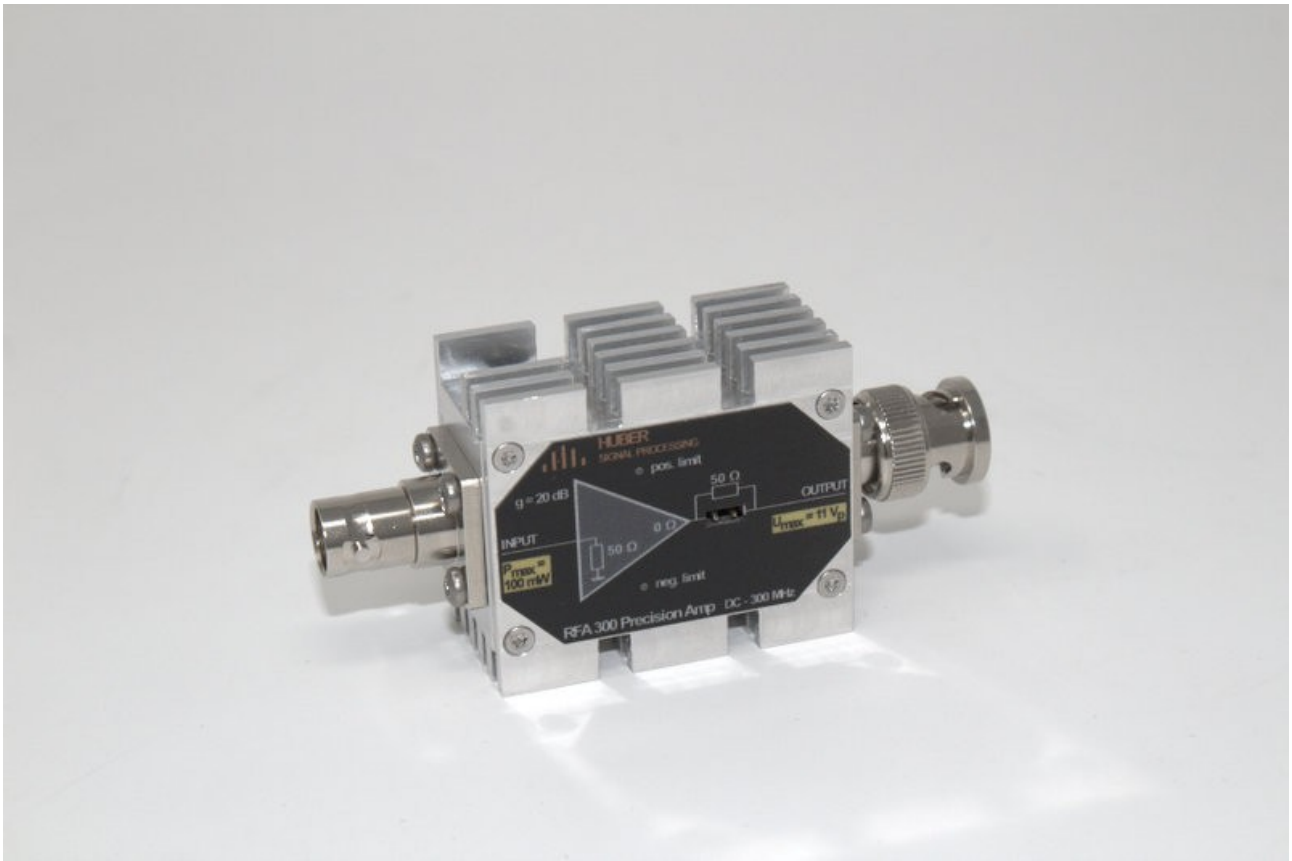
HUBER
SIGNAL PROCESSING

Datasheet

RFA 300
Precision RF Amplifier



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1 Applications

- Baseband amplifier
- Driver for eddy current probes
- Ultrasonic driver
- Amplifier for RF sources
- ATE
- AWG output stage
- VHF transmitter
- Data cable driver
- HDTV video amplifier

2 General Data

Setup:	Non-inverted Output short-protected
Open-loop gain:	20 dB
Output voltage:	20 V_{pp} (with load), 22 V_{pp} (no load)
Output current:	100 mA_p (DC - 1 MHz) 300 mA_p (> 1 MHz)
Bandwidth:	DC - 300 MHz (-3 dB)
Frequency response:	±0.1 dB (DC - 100 MHz) ±0.2 dB (100 MHz - 200 MHz)
Degradation of the maximum output amplitude for sine wave signals (due to slew rate):	0 dB (0 - 120 MHz) -6 dB (240 MHz) -9 dB (360 MHz)
Output impedance:	0 Ω / 50 Ω selectable
Input impedance:	50 Ω (optional 100 Ω)
Slew rate:	6300 V/µs
Power consumption:	3 W with no load, 6 W with maximum load
Connector type:	BNC
Indication:	Overdrive pos./neg. via LEDs Output current limitation
Operating temperature:	0 - 40 °C (passive cooled, ext. fan recommended)

