TALK

Understanding dB Math

Keith Parsons · WLAN Pros channel · 2020-09-04

Understanding dB (decibel) math is one of the wireless LAN design rules. Keith Parsons shows quick ways to do it, even in your head, and ends with an Excel sheet to practice with.

Key points

- Part of the Wireless LAN Design Rules series: a designer needs dB (decibel) math, and it can be done in your head.
- Two rules cover most of it: add 3 dB and the power doubles; add 10 dB and it multiplies by 10. On the dB side you add and subtract; on the milliwatt side you multiply and divide.
- Worked examples convert dBm to milliwatts, such as 36 dBm to 4,000 mW and 15 dBm to about 32 mW, by breaking each number into 10s and 3s.
- A fill-in chart of the 3s, 10s and their halves builds a full dBm to milliwatt table.
- A spreadsheet compares the shortcut with the exact logarithm: the shortcut is close but not exact (doubling ten times gives 1,024, not 1,000).

Chapters

1. 00:00 Why dB math matters
2. 02:02 The rules: 3s, 10s, plus becomes times
3. 03:05 Worked examples
4. 06:08 Building the chart
5. 08:00 Checking it in a spreadsheet

Watch on YouTube (https://www.youtube.com/watch?v=kofi_P9oLNQ). More conference talks: wlan-talks.net (index by Victor Gatuna).

By Keith Parsons, CWNE #3, Wireless LAN Professionals. Free to read and share. Facts