

> Wireless Lan Apps  
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 Subject: |  
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 |Re: FCC Questions on MAC protocol  
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**Dear Beck,**

I will try to help you address some of the questions raised by the FCC with regard to the frequency hopping operation of our MAC protocol. It appears that the questions may have arisen because the FCC have made an incorrect assumption about the way the protocol operates. First of all, re-stating some fundamental statements may help:

1. The protocol relies on one or more stations/nodes in the network group being a 'master'. A master changes frequency at a fixed rate, and periodically transmits timing information to the other stations in the group. In this way, a 'slave' node knows when to change frequency, and also knows which frequency to change to. This operation of the different types of station is described in more detail in section 8.5 of the Application Programmer's Interface specification, which is supplied as part of the Binary MAC package. This information may be added to your submitted material, but the FCC MUST be requested to hold it confidential, as with the schematic, theory of operation etc. I have also attached this information to this message.

2. The time spent on each frequency (the 'dwell time') is fixed (80mS). Stations always change channels every 80mS, irrespective of whether any transmissions have taken place. There is NO synchronisation between the frequency used and the occurrence of a transmission.

3. Each transmission takes place on only ONE frequency - a single transmission is NOT spread across different frequencies.

The report from the FCC states "each new transmission must start at a different point in the sequence". Please consider the following scenario: a station has just changed frequency and immediately transmits a short packet. If, immediately after this first transmission, the station then has another short packet to transmit, it will attempt to transmit the packet on the SAME frequency, because the 80ms dwell time has not yet elapsed. However, we would argue that this IS "a different point in the sequence" - because the sequence is time-based, and this timing is not altered as a result of the transmissions occurring.

As stated above, there is no synchronisation between the time at which the frequency is changed and the transmission of data packets. Therefore each transmitter WILL, on average, use each frequency equally. I believe that the FCC may be assuming that the protocol operates by changing frequency prior to each and every transmission - this is not the case.

Best Regards,  
Colin

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