Technical Brief

94001480600
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MC72000 Development Kit for the Bluetooth Platform Solution from Motorola

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With the development kit for the Bluetooth Platform Solution from Motorola, the company is launching yet another unique demonstration and development tool for its platform.

The development kit contains all of the hardware, software, and documentation needed to evaluate the functionality of the following Motorola Bluetooth platform solution IC's:

- MC72000 Bluetooth Baseband Controller and Transceiver IC
- MC13181 Wireless Power Management IC

Also, you can develop software and hardware solutions around the platform chipset. The development kit makes it possible to easily and quickly set up and start demonstrating a Class 2 Bluetooth solution, and it provides an efficient layout for the RF on an FR4 PCB substrate.

The primary applications of the development kit are:

- Evaluation of the platform chipset and its features
- Porting of a user Bluetooth stack to the Motorola Bluetooth hardware
- Prototyping of a Bluetooth-enabled host device
- Reference design for quick layout of a Bluetooth solution based on the MC72000 IC

The development kit is Bluetooth 1.1 qualified and will be type approved in a great number of countries. See the section "Type Approvals".

For detailed information on the MC72000 and MC13181 IC's, please refer to the technical brief for each.

Preliminary

1 Block Diagram

Figure 1. Block Diagram
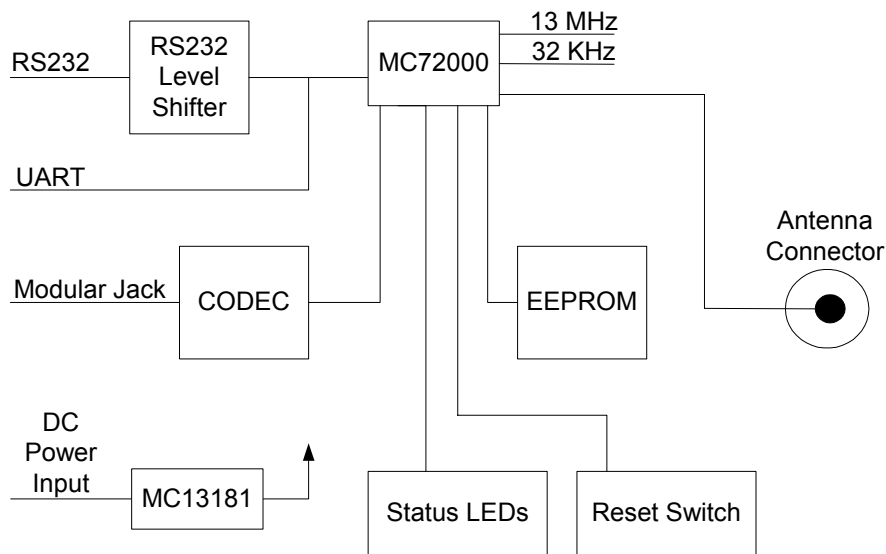
2 Signal and Connection Descriptions

The development kit contains the following connections, switches, and indicators:

- Power supply input
- Modular jack 4/4 connector for mono-audio speaker and microphone (headset application)
- RS232 interface
- UART interface
- Antenna connector
- JTAG allowing interface to MC72000 production test
- Reset switch
- Three control buttons for eg. headset application
- On/off switch
- Status LEDs

The power supplied for the development kit is DC with the ratings stated in the specifications.

An analog audio signal to be transmitted over the Bluetooth connection can be fed into the development kit via the modular jack or as streaming audio through the host interface. It will be converted to digital data and transmitted through the Bluetooth link. A digital audio signal received from a connected Bluetooth device will be converted to an analog audio signal and available at the modular jack or as streaming audio through the host interface (UART, SSI, SPI). The MC72000 has a Bluetooth Audio Signal Processor (BTASP) for superior audio performance.

The RS232/UART interfaces can be used to transfer data and audio between a host and the Bluetooth device. The firmware of the development kit can be upgraded through the RS232/UART interface.

The CODEC is attached to the MC72000 via the SSI interface.

The antenna connector is an SMA 50 ohm connection.

The reset switch can be activated to re-initialize the entire system.

Three buttons are provided for embedded applications—Functions 1, 2, and 3.