3 Maximum Ratings

Max. input power:	20 dBm or 3 V_{RMS}
Max. DC supply voltage:	14 V
Max. input voltage:	-1.1 V to +1.1 V

4 Input Characteristics

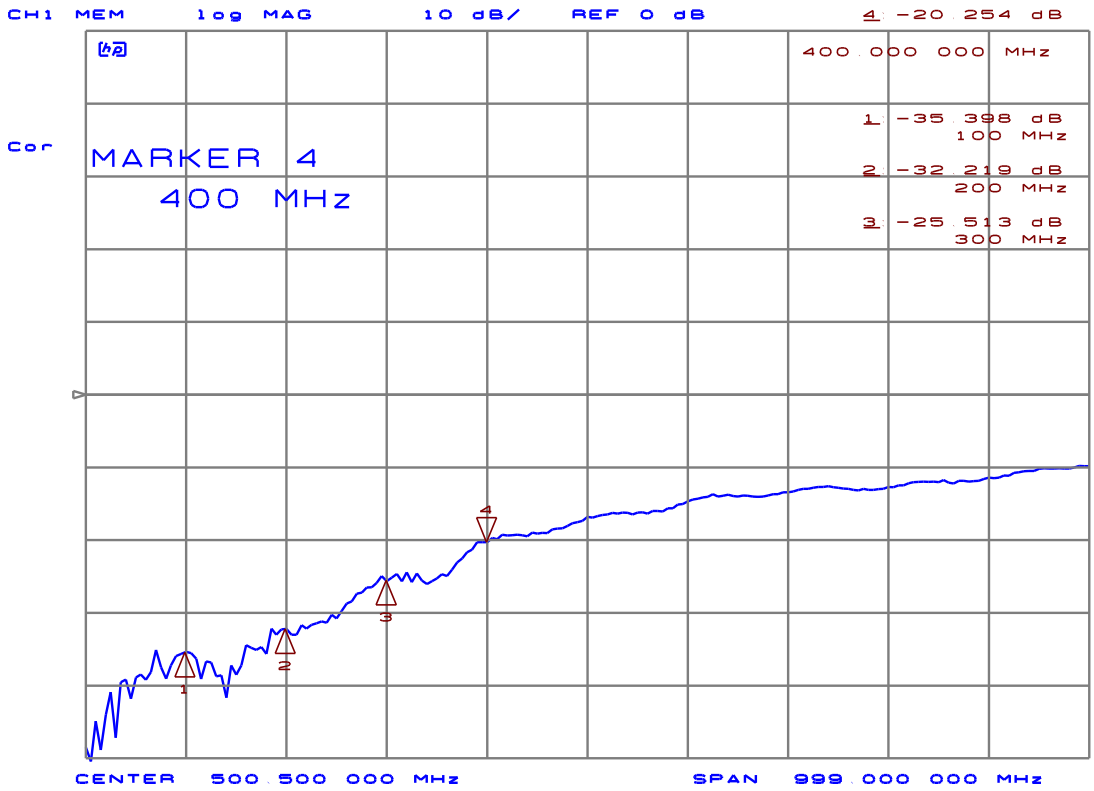


Illustration 1: Return loss input: > 25 dB at f < 100 MHz (50 Ω)

