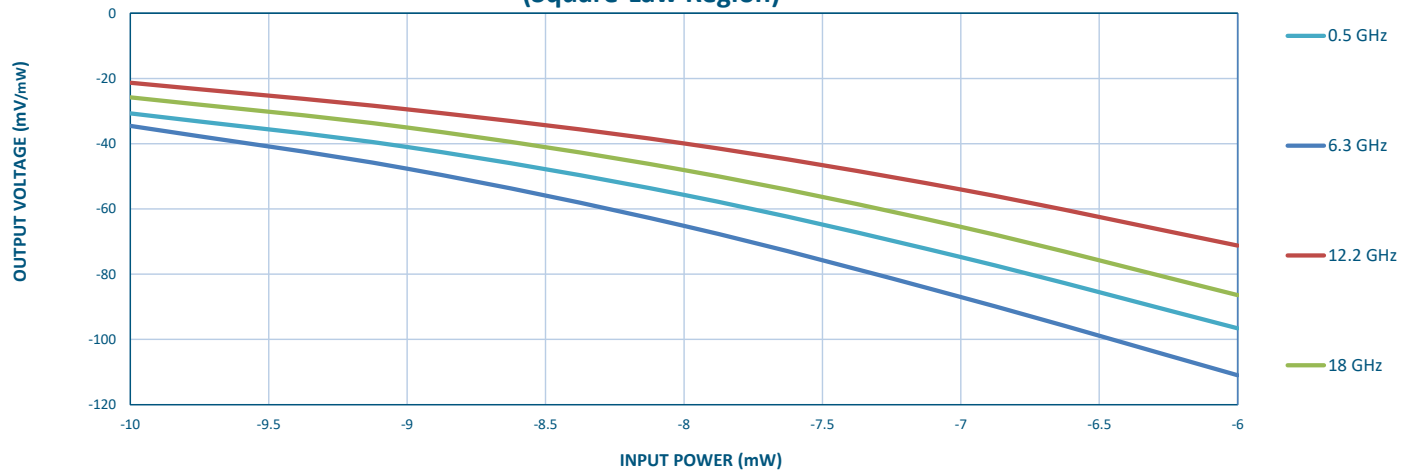


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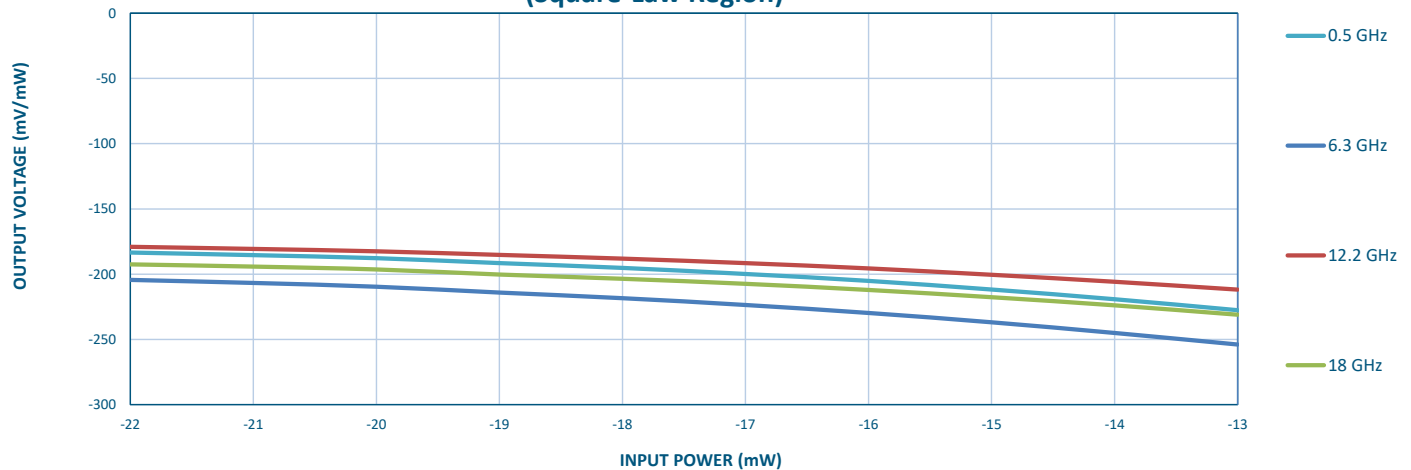
Sensitivity with 10K Ω at +25°C
(Square-Law Region)



