frame, and generates two CTS frames for each RA. This allows the present invention to respond quickly with a CTS control frame by selecting the appropriate stored frame based on the received address (RA) and the current power management mode.

FIG. **6.0** depicts the acknowledge (ACK) control frame format. As can be seen most of the fields in the frame control segment are 0 (**601***ad,e,f,g,i,j,k*). The power management field (**601***ah*) is either 0 or 1. The protocol field (**601***aa*), type (**601***ab*) and sub type (**601***ac*) are fixed. The duration field (**601***b*) is set to zero for normal packet exchange, or set to the maximum length exchange for a specific data rate during an exchange with fragmented packets. Given that the RA (**601***d*) can be determined, the only variable in the ACK control frame is the state of the power management field (**601***ah*) and the FCS (**603**). The present invention generates two ACK control frames for each RA on the network. One ACK frame with the power management field set to 1 the other with the power management field (**601***ah*) set to a 0. Once the power management field is set, the FCS sequence can be calculated. The present invention learns the RA's on the network over time using the procedure outlined for the RTS control frame and generates two ACK frames for each RA. This allows the present invention to respond quickly with an ACK control frame by selecting the appropriate stored frame based on the received address (RA) and the current power management mode.

FIG. **7.0** depicts the PS-Poll control frame format. As can be seen most of the fields in the frame control segment are 0 (**701***ad,e,f,g,i,j,k*). The power management field (**701***ah*) is either 0 or 1. The protocol field (**701***aa*), type (**701***ab*) and sub type (**701***ac*) are fixed. The transmitting terminal knows the TA and thus can be pre-computed. The AID (**701***b*) and BSSID (**701***d*) are the only two variables in the PS-Poll frame. The present invention learns both ID's over time by monitoring network traffic and noting when a new AID and BSSID is seen using the same procedure for learning the RA's on the network. The only other variable in the PS-Poll control frame is the state of the power management field (**701***ah*) and the FCS (**703**). The present invention generates two PS-Poll control frames for each AID/BSSID pair on the network. One PS-Poll frame with the power management field set to 1 the other with the power management field set to a 0. Once the power management field is set then the FCS can be calculated for the frame.

FIG. **8.0** depicts the CF-End frame format. As can be seen most of the fields in the frame control segment are 0 (**801***ad,e,f,g,i,j,k*). The power management field (**801***ah*) is either 0 or 1. The protocol field (**801***aa*), type (**801***ab*) and sub type (**801***ac*) are fixed. The Duration field (**801***b*) is 0 for the CF-End frame format. The present invention monitors the network traffic for different values of RA (**801***d*) and BSSID (**801***e*). Over time, the present invention builds a table for each RA and BSSID on the network using the procedure outlined for the RTS control frame. Given the RA and BSSID, the present invention computes two CF-End control frames for each RA and BSSID, one with the power management bit set to 0 and one with power management bit set to 1. Once the power management bit is set the FCS (**803**) can be calculated for the frame.

FIG. **9.0** depicts the CF-End+CF-ACK frame format. As can be seen most of the fields in the frame control segment are 0 (**901***ad,e,f,g,i,j,k*). The power management field (**901***ah*) is either 0 or 1. The protocol field (**901***aa*), type (**901***ab*) and sub type (**901***ac*) are fixed. The Duration field (**901***b*) is 0 for the CF-End+CF-ACK frame format.

The present invention monitors the network traffic for different values of RA (**901***d*) and BSSID (**901***e*). Over time, the present invention builds a table for each RA and BSSID on the network using the procedure outlined for the RTS control frame. Given the RA and BSSID, the present invention computes two CF-End+CF-ACK control frames for each RA and BSSID, one with the power management bit set to 0 and one with power management bit set to 1. Once the power management bit is set, the FCS (**903**) can be calculated for the frame.

FIG. **10.0** depicts a block schematic diagram of the functions within the software driver required to pre-compute the transmit waveforms for the control frames outlined in FIGS. **4.0** though **9.0**. The receive frame demodulator (**1001**) demodulates the incoming packet and strips out the transmitter address, TA (**1001***a*). The transmitter address is used to index a table of known addresses (**1002**) to determine if this TA is known or not. If the TA is new (not known) then the software driver generates a set of control frames for the TA (**1003**). Since the TA becomes the RA in the transmitted control frame, the software driver uses the TA for the RA field for the control frames. The waveform generator (**1003**) generates a waveform for each control frame, for each data rate, with the power management bit set to a 1 and set to a 0 and the calculated FCS. These waveforms are stored in memory (**1004**). The memory organization is shown in (**1005**). The generator (**1003**) generates two types of control frames; one with the power management bit set to 0, and one with the power management bit set to a 1. This is done for each RA (RA**1**-RA(N)). The set of control frames for each RA is then generated for each data rate (Rate **1**-Rate(N)). The memory for each data rate is depicted in **1005**, by **1005***a* for the first data rate, **1005***b* for the second data rate, and **1005***c* for the N^{th} or last data rate. The samples will vary by data rate if the coding and or modulation format for a particular data rate is different from those of other data rates. For each data rate a set of precomputed samples resides in **1005**, one for each receive address (RA). In **1005** the set for each RA is shown by **1005***aa*, **1005***ab*, and **1005***ac*. For each rate and RA there exists the samples for two transmit packets for each of the six control frame types (**1005***aaa*-**1005***aal*). One packet has the power management bit set to one (**1005***b,d,f,h,j,l*) the other has the power management bit set to a zero (**1005***a,c,e,g,l,k*). It should be understood by those skilled in the art that the memory organization outlined in **1005** is just one embodiment. Other memory organizations exist; such as organization by RA and then by rate, or packet type and then RA or rate, etc. If the received TA is known then the waveform for the control frame exists in memory (**1005**), having been previously computed. The TA is then used to index the memory (**1005**) and transfer the waveform samples to the modulator (**1006**). It is in this way that the present invention minimizes the time critical processing required to respond to a valid receive packet. Over time all TA's on the network are known and the table (**1005**) is completed. Once this is accomplished there is no transmit processing required to send a control frame, other than transferring the waveform samples to the modulator.

It should be understood by those skilled in the art that the techniques outlined in the above embodiment are not limited to IEEE 802.11 WLAN adapters. Similar techniques can be applied to other wireless packet data standards as well. Blue tooth, IEEE 802.15, as well as newer cellular WAN packet data standards all could be implemented using similar techniques and the host CPU of a personal computer.