5 Output Characteristics

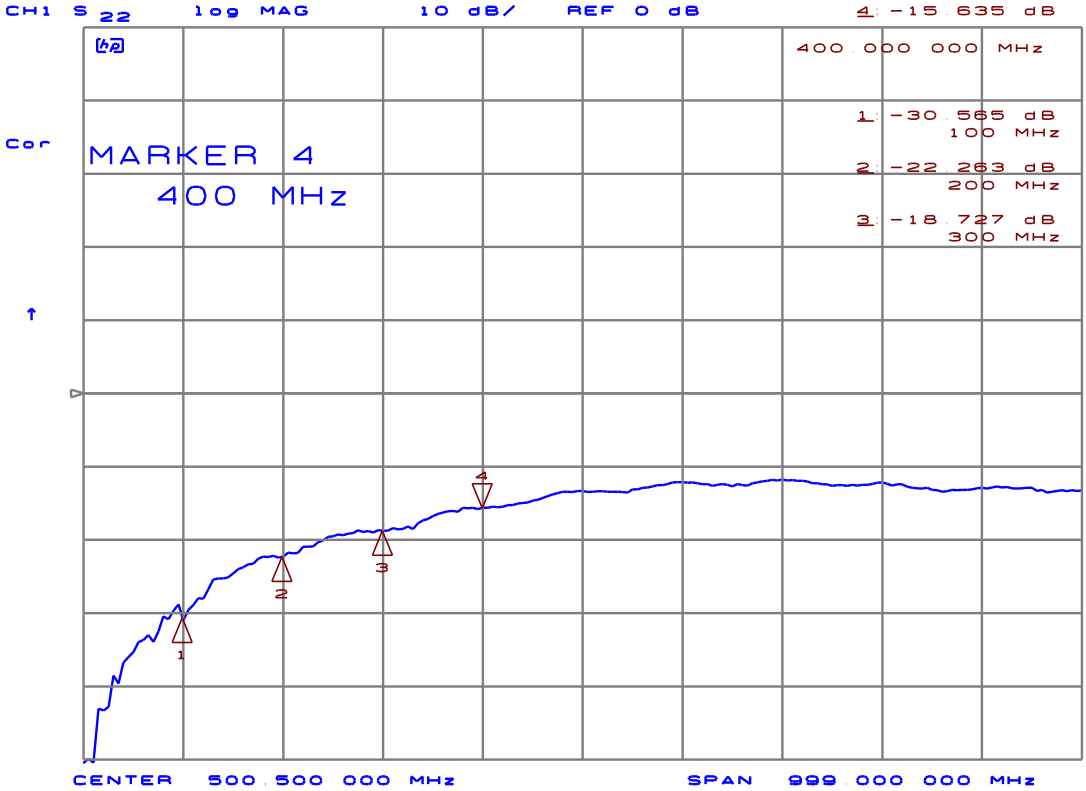


Illustration 2: Return loss output: > 25 dB at f < 100 MHz

Output power

- Output 50 Ω

Sine wave:	24 dB (0.25 W)	Output 50 Ω und R_{Load} = 50 Ω, f < 120 MHz f > 100 MHz linear degrading
DC:	0,5 W	5 V / 100 mA

- Ouput 0 Ω

Sine wave:	30 dBm (1 W)	R_{Load} = 50 Ω, f < 120 MHz f > 100 MHz linear degrading
	30 dBm (1.5 W)	R_{Load} = 33 Ω f > 100 MHz linear degrading
DC:	1 W	10 V / 100 mA

6 Harmonic Distortion

(DC = 0 V)