Four status LEDs are provided:

- One application-specific LED
- 24 MHz/32 kHz
- RX/TX
- Power on

3 Environmental

This section contains system level environmental information:

- Storage temperature (degrees centigrade):
  — Min. -40
  — Max +125
- Operating temperature (degrees centigrade):
  — Min. 0
  — Max +85

4 Mechanical

This section contains system level mechanical information:

- Length: 75 mm
- Width: 50 mm
- Height (PCB with components): 20 mm
- Layout, FR4, 4 layer: 1 mm

5 Electrical

This section contains electrical information:

- Input power supply requirements: 3.5-6.5 VDC
- Audio input: 65m Vpp
- Audio output: 1.6 Vpp, modular jack 4/4 connector

The following table shows the current consumption measurements of the circuits of the MC72000 Bluetooth Baseband Controller and Tranceiver IC.

Table 1.   Current Consumption Measurements of MC72000

DH5 asymmetric RX	50.4 mA	TX rate 57.6 kbits RX rate 723.2 kbits
DH5 asymmetric TX	48.5 mA	TX rate 723.2 kbits RX rate 57.6 kbits
DH5 symmetric	45.8 mA	TX rate 433.9 kbits RX rate 433.9 kbits
HV1	45.8 mA	
HV3	27.8 mA	
Total system in low-power mode	0.130 mA	

Note: The table contains typical values.

6   Interfaces

The development kit features RS232 and UART interfaces:

- RS232 interface: Programmable baud rate from 1200 to 921 Kbit.
- UART interface: 5-pin header with RxD, CTS, RTS, and GND, 3.3 V signaling, programmable baud rate from 1200 to 921 Kbit, HCI UART transport layer.

    Note: The UART and RS232 interfaces cannot operate simultaneously.

7   Antenna

The development kit contains an SMA 50 Ohm antenna connector.

8   Development Tools

The development kit includes the following software tools:

- HCI Terminal: This allows you to interact with your Bluetooth hardware. The interface is similar to that of an AT Terminal application when communicating with a modem. You can send HCI commands from a computer to a Bluetooth device, and receive HCI responses from a Bluetooth device. The HCI Terminal allows you to get hands-on experience with the HCI or test your own hardware.
- Configuration Manager: This allows you to handle the development kit file system. You can download firmware patches and set up a number of baseband and radio parameters to exercise the board. All parameters will be restorable and default settings will be stored automatically.
- DemoBench: This allows you to send a file to another Bluetooth device, "chat" with another Bluetooth device, and view link and packet statistics in a real-time application.

9 Documentation

The development kit is accompanied by the following documentation:

- Development Kit user's guide providing the information needed to get started with the development kit
- User's guides for the various software tools accompanying the Development Kit
- Embedded system user's guide
- Reference designs
- A platform document providing a system overview of the Bluetooth Platform Solution from Motorola
- Technical briefs for the various Bluetooth platform elements
- Application notes for the following:
  — Using the Bluetooth Audio Signal Processor (BTASP) for High-Quality Audio Performance
  — Motorola's Bluetooth Solution to Interference Rejection and Coexistence with 802.11
  — Enhancing ISM Band Performance Using Adaptive Frequency Hopping
- Data sheets for (3rd party) peripherals supported by the Development Kit
- Bluetooth Specification v1.1, Core Specification

10 Sales Package Contents

The development kit sales package contains the following items:

- Development kit boards (2)
- Power supplies (2)
- RS232 cables (2)
- Antennas (2)
- Headsets (2)
- Installation CD including software tools and documentation (1)

11 Type Approvals

The development kit will be type approved in the following countries:

- Europe (EU and EFTA countries)
- USA
- Canada
- Japan*
- China
- Taiwan
- Israel**
- Hong Kong

Type Approvals

- Korea (South)
- Singapore
- Brazil
- Mexico**

* The equipment will be tested at accredited in-country test house; however, actual application will not be submitted because the Development Kit board has no enclosure, which is required to obtain Japanese type approval.

** Awaiting new regulations.

HOW TO REACH US:

USA/EUROPE/LOCATIONS NOT LISTED:

Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217
1-303-675-2140 or 1-800-441-2447

JAPAN:

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3-20-1, Minami-Azabu Minato-ku, Tokyo 106-8573 Japan
81-3-3440-3569

ASIA/PACIFIC:

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