WIPCLIP V131c Duty Cycle

There are several levels to note regarding the duty cycle for transmissions from a WIPclip V131c, which implements the CDPD protocol. First is the duty cycle range allowable from the CDPD protocol itself. Second is the method of transport of transmission packets. Lastly, the end application controls the amount of data that is transmitted.

At the first level, the absolute maximum duty cycle possible from the CDPD spec is 98.3%, which is derived from an absolute maximum ON time of 1.288458 seconds and an absolute minimum OFF time of 0.021875 seconds. In practice, the maximum ON time and the minimum OFF time are both parameters dictated by the operators of the network on which the device is operating. For the AT&T network, the typical maximum duty cycle is 73.8%, which is derived from their typical broadcast maximum ON time of 0.325958 seconds and their minimum OFF time of 0.115625 seconds

These maximum times assume that the user has an infinite amount of data to transmit, that the transmission channel is error free, that the transmission channel and frequency is always available when needed (not being used by another transmitting device), and that the data can be delivered to the WIPclip V131c faster than the rate that it is being transmitted. In addition, it assumes that the WIPclip V131c does not wait for responses from the transmissions. For any practical transport protocol, the continuous transmission assumption is unrealistic because there needs to be a mechanism from the receiving endpoint to signal back to the transmitter that particular portions of the data have or have not been correctly received. For CDPD, the most common transports are ICMP, TCP, or UDP. These protocols either have built in feedback mechanisms, or mechanisms built in by the user. In TCP for instance, the recipient must acknowledge packets before additional packets are sent. This feedback requires at least a round trip air time at the minimum, which translates into additional idle (transmitter OFF) time in the WIPclip V131c.

Lastly, the application will dictate when and how often transmission of data is required. Typical application and use for the WIPclip V131c is "Web-browsing" and email. Web-browsing is an asymmetrical operation: small amounts of transmission are required to deliver the user commands (document addresses) to the server, and large amounts of reception as the server returns the data (document contents) to the user.