Harmonic distortion: Output 50 Ω and R_{Load} = 50 Ω

at U_{out} = 3.3 V_p (20 dBm), f = 8 MHz: h1 > 70 dBc h2 = 60 dBc

at U_{out} = 5 V_p (24 dBm), f = 8 MHz : h1 > 55 dBc h2 = 45 dBc

at U_{out} = 3.3 V_p (20 dBm), f = 80 MHz: h1 > 48 dBc h2 > 38 dBc h3 > 45 dBc

7 Intermodulation

Output 50 Ω and R_{Load} = 50 Ω

at f = 10 MHz: $IP3_{out}$ = 45 dBm

at f = 40 MHz: $IP3_{out}$ = 41 dBm

8 Small Signal Bandwidth

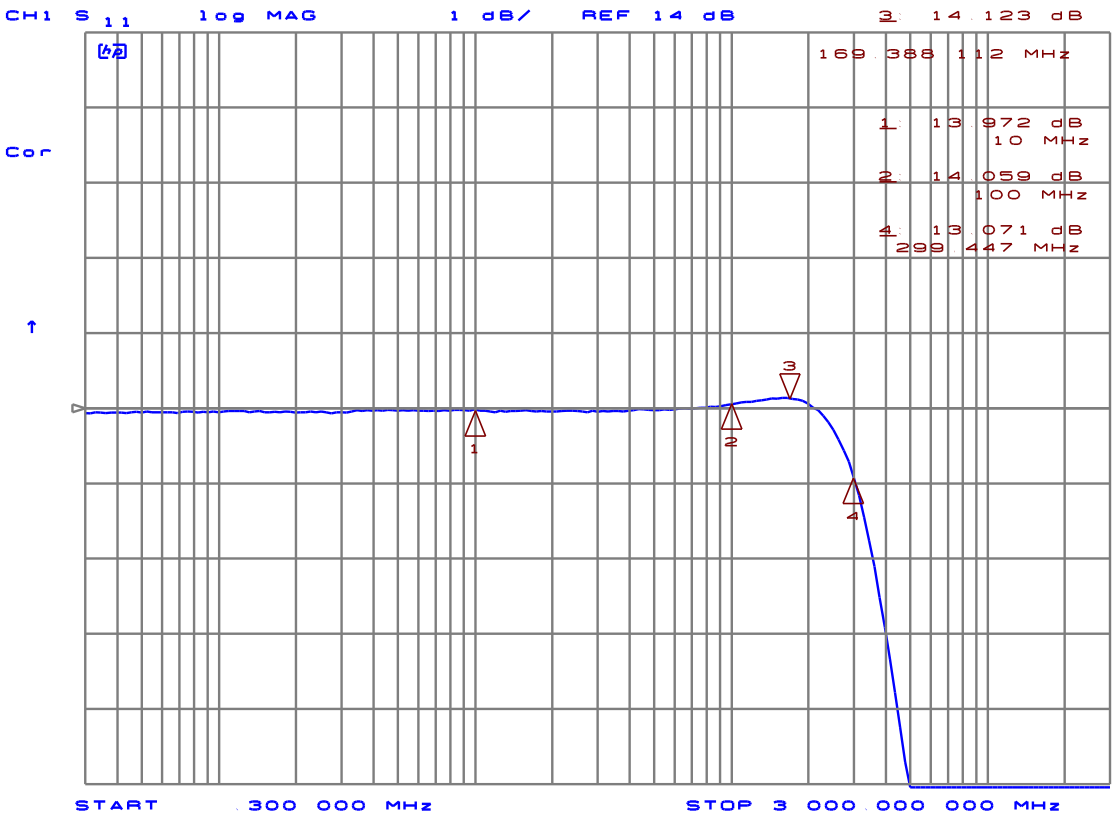


Illustration 3: Small signal bandwidth, P_{out} = +2 dBm (Output 50 Ω, R_{Load} = 50 Ω)

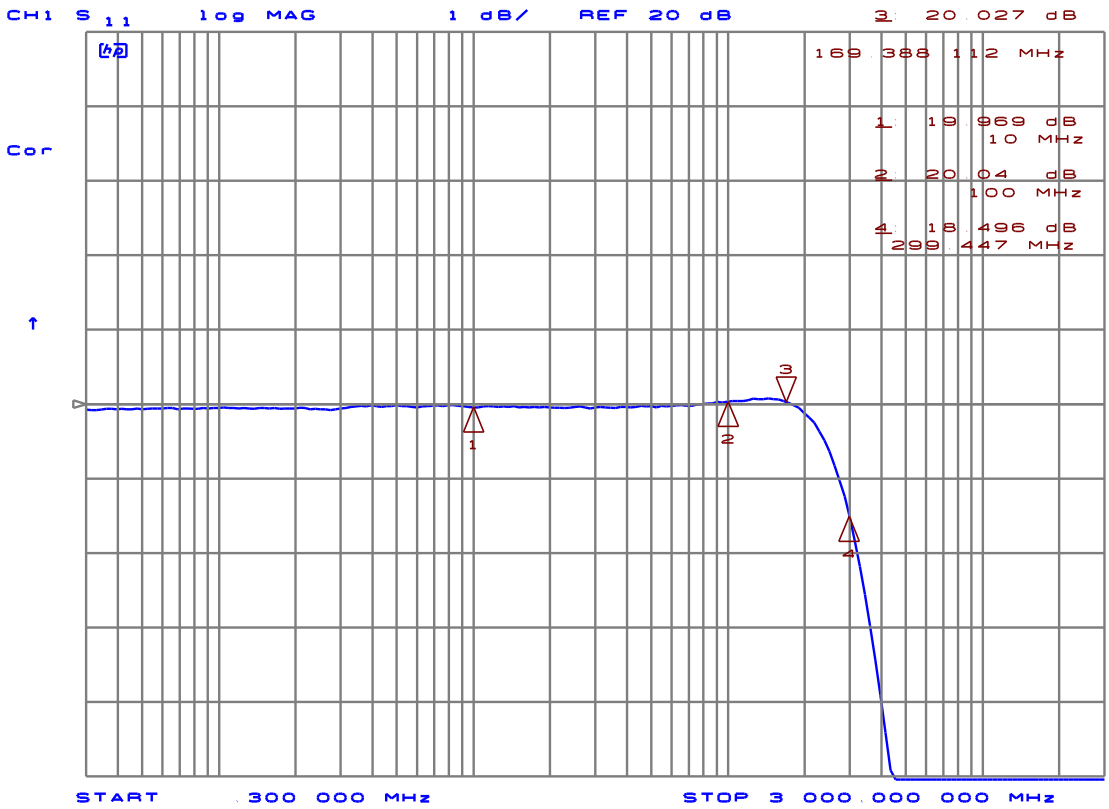


Illustration 4: Small signal bandwidth, P_{out} = +2 dBm (Output 0 Ω, R_{Load} = 50 Ω)

