Balanced antenna research for multi-comm antenna system in wireless mobile devices

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Every year mobile devices are evolving to provide the user greater flexibility and ubiquitous communications coverage through the inclusion of more communication standards in smaller form factors. The communication standards include WiFi, WiMAX, BT, GPS, DTV, UWB, RFID and cellular. The antenna system is a major obstacle in the implementation of successful multi-communication in small mobile devices. There are many problems to be solved in the antenna system such as antenna to antenna isolation, antenna miniaturization, combo antenna design, platform noise mitigation, SAR, etc.

The antenna cannot anymore be treated as an independent component of a wireless platform, but must be considered as a subsystem which is to be co-designed together with RF system, chassis design and consideration of platform noise, etc. Holistic antenna system design is strongly required considering antenna efficiency, antenna isolation, and platform noise taking while into account mechanical constraints and safety requirements imposed by SAR regulations. In the past platform noise has not been an issue related to antenna design, but more recently it has been shown that careful antenna selection is critically important in reducing pickup of platform noise which can otherwise degrade throughput and range.

It has been shown that balanced antenna is one of the most antenna candidates which might provide the solution in multi-comm antenna system. Using the balanced antenna, we could reduce the platform noise dramatically and also increase the antenna-to-antenna isolation with very good antenna efficiency in small mobile device such as MID and laptop computer. Using the balanced antenna technology, we could resolve three major problems of antenna efficiency, antenna isolation and platform noise mitigation. More detail research results will be discussed in the presentation.