Sensitivity with 10K Ω at -20°C
(Square-Law Region)



Sensitivity with 10K Ω at +85°C
(Square-Law Region)



TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

Input Power 0 dBm
1 μ s PW, 25% Duty Cycle
@ 50 Ω Load

Rise time - 4.1 ns
Fall Time - 1.8 ns

Input Power 0 dBm
1 μ s PW, 50% Duty Cycle
@ 50 Ω Load

Rise time - 4.1 ns
Fall Time - 1.8 ns

Input Power 0 dBm
1 μ s PW, 25% Duty Cycle
@ 100 Ω Load

Rise time - 8.0 ns
Fall Time - 8.4 ns

Input Power 0 dBm
1 μ s PW, 50% Duty Cycle
@ 100 Ω Load

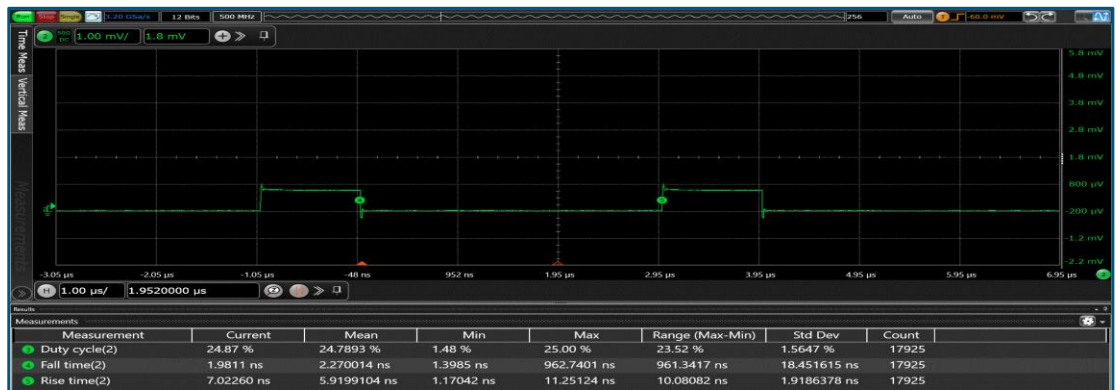
Rise time - 8.0ns
Fall Time - 8.3 ns



TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

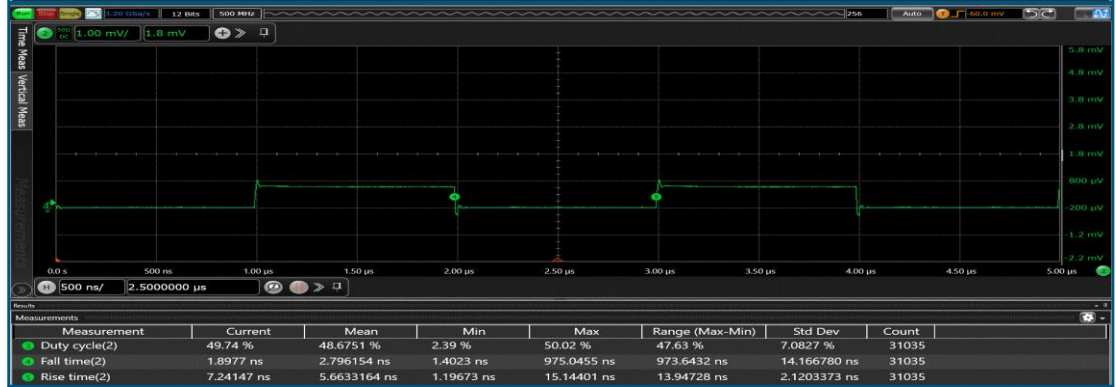
Input Power -5 dBm
1 μ s PW, 25% Duty Cycle
@ 50 Ω Load