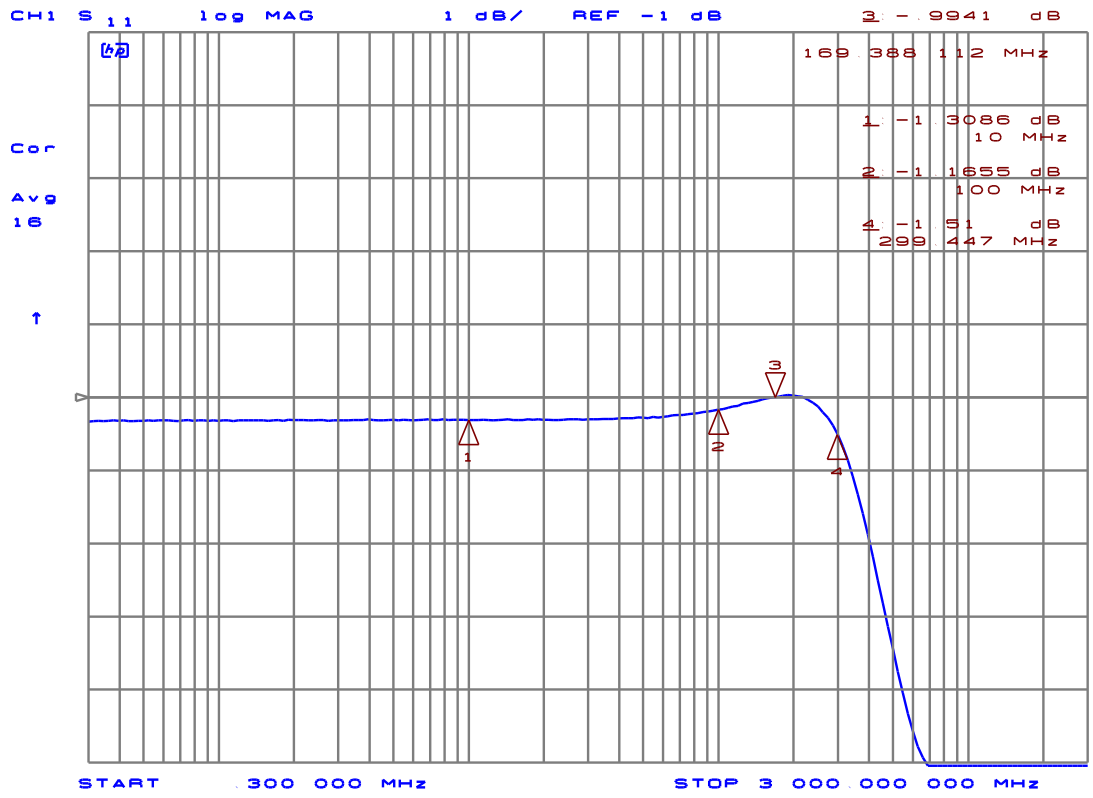


Illustration 5: Small signal bandwidth, P_{out} = +2 dBm (Output 0 Ω, R_{Load} = 500 Ω)

