

Determining Voltage or Current Gain (dB) when Input and Output Are Not Equal

$$dB = 20 \log \frac{V \text{ or } I \text{ output} \sqrt{R \text{ input}}}{V \text{ or } I \text{ input} \sqrt{R \text{ output}}}$$

where

V = voltage

I = impedance

R = resistance

Determining Voltage or Current Loss (dB) when Input and Output Are Not Equal

$$dB = 20 \log \frac{V \text{ or } I \text{ input} \sqrt{R \text{ output}}}{V \text{ or } I \text{ output} \sqrt{R \text{ input}}}$$

Voltage/Current Ratio Tables		
Voltage/Current Ratio Gain	Decibels	Voltage/Current Ratio Loss
1.000	0.0	1.000
1.012	0.1	0.9886
1.023	0.2	0.9772
1.035	0.3	0.9661
1.047	0.4	0.9550
1.059	0.5	0.9441
1.072	0.6	0.9333
1.084	0.7	0.9226
1.096	0.8	0.9120
1.109	0.9	0.9016
1.122	1.0	0.8913
1.259	2.0	0.7943
1.413	3.0	0.7079

Voltage/Current Ratio Tables (cont.)		
Voltage/Current Ratio Gain	Decibels	Voltage/Current Ratio Loss
1.585	4.0	0.6310
1.788	5.0	0.5623
1.995	6.0	0.5012
2.239	7.0	0.4467
2.512	8.0	0.3981
3.162	10.0	0.3162
3.548	11.0	0.2818
3.981	12.0	0.2515
4.467	13.0	0.2293
5.012	14.0	0.1995
5.632	15.0	0.1778
6.310	16.0	0.1585
7.079	17.0	0.1413
7.943	18.0	0.1259
8.913	19.0	0.1122
10.00	20.0	0.1000
31.62	30.0	0.0316
10 ²	40.0	10 ⁻²
316.23	50.0	0.000316
10 ³	60.0	10 ⁻³
3.16 × 10 ³	70.0	3.162 × 10 ⁻⁴
10 ⁴	80.0	10 ⁻⁴
3.16 × 10 ⁴	90.0	3.162 × 10 ⁻⁵
10 ⁵	100.0	10 ⁻⁵