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Circuit Description for WLI-CB-AG300N and WZR-AG300NH-US (Draft N Client Card and Access Point)

Our products are 802.11abgn compliant devices. (802.11n is still in draft specification). The 802.11 system architecture in high level is comprised of radio, FEM, MAC, Regulator, and Memory. The radio receives and transmits radio signal at 2.4 and 5 GHz frequency band. Our radio is capable of transmit and RX of 2 spatial streams data which is a feature of MIMO (Multiple Input Multiple Output) devices. The MAC is comprised of BB portion and MAC layer. BB portion is responsible to modulate and demodulate signal either to MAC or to the radio chip. Memory functionality is to save configuration settings such as power settings, calibration data, and application level settings. The Regulator is to provide a clean stable voltage that powers up all the circuit on board. Client has PCB Trace antenna and is connected to the radio portion through a 50 Ohm RF line. AP has external antenna and is connected using mini-SMA connector. Between antenna and radio portion there are various RF components such as LNA, PA, FEM, and filters that help improve FCC performance. GND layers are implemented in both AP and Client to reduce the negative impact of ground return currents and to ease the general layout.

In general application user would be able to use client device to connect to the AP which acts as a gateway for internet connectivity. To connect between AP and client: AP is sending beacons that broadcast to the client what channel it is operating at, what type of 802.11 device it is. Client will send an Association request to the AP in order to create a connection to the AP. AP will respond with Association Response. Within Association procedure, all the 802.11 features and functionalities will be negotiated and once they are agreed upon connection will be successful.

Client: Client is dual-band device which operates at either 2.4 GHz or 5GHz. Client does not have the capability to operate at both bands simultaneously. Client has a Cardbus type connector that is used to transfer data between host (such as PC/Laptop) to the MAC chip.

AP: AP is concurrent dual-radio device which operates at both 2.4 and 5 GHz. Unlike client, AP does have the capability to operate at both bands simultaneously. Other than the system level diagram above, AP also contains CPU Processor, Gigabit Switching Ethernet chip, Gigabit Ethernet Transceiver, and more memories. In the AP, connection between MAC to the processor is PCI bus type.