2276427 Ontario Inc

M400 Operational Description

The M400 is a mobile personal security system. It is a battery powered unit that sits on a user's key chain. There are two buttons on this system: a small Function button and a Panic Button.

The unit is turned on by pressing the Function button for 2 seconds, and turned off by pressing the Function button for 5 seconds. While the unit is on, the user can press the function button to light up the unit's 2 status LEDs that indicate battery and connectivity. The unit is powered with a 500 mAh lithium polymer battery and charged through a micro-USB port. The battery is not replaceable by the user.

After the unit starts up, it connects to the user's phone using Bluetooth. When the user presses the Panic Button in an emergency, the M400 vibrates, and dials the user's phone to a security response centre. There is a sensitive microphone on the unit that enables the response centre to hear what is happening around the user.

The M400 employs a fully integrated V2.0 EDR Class II Bluetooth transceiver chip produced by CSR that uses a 26Mhz crystal as its primary input frequency reference. This frequency is used to create both low IF and RF heterodyning frequencies: On the transmitter side, baseband signals are first up converted to a “near zero” IF frequency and then to the final 2.4Ghz hopping frequency. The reverse occurs on the receiver side. The hopping frequencies used are those identified in Bluetooth standards for North American markets.

The M400 employs an internal integrated antenna with no provision for connection to an external antenna. The M400 enclosure is sealed and cannot be opened without damaging the case.

The M400 also employs an ARM9 processor that receives two on board crystal references: a 32Khz crystal, and a 10MHz crystal. The 32Khz crystal is used to drive an integrated real time clock while the 10Mhz crystal is used to drive two integrated frequency synthesizers. One synthesizer generates a 180 Mhz clock signal for internal consumption by the ARM9 processor, while the other synthesizer generates a 96 MHz clock used for driving SDRAM access.

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