Rise time - 7.0 ns
Fall Time - 2.0 ns



Input Power -5 dBm
1 μ s PW, 50% Duty Cycle
@ 50 Ω Load

Rise time - 7.2 ns
Fall Time - 1.9 ns



Input Power -5 dBm
1 μ s PW, 25% Duty Cycle
@ 100 Ω Load

Rise time - 18.2 ns
Fall Time - 8.6 ns



Input Power -5 dBm
1 μ s PW, 50% Duty Cycle
@ 100 Ω Load

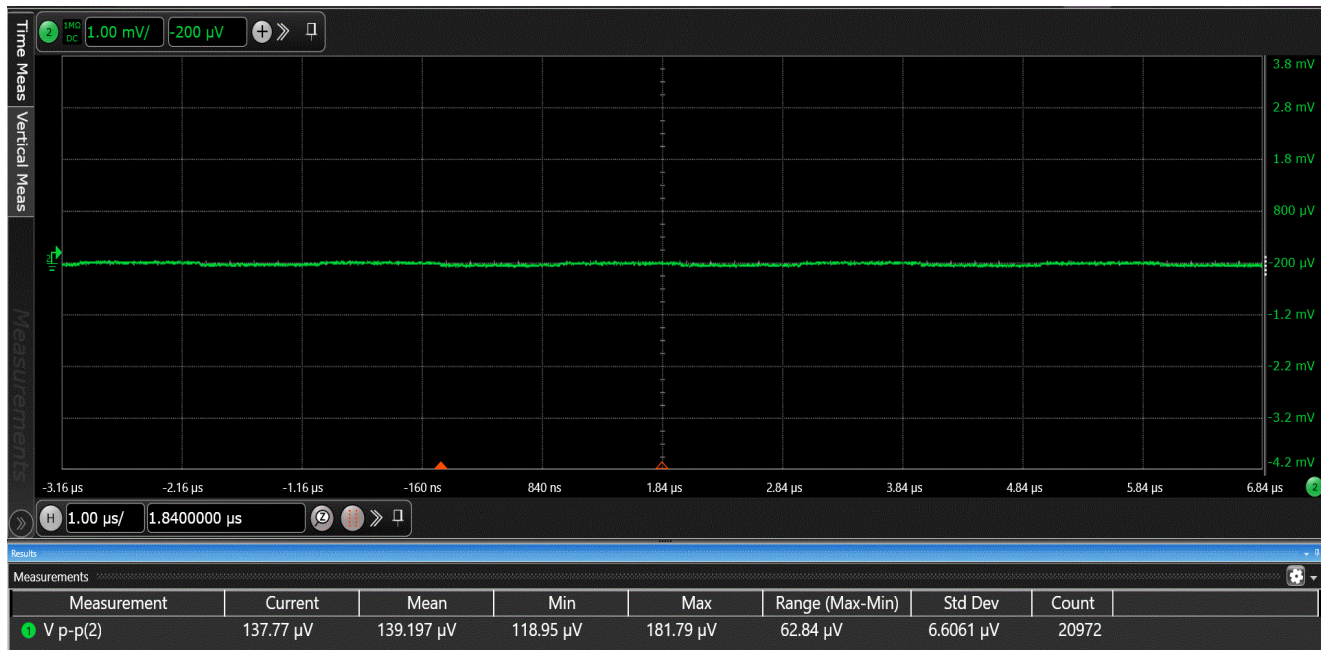
Rise time - 18.0ns
Fall Time - 8.4 ns



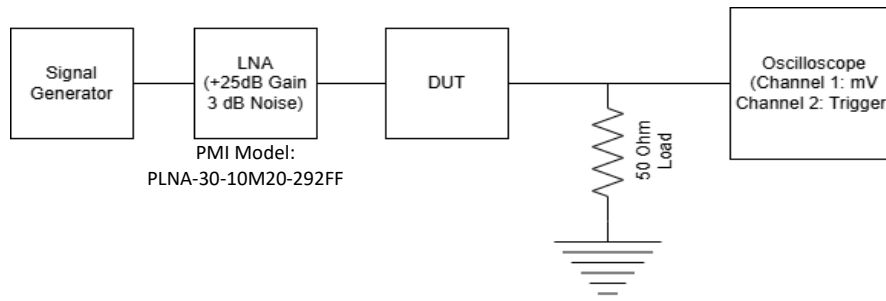
TYPICAL CHARACTERISTICS ON DD-0R5G18G-NEG-RAD-MF-ROHS

Tangential Sensitivity (TSS)

1 μ s PW, 50% Duty Cycle
Frequency (0.5 GHz to 18 GHz)
Measured value (-40 dBm)



Block Diagram For TSS Test With 50 Ω Load



Block Diagram For TSS Test With 100 Ω Load