9 Power Bandwidth

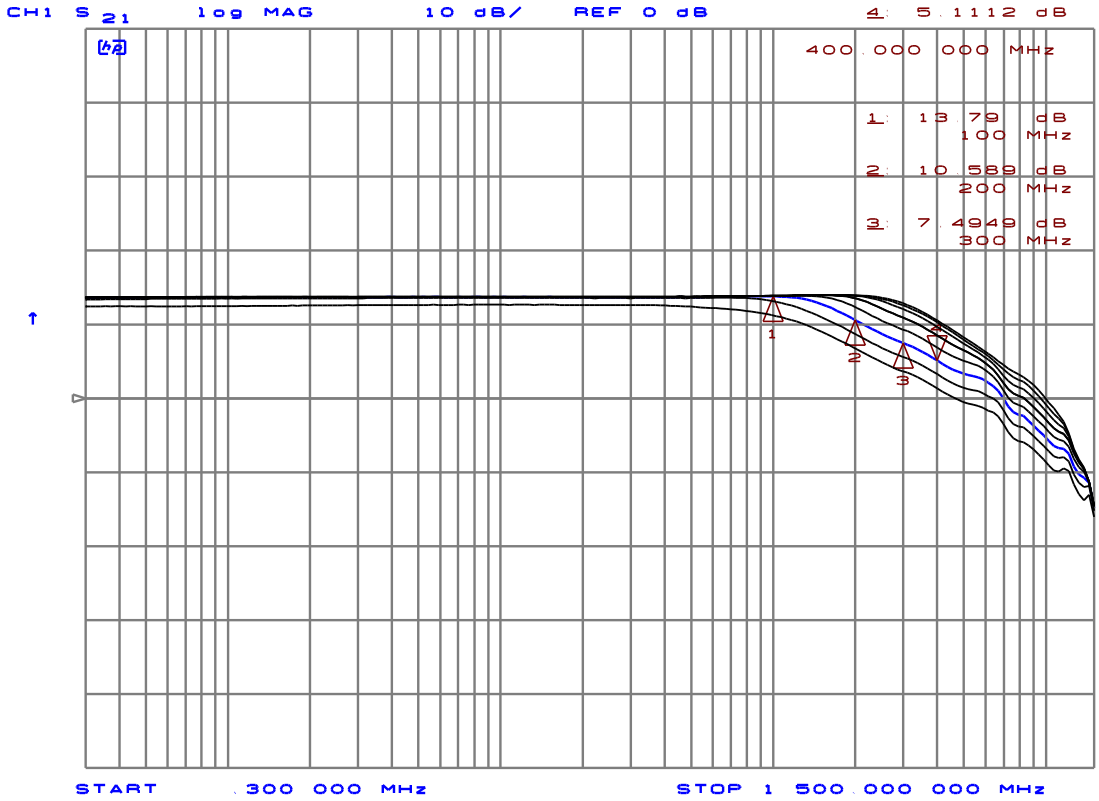


Illustration 6: Power bandwidth with Output 50 Ω, R_{Load} = 50 Ω P_{out}=24dBm,22dBm,20dBm,18dBm,16dBm,14dBm,12dBm,10dBm (blue = 20dBm)

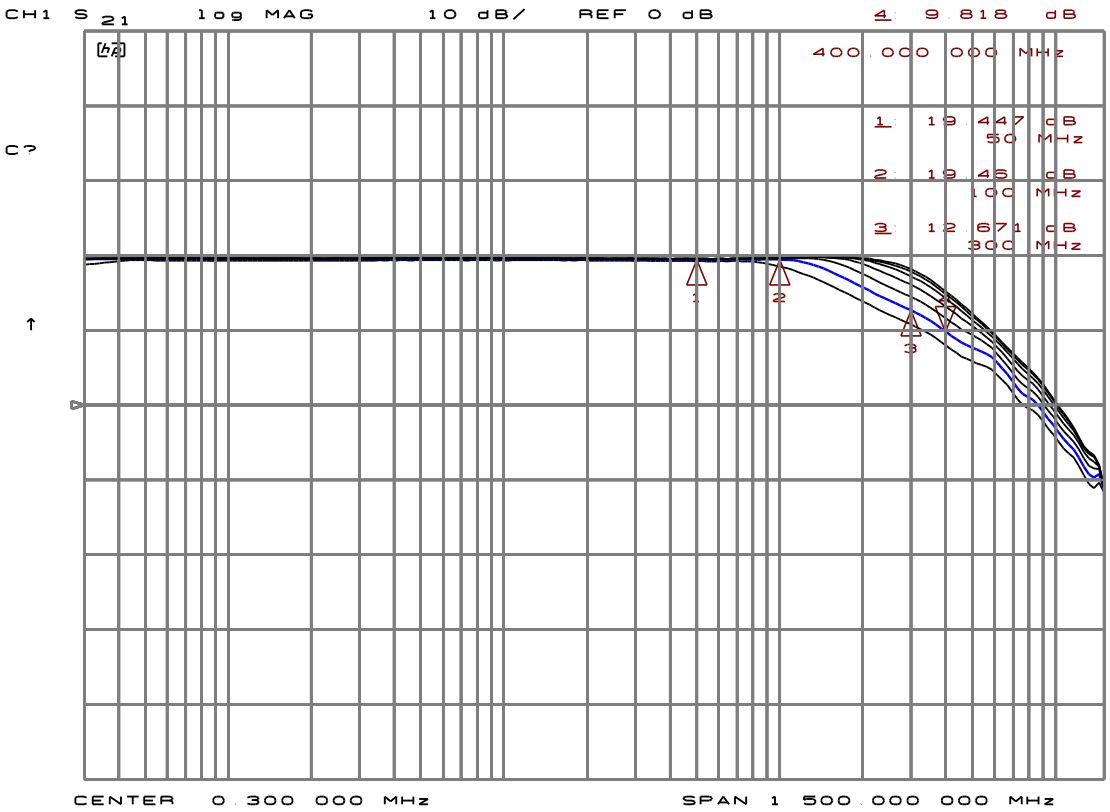


Illustration 7: Power bandwidth with Output 0 Ω, R_{Load} = 50 Ω
P_{out}=22dBm,20dBm,18dBm,16dBm,14dBm,12dBm,10dBm (blue - 20dBm)

