invention is not limited in its application to the details of the particular arrangement shown since the invention is capable of other embodiments. Also, the terminology used herein is for the purpose of description and not of limitation.

Wireless Local Area Networks (WLAN) such as that standardized in IEEE 802.11, were designed to provide un-tethered access to information sources such as the Internet and enterprise file systems. The WLAN allows standard Internet protocol (IP) traffic to be transmitted using RF frequencies eliminating the need for a "hardwired" Ethernet connection common on "wired" local area networks (LAN). Just as in wired networks, the physical interface to the network is implemented on what is known as a "network adapter" or just "adapter". In prior art, the WLAN service was provided to the applications (file managers, Internet browsers, etc.) running on a computers host CPU via four components.

The first component is a software device driver allowing the application on the host CPU to access the WLAN service through a common interface such as a TCP protocol stack. The software driver provides the interface between the TCP protocol stack and the media access control functions (MAC), which are specific to the WLAN.

The MAC function provides the support protocol required to transport the IP traffic or packets over the wireless medium. The MAC provides data rate and error control as well as congestion management. The MAC also provides the interface between the software driver and the physical layer modulation and demodulation (MODEM) functions. In prior art the MAC function was implemented on a dedicated processor located on the WLAN adapter.

The MODEM provides the mapping of the payload data (IP packets) and control data to a form more conducive to wireless transmission and reception. The modulation functions in prior art would include scrambling, interleaving, puncturing, encoding, mapping, and filtering of bits onto the channel. The demodulation functions in prior art would include filtering, de-mapping of bits from the channel, decoding, de-interleaving and de-scrambling. In prior art the MODEM functions were provided via dedicated hardware on the WLAN adapter.

The final function required for implementation of a WLAN adapter is the radio. The radio is used to translate the base-band waveform generated and used by the MODEM up and down to RF frequencies. In prior art the radio functions were provided via dedicated hardware on the WLAN adapter.

FIG. **1.0** outlines the major components of prior art WLAN adapters. The four components are the software driver (**104***a*) running on the host CPU (**104**), MAC functions (**103***c*), MODEM functions (**103***b*, **103***e*), and radio (**102**). The software driver (**104***a*) communicates with the MAC (**103***c*) through an interface (**103***d*). This interface is normally a standardized bus type such as peripheral component interface (PCI), PC Card etc. The MAC receives data from the wireless medium via demodulation functions (**103***b*) and provides data to the wireless medium via the modulator functions (**103***e*). The MODEM functions (**103***b*, **103***e*), MAC functions **103***c*, and CPU interface functions (**103***d*) constitute the base-band processing functions (**103**). The base-band processing utilizes analog to digital converters (ADCs) (**103***a*) to interface with the receive portion of the radio (**102**). The base-band utilizes digital to analog converters (DACs) (**103***f*) to interface with the transmit portion of the radio (**102**). The radio consists of two sections, the transmitter (**102***d*, **102***e*, **102***f*) and the receiver (**102***a*, **102***b*, **102***c*). The radio transmitter receives the analog signal from the base-band processing (**103**) in a complex format and translates the analog signals to RF using two mixers (**102***d*). The result of the mixing operation is then filtered (**102***e*) and amplified (**102***f*). The transmit/receive (T/R) switch (**102***g*) then connects the amplifiers to the antenna (**101**). In receive mode the T/R switch (**102***g*) connects the antenna (**101**) to the receive amplifiers (**102***a*). The result of the amplification is then filtered (**102***b*) and down converted to complex baseband analog via two mixers (**102***c*). The analog outputs of the mixers are presented to ADCs (**103***a*) for processing by the demodulation functions (**103***b*).

FIG. **2.0** outlines a WLAN adapter, which uses the host CPU to perform both MAC and MODEM functions. The details of implementing a WLAN adapter using a host CPU to provide both MAC and MODEM functions is more specifically described in U.S. Provisional Patent Application No. 60/377,028 filed May 2, 2002 and that application is hereby incorporated by reference. The radio functions (**202**) and antenna (**201**) are identical to that of prior art (FIG. **1.0**). However, the MAC functions of prior art are now implemented in the host CPU software driver (**204**) and no longer exist in the baseband functions (**203**). In addition, most of the MODEM functions have been implemented in the host CPU software driver (**204**). The MODEM functions that remain (**203***b*) on the adapter have been specialized to require host CPU processing only when valid packets arrive at the receiver or when the wireless medium is available for transmission. The host CPU interface (**203***c*) has also been modified to allow the host CPU (**204**) direct access to various functions previously controlled by the MODEM functions that now reside on the host.

The remaining MODEM functions (**203***b*) on the WLAN adapter are automatic gain control (AGC), preamble detection, timing generation, and waveform identification. The AGC function provides control over the receive amplifiers (**202***a*) to maintain the correct analog signal level into the ADCs (**203***a*). Since this function requires near continuous supervision it must remain an autonomous function of the WLAN adapter. The preamble detection function serves two purposes in prior art WLAN adapters. First, the preamble detector is used to start demodulation processing. Second, the pre-amble detector is used by the transmitter to sense the availability of the wireless access medium. If the preamble detection function does not detect a valid preamble there is no need to perform demodulation processing. Similarly, if valid preambles are being detected there is no need to perform transmit processing since the wireless medium is being used. This fact allows the host CPU to run autonomously from the WLAN adapter unless valid preambles are being detected indicating that there are data packets arriving at the receiver. The waveform identification function works in conjunction with the pre-amble detection to filter out packets that are not of interest to this adapter based on data rate, modulation type etc. Once the preamble detection function detects valid packets, which require demodulation and MAC processing, the host CPU can be interrupted to provide the necessary processing.

The WLAN protocol dictates that the response to several different packet types must occur in 10-20 us. For a software based WLAN adapter this requires that transmit processing must occur within several microseconds of the end of a valid receive packet. The current invention exploits the static or near static nature of the transmit frame formats to reduce transmit processing required to respond to valid frames or packets. What follows is a detailed description of the spe-