

Powerwave Technologies is a manufacturer of wireless solutions for cellular networks around the world. We are investigating operability, coverage issues associated with LTE Picocell (mobile and nomadic) users moving in and out of buildings, about outdoor campus and indoor while being serviced by a Picocell base stations (BS) operating in the 698-716, 728-746, 788-798, 758-768, 1710-1755, and 2110-2155 MHz ranges. Due to unpredictable NLOS propagation at these frequencies and limited propagation models certain operational scenarios can only be fully appreciated by building an experimental network consisting of BS nodes with an appropriate number of mobile users in the immediate service area (<2km).

The idea is to fully test and validate hardware and software that will provide robust LTE Picocell handover and coverage by improving QoS and power control and resource scheduling algorithms which require the establishment of LTE Picocell Experimental Network. LTE Picocell has a built-in error detection techniques that reduces system Signal to Noise Ratio (SNR) to keep transmitted power to minimum, while FEC and interleaving algorithms are used to correct data errors improving overall data link throughput. These strong error correction techniques can recover some of corrupted frames that may have been blocked due to frequency selective fading or burst errors.

The power control algorithms decrease the overall power consumption of the mobile users extending battery life while possibly reducing interference to BS receivers. This and other operational aspects will be investigated in our LTE Picocell Experimental Network. The ultimate goal is to validate our models against a real-world deployment of a self-optimizing network of LTE Picocells to provide maximum throughput, reliability and spectrum re-use.

//R Keith Beal//