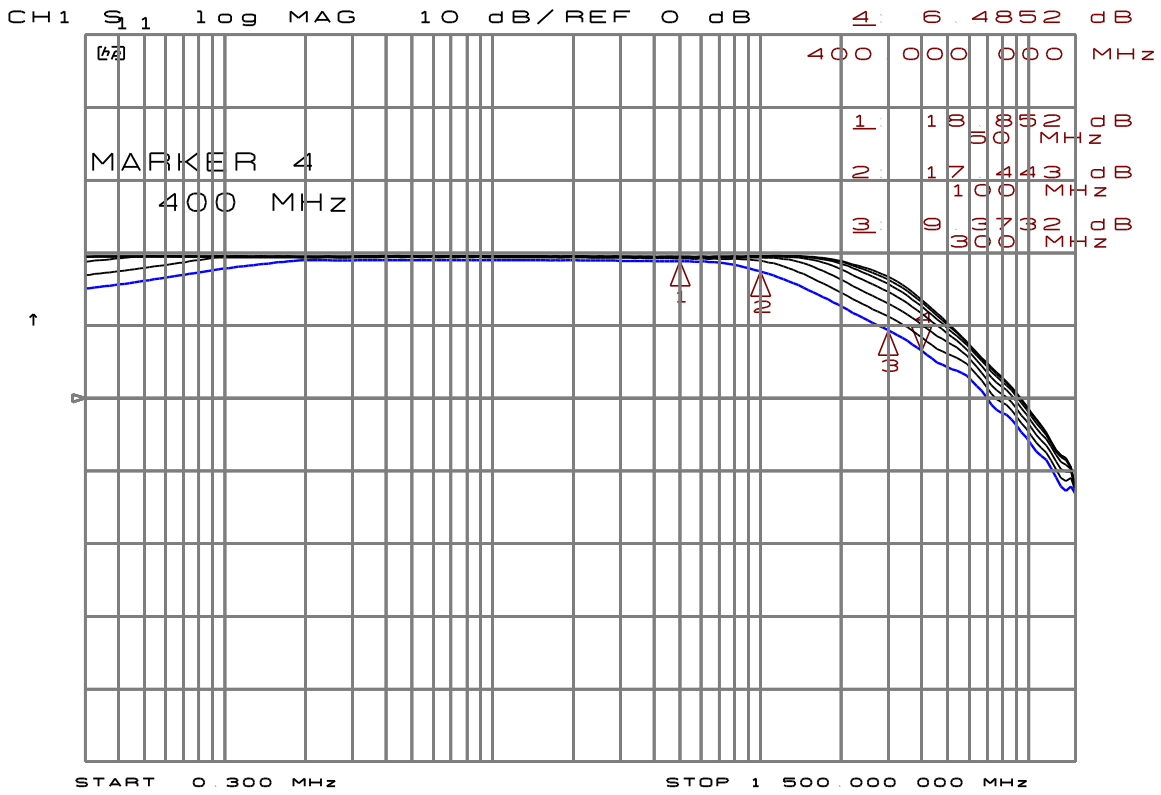


Illustration 8: Power bandwidth with Output 0 Ω, R_{Load} = 33 Ω
P_{out}=22dBm,20dBm,18dBm,16dBm,14dBm,12dBm,10dBm (blue - 22dBm)

