



31 March 2011

**Promethean 2.4GHz Activsystem
(ActivBoard/ActivHub/ActiVote/ActivSlate/ActivExpression) Frequency Hopping**

To whom it may concern:

Each frame will transmit on a new channel, so the master device (Activhub) hops to the new channel to send the beacon and all of the slave devices (Activboard, Activote, Activslate and Activexpression) respond on the same channel.

The next channel is chosen by adding 'hop width' to the value of the current channel. 'Hop width' is chosen at random from 2 to 45 on every power up of the Activhub and the value is transmitted in each beacon, so that a slave device can keep synchronized with the master device.

When the next channel to hop to is calculated the hop width must be doubled and added to the current channel number. If the next calculated channel value is greater than 94, subtract 94 from it. If the new channel is marked as bad, use 'hop width' to calculate another channel.

As stated the hop width is a random value; this is generated at power up based on the background noise. At power up the transceiver monitors the RSSI value on channel 0, as this is not used in the system so is not influenced by another system. The random value of the noise is used to generate a start channel and a hop width which all slave devices will use for this session.

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