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Abstract:**Basics of Broadband Wireless Technology****Lecture Time : 1 hour**

This presentation will share with the participants the basic building blocks and formulas of wireless technology based on IEEE 802.11x Protocols i.e. WiFi /WiMax. The paper will highlight Maxwell's Electromagnetic Equations, The Free Space Loss Formula, Freznell Zone Formula, and how they affect Propagation of the Radio signals in Free Space. Various Modulation techniques used in radio communication such as TDMA, CDMA, Spread spectrum, QAM, OFDMA will be highlighted and compared in terms of capacity, quality, and range. The Paper will also highlight factors such as Radio Interference, Reflections, Radio link budget, dB Math. Channel allocation and allowed transmitter power issues will be demonstrated (FCC/ITUR).The Paper will show the building blocks of a complete Wireless Link including: Radio Base Station, Antennas, Power supply, power over Ethernet, Lightning arrestor, Solar power/Wind power, network management system, Distributions of Open Source Software for programming the Wireless Networks. Free Open Source Software Tools for Radio Network Planning will be demonstrated.