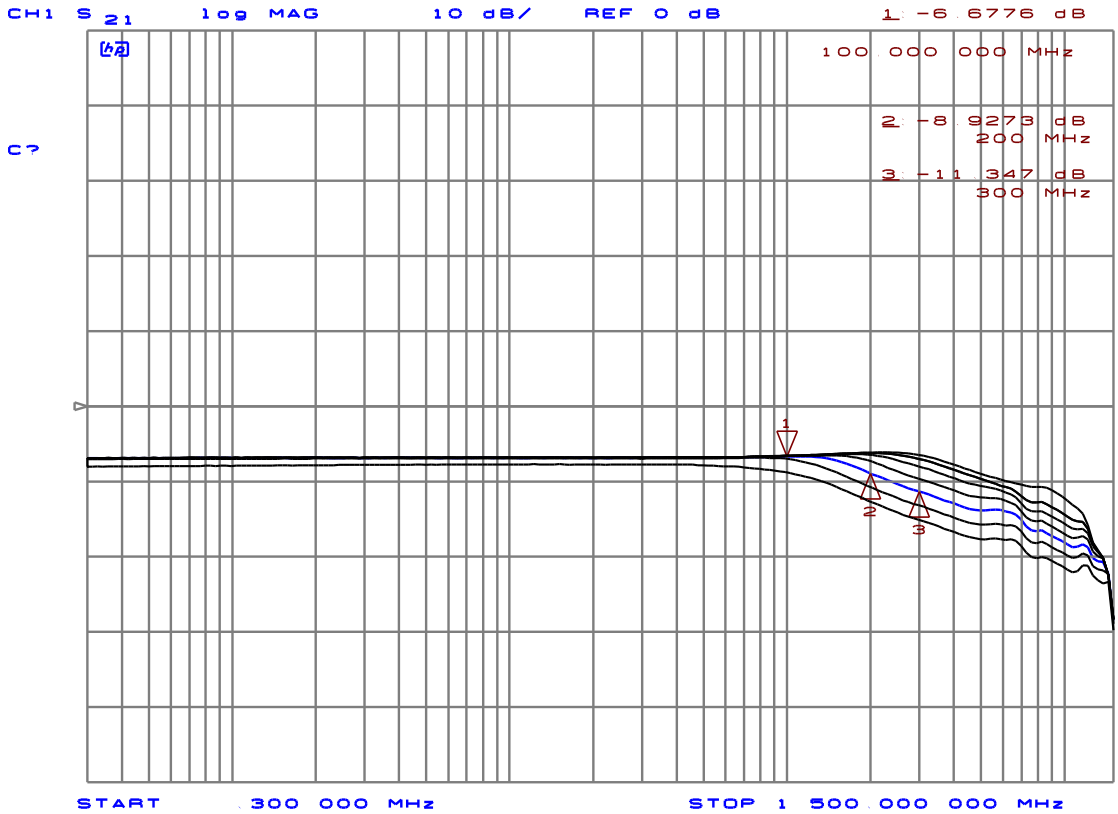


Illustration 9: Power bandwidth with Output 0 Ω, R_{Load} = 1 kΩ P_{out}=24dBm,22dBm,20dBm,18dBm,16dBm,14dBm,12dBm,10dBm (blue - 20dBm)

$$g = g(Plot) + 26.5\ dB$$

10 Impulse Response

Output 0 Ω and R_{Load} = 50 Ω, U_{in} = 1 V_{pp}

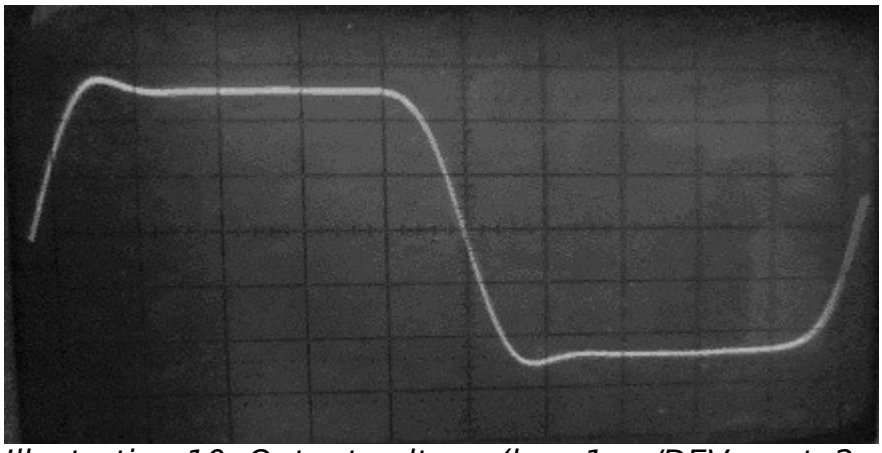


Illustration 10: Output voltage (hor. 1 ns/DEV, vert. 2 V/DIV)

HUBER
SIGNAL PROCESSING

... Made in Germany

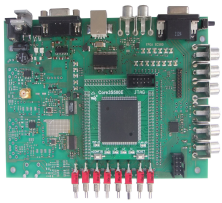
Signal Generators

Probes

Precision Amplifiers

Measurement Range Extenders

DSP Systems



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