WLX-2007 Theory of Operation

WLX-2007 – Wireless 4-port hub based upon Certified Wireless USB

From inception, California headquartered Staccato Communications has dedicated itself to the UWB market by driving global standards activities, creating industry momentum, and engaging in cutting-edge technological development. Staccato™ is recognized for being the leader in single-chip, all CMOS complete solutions based on the WiMedia Common Radio Platform for Certified Wireless USB. Staccato's 110nm highly-integrated digital CMOS silicon includes RF, Digital Baseband, Media Access Controller (MAC), Memory, 32-bit RISC Processor, Encryption Engine and various I/O including USB 2.0 Host, USB 2.0 Device and SDIO 1.1 Device. Staccato is enabling the personal computer, consumer electronic and mobile device industries with high-speed wireless personal area network (WPAN) solutions optimized for cost, power consumption and form-factor.

The WLX-2007 product incorporates Staccato's Ripcord™ SC3500P series silicon with pin-out for Certified Wireless USB Device Wire Adapter (DWA) and has been built by Taiwanese-based Original Design Manufacturer (ODM) innovator Cameo Communications. This product is to be used with a Certified Wireless USB Host Wire Adapter (HWA) or native Host and enables legacy USB devices (such as printers, hard-disk drivers, digital still cameras, and personal media players) to be accessed wirelessly at data rates of up to 480Mbps, according to the specifications defined by the USB Implementers Forum. WLX-2007 is compliant to WiMedia PHY specification v1.1, and operates in the 3168-4752MHz spectrum.

The SC3500P series silicon also supports Certified Wireless USB HWA products including external adapters and MiniCards that get embedded into notebooks. The spirit of wire adapters is to enable fast deployment of Certified Wireless USB by allowing minimal software/firmware modifications, primarily to the host PC; in fact, a DWA such as the WLX-2007 enables up to four legacy devices to be connected to a single unit without any software or firmware changes.

Staccato's numerous reference design kits include working hardware samples, schematics, PCB Gerber layout files, bill-of-materials, design guides, production test guides, HWA and DWA Windows XP drivers and utilities, and a sample end user manual in order to accelerate time to market. The reference designs are supplemented by Staccato's UWB University and Team Staccato Partner Program. UWB University offers a free online educational review of the most relevant industry topics for engineers and business executives in the Certified Wireless USB, Bluetooth 3.0 and IP-over-UWB arenas. The Team Staccato partner program provides customers with total solutions through alliances with industry leaders throughout the value chain, including suppliers of UWB components, software, test equipment and services, and design services.

Staccato's Ripcord SC3500P series silicon transmits WiMedia UWB signals that have instantaneous bandwidth (BW) greater than 500MHz or fractional occupied BW greater than 20 percent as defined by the FCC Report and Order for UWB Communications. Band Group 1 is divided into 3 individual bands, each 528MHz wide, with center frequencies of 3432MHz, 3960MHz and 4488MHz. Staccato's silicon transmits either by band switching between the 3 bands or remaining stationary in each band, known as TFI or FFI respectively. Staccato's silicon occupies approximately 1584MHz while band switching in TFI mode (528MHz instantaneously) and the average transmitted power is approximately -9.3dBm (or -14dBm when stationary operating in FFI mode).

FCC Part 15 regulation in Subpart F, Section 15.517 and 15.519 specifies maximum average Equivalent Iso-tropically Radiated Power (EIRP) of – 41.3dBm (53.9dBuV/m) measured using a resolution bandwidth of 1MHz. EIRP in dBm coverts to a field strength, in dBuV/m at 3 meters, by adding 95.2dB. One hundred twenty two modulated Orthogonal Frequency Division Multiplexed (OFDM) sub-carriers comprise the 528MHz wide signal of each band.

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