1.2 Operational Descriptions

1.2.1 Product Descriptions

The test item is a Bluetooth Air Mouse based on the Bluetooth technology.

Bluetooth is a short-range radio link intended to be a cable replacement between portable and/or fixed electronic devices.

Bluetooth operates in the unlicensed ISM Band at 2.4 GHz. In the US a band of 83.5 MHz width is available. In this band, 79 RF channels spaced 1 MHz apart are defined.

The channel is represented by a pseudo-random hopping sequence through the 79 channels. The channel is divided into time slots, with a nominal slot length of 625 µs, where each slot corresponds to different RF hop frequencies. The nominal hop rate is 1600 hops/s. The symbol rate on the channel is 1-3 Mbps.

The USB connector is for charging only, no data exchange is supported.

1.2.2 Technical Background of the Wireless Technology

Bluetooth operates in the unlicensed ISM band at 2.4 GHz. A frequency hop transceiver is applied to combat interference and fading. A shaped, binary FM modulation is applied to minimize transceiver complexity. The symbol rate is 1 Ms/s. A slotted channel is applied with a nominal slot length of 625 μ s. For full duplex transmission, a Time-Division Duplex (TDD) scheme is used. On the channel, information is exchanged through packets. Each packet is transmitted on a different hop frequency. A packet nominally covers a single slot, but can be extended to cover up to five slots. The Bluetooth protocol uses a combination of circuit and packet switching. Slots can be reserved for synchronous packets. Bluetooth can support an asynchronous data channel, up to three simultaneous synchronous voice channels, or a channel which simultaneously supports asynchronous data and synchronous voice. Each voice channel supports a 64 kb/s synchronous (voice) channel in each direction. The asynchronous channel can support maximal 723.2 kb/s asymmetric (and still up to 57.6 kb/s in the return direction), or 433.9 kb/s symmetric. The Bluetooth system consists of a radio unit, a link control unit, and a support unit for link management and host terminal interface functions.