

# Conversion Tables (1)

Power → dBm → Voltage in 50 Ω  
Voltage → dBμV



## Power → dBm → Voltage in 50 Ω

$$\text{dBm} = 10 \log (P/P_{\text{Ref}})$$

where  $P_{\text{Ref}} = 1 \text{ mW}$

$$V_{\text{RMS}} = \sqrt{P \times 50}$$

Power	dBm	Voltage (RMS) in 50 Ω
1 kW	+ 60	224 V
100 W	+ 50	70.7 V
10 W	+ 40	22.4 V
1 W	+ 30	7.07 V
100 mW	+ 20	2.23 V
10 mW	+ 10	707 mV
1 mW	0	224 mV
100 μW	- 10	70.7 mV
10 μW	- 20	22.4 mV
1 μW	- 30	7.07 mV
100 nW	- 40	2.23 mV
10 nW	- 50	707 μV
1 nW	- 60	224 μV
100 pW	- 70	70.7 μV
10 pW	- 80	22.4 μV
1 pW	- 90	7.07 μV
100 fW	- 100	2.23 μV
10 fW	- 110	0.71 μV
1 fW	- 120	0.22 μV

## Voltage → dBμV

$$\text{dB}\mu\text{V} = 20 \log (V_{\text{RMS}}/V_{\text{Ref}})$$

where  $V_{\text{Ref}} = 1 \mu\text{V}$

Voltage (RMS)	dBμV
10.0 V	140
3.16 V	130
1.00 V	120
316 mV	110
100 mV	100
31.6 mV	90
10.0 mV	80
3.16 mV	70
1.00 mV	60
316 μV	50
100 μV	40
31.6 μV	30
10.0 μV	20
3.16 μV	10
2.00 μV	6
1.41 μV	3
1.00 μV	0
0.708 μV	-3
0.501 μV	-6
0.316 μV	-10
0.100 μV	-20