Operational Description

The EUT has a Bluetooth module, operating in 2400 to 2483.5 MHz band and employing 79 hopping channels. The nominal hop rate is 1600 hops/s.

Bluetooth units which want to communicate with other units must be organized in a structure called piconet. This piconet consists of maximum 8 Bluetooth units. One unit is the master, the others seven are the slaves. The master co-ordinates frequency occupation in this piconet for all units. As the master hop sequence is derived from it's BD address which is unique for every Bluetooth device, additional masters intending to establish new piconets will always use different hop sequences.

In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection (e.g. single or multislot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

POWER SOURCE

The EUT is powered from a Lead-acid battery on vehicles (DC12V/DC24V). The step down switching regulator IC, L5973, stabilizes the voltage into DC 10V as internal power sources. This voltage is converted into DC±5V by PWM DC/DC Convert IC, NJM2374A. Finally, the Bluetooth module and MCU (ATmega32L) is powered from DC +3.3V regulated by low dropout voltage regulator IC, NJM2872AF.

ANTENNA

The EUT uses an integral SMD chip antenna. No external ground is required.