is based on a single clock fundamental, such as 22 MHz, except that the 802.11a OFDM symbol waveform is effectively unmodified. Again, the OFDM signal symbol **806** may include data rate and data count fields in a similar manner as described for the packet configuration **300**. As shown in FIG. **8**B, for example, the guard interval **811** utilizes the 802.11a standard 16 samples rather than the 24 samples of the guard interval **711**. The OFDM symbol **810** is therefore transmitted in just over 3.5 μsecs or approximately 3.63637 μsecs rather than 4 μsecs.

The dual packet configuration **800** includes 52 subcarriers **820** for each of the OFDM symbols **810**, as shown in FIG. **8**C. The data rates for the packet configuration **800** is slightly modified as compared to the data rate of the packet configuration **700**. In particular, the data rates for the packet configuration **800** ranges from 6.6, 9.9, 13.2, 19.8, 26.4, 39.6, 52.8, or 59.4 Mbps, which are slightly greater than the data rates for the packet configuration **700**. The spectral width for the packet configuration **800** is approximately 10% wider as compared to 802.11a. One advantage is that the packet configuration **800** is based on the same clock fundamental so there is no need for clock switching or two different clock generators or circuitry. Another advantage of the packet configuration **800** over the packet configuration **700** is that there is about the same loss as compared to 802.11a and not the greater loss of 0.5 dB as experienced for the packet configuration **700**. Further, the Root Mean Square Delay Spread Performance (RMS DS) for the packet configuration **800** is approximately 10% worse as compared to 802.11a.

FIG. **9**A is a graph diagram of dual packet configuration **900** similar to the dual packet configurations **700** and **800**, including a first portion comprising a preamble **901** and a header **903**, and a second portion including an OFDM sync pattern **905**, an OFDM signal symbol **906** and a payload portion **907**. The dual packet configuration **900** operates with the same or a single clock fundamental, such as 22 MHz, except that the OFDM waveform is modified to include a reduced number of frequency subcarriers, such as only 48 subcarriers rather than 52 subcarriers. Again, the OFDM signal symbol **906** may include data rate and data count fields in a similar manner as described for the packet configuration **300**. The 802.11a standard specifies a total number of subcarriers as 52 which includes 48 data subcarriers and 4 pilot tones. Utilizing 48 subcarriers rather than 52 generates a narrower spectrum although the spectral width is essentially the same as the 802.11a standard. The packet configuration **900**, however, may be modified in several ways to generate multiple embodiments of the present invention as further described below.

FIG. **9**B is a graph diagram illustrating the subcarriers **910** according to one embodiment of the dual packet configuration **900** utilizing 44 data subcarriers and four (4) pilot tones. In this configuration, there are 44 data subcarriers, denoted D**0**, D**1**, . . . D**43**, and 4 pilot tones, denoted P**0**, P**1**, P**2** and P**3**. As shown in FIG. **9**B, the organization of the subcarriers **910** is a first data subcarrier D**0**, followed by a first pilot tone P**0**, followed by the second data subcarrier D**1**, which is then followed by the second pilot tone P**1**. Then, the data subcarriers D**2** to D**41** are sequentially placed in order, followed by the third pilot tone P**2**, the 43^{rd} data subcarrier D**42**, the fourth pilot tone P**3**, and finally the last data subcarrier D**43**. The locations of the pilot tones can vary from that shown. The figure merely illustrates one possibility.

FIG. **9**C is a graph diagram of an alternative subcarrier configuration **920** for the packet configuration **900** in which all 48 subcarriers are data subcarriers, denoted D**0**-D**47**. In this embodiment, there are no pilot tones, and the provided data rates are the same as that of 802.11a with 24 samples in the guard interval. However, if only 16 samples are utilized in a similar manner as shown in FIG. **8**B, then slightly different data rates are achieved at the 22 MHz clock fundamental, where each respective data rate is multiplied by approximately 1.1.

FIGS. **10**A and **10**B illustrate yet another alternative embodiment of the subcarrier configuration for the dual packet configuration **900** in which four data subcarriers are replaced with pilot tones. As shown in FIG. **10**A, the 48 subcarriers are all data subcarriers denoted D**0**-D**47**. However, as shown at **1001**, the data subcarriers D**1**, D**3**, D**44** and D**46** are punctured and discarded. As shown in FIG. **10**B at **1003**, the discarded data subcarriers are replaced with four pilot tones P**0**, P**1**, P**2** and P**3** respectively. The pilot tones are normally used to keep the phase lock loop (PLL) circuitry healthy. It is noted, however, that the PLL may track on the data carriers instead when no pilot tones are present. The discarded data is reconstructed, recreated or otherwise regenerated by the receiver using the received data that was not discarded. The data may be reconstructed using Error Correction Code (ECC) techniques or the like, such as utilizing forward error correction (FEC) or the like. The locations of the pilot tones can vary from that shown. The figure merely illustrates one possibility

Another variation for all of the dual packet configuration **900** embodiments is to change the number of samples in the cyclic extension or guard interval between 24 and 16 samples in a similar manner as described previously for the dual packet configuration **700** and **800** as shown in FIGS. **7**B and **8**B. For the 48 subcarrier embodiments, changing the number of samples in the cyclic extension from 24 to 16 changes the OFDM symbol duration from 4 μsecs to 3.63637 μsecs. Furthermore, the resulting data rates may be changed from the 802.11a and 802.11b standards.

FIG. **11** is a table diagram illustrating comparisons of the various dual packet configurations described heretofore illustrating variations in data rates, OFDM symbol duration, spectral width, thermal noise performance and delay spread performance as a result of variations in the clock rates, number of subcarriers, number of pilot tones, and the number of samples in the cyclic extension or guard interval. The thermal noise performance is measured as energy per information bit (Eb) per noise density or strength (No) and is independent of bandwidth. Delay spread performance provides an indication of multipath-induced signal dispersion caused by echoes and reflections and is measured as root-mean-square delay spread (RMS DS). Each of the embodiments have an embodiment number from 1 to 9, followed by reference numbers illustrating the particular packet configuration. For example, embodiment 1 is configured according to packet configuration **500**, embodiment 4 is configured according to packet configuration **900** with 48 data subcarriers of configuration **910** with 24 samples like configuration **710**, and embodiment 9 is configured according to packet configuration **900** with 44 data subcarriers and data subcarrier puncture and pilot tone replacement of configurations **1000**, **1010**, with 16 samples as in configuration **810**. Embodiment 1 utilizes 2 clock fundamentals of 20 and 22 MHz, whereas embodiments 2-9 utilize a single clock fundamental of 22 MHz. Embodiments 1, 2 and 3 utilize 52 subcarriers, whereas embodiments 4-9 utilize 48 subcarriers. Embodiments 1-4, 6, 7 and 9 utilize four pilot tones whereas embodiments 5 and 8 utilize no pilot tones. Embodiments 1, 3, 7, 8 and 9 utilize 16 samples in the guard