

Theory of operation: Wisair 601SD-D USB dongle.

The Wisair 601SD-D is a UWB radio device with a USB interface to the host computer, and USB interface to a device. The 601SD-D is intended to provide a short-range wireless USB connection for computers and peripheral units equipped with a USB 2.0 interface. The 601SD-D is powered entirely from the USB connector of the device to which it is attached or from a separate power supply. The 601SD-D operates in the frequency band defined in the FCC rules and regulation for UWB device. Specifically, it operates between the frequencies of 3.168 and 4.752 GHz per the industry-defined WiMedia 1.1 specification.

The 601SD-D is based on the WSR601SD integrated circuit device and supporting circuitry for filtering, interface and power conditioning. The 601SD-D has an integrated antenna; there is no facility for an external antenna. The schematic diagram shows a connector, Hirose type, in the RF path. This is a production test connector, it is not accessible for outside of the unit housing. Following the integrated antenna is a bandpass filter with a passband from 3.1 GHz to 4.8 GHz which provides suppression of unwanted transmitter emission and receiver interference rejection in the 2.4 GHz and 5.1 GHz bands.

The WSR601SD is the main chip RF Transceiver generates the system reference frequency from a 24 MHz crystal resonator. The 24 MHz reference is multiplied to 5.280 GHz internally in the 601SD by a PLL multiplier. From this frequency the three band frequencies, 3.432 GHz, 3.960 GHz and 4.488 GHz for both transmit and receive modes are derived internally within the 601SD by direct synthesis. In addition to the band frequencies, a 1056 MHz clock for ADCs and DACs within the 610SD Base band Processor is generated.

The interface between the 601SD-D dongle and the host / Device system is via the industry-defined USB 2.0.

References.

MultiBand OFDM Physical Layer Specification 1.1.

MAC-PHY Interface Specification 1.0.

Universal Serial Bus Specification 2.0.