Maximum Duty Cycle Analysis for Symphony-HRF Cordless Gateway

This is a dual mode product that is capable of operation with either Symphony or Home RF protocols. Please refer to the Symphony-Home RF Theory of operation for a more detailed explanation.

Both the Symphony and Home RF protocols have more than one configurable hopping period depending on installation parameters, and the type of traffic to be carried in the network.

Regardless of protocol and network traffic, the duty cycle of any node is always <100% in any hop period because there is always some time spent in receive and turning around between transmit and receive modes or moving from one hop to another. The hop periods and number of hopping channels are all such that the regulatory requirement that channel occupancy in any thirty second period be less that 400ms can not be exceeded.

Refer to the table below for channel occupancy calculations for each hop period mode of both protocols assuming 100% duty cycle. Note that the actual channel occupancy will always be less due to finite duty cycle, so the limit of 0.4 seconds maximum in any thirty second interval on any one hopping frequency is never reached by either protocol at each of their configurable hop periods.

protocol	hop period seconds	number of channels	time to cycle through sequence seconds	maximum hops on any one channel in 30 seconds	maximum time on any channel in 30 seconds if 100% duty seconds	maximum time on any channel in 30 seconds seconds
Symphony	0.1	79	7.9	4	0.4	**<0.4**
Symphony	0.2	79	15.8	2	0.4	**<0.4**
Symphony	0.4	79	31.6	1	0.4	**<0.4**
Home RF	0.01	75	0.75	40	0.4	**<0.4**
Home RF	0.02	75	1.5	20	0.4	**<0.4**