Wireless Airport/Wavelan 802.11HR Power Cascade:

Terms:

dBm is decibels relative to 1 Milliwatt (mW)

dBW is decibels rel to 1 Watt

dBi is antenna decibels rel to isotropic radiator

dBd is antenna decibels rel to dipole antenna

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10 mW = log10 10/1 = 1, 1 x 10 = 10dBm

100 mW = log10 100/1=2, 2 x 10 = 20 dBm

1000mW = log10 1000/1 = 3, 3 x 10 = 30 dBm

10Watts = 10,000mW, log10 10,000/1 = 4, 4 x 10 = 40 dBm

Lucent Wavelan has output power of 32 mW, or 15dBm

Connector to amplifier loses –5 dBm, resulting in 10mW or 10dBm

Hyperlan Amplifier has +23dBm gain, resulting in 33dBm (2 Watts)

Antenna connector drops –2 dBm to 31dBm

Various antennas increase dBm to dBi (decibels relative to an isotropic radiator)

FCC legal limit for 2.4 ghz ISM band is 36dBi, if under 6dBi. Over 6 dBi, add 3 dB for every 1 dB lower than isotropic radiator (dipole)

24dB gain Parabolic antenna:: 31dBm + 24dBi = 55dBi

15dB Omni antenna: 31dBm + 15dBi = 46dBi

8dBi Omni antenna: 31 dBm + 8 dBi = 39dBi

5dBi Omni antenna: 31dBm + 5 dBi = 36dBi (legal limit)

Connectors lose 1.5dBm each, LMR 400 loses 3.4 dBm for each 50' length

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EIRP is Effective Isotrophic Radiated Power

1.10.02

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