



# ICs for Communications

## BLUETOOTH BlueMoon™ I

BlueMoon™ Reference Design Application

<b>BlueMoonI</b>	
<b>Revision History:</b> <b>Current Version: 1.1</b>	
Previous Version: Revision –	
<b>Page</b>	<b>Changed Items since last revision BMI-LISV10-7600</b>
Several	Update of HW and FW versions for Bluetooth Core Specification 1.1

For questions on technology, delivery and prices please contact the Infineon Technologies Offices in Germany or the Infineon Technologies Companies and Representatives worldwide: see our webpage at <http://www.infineon.com>

ABM®, AOP®, ARCOFI®, ARCOFI®-BA, ARCOFI®-SP, DigiTape®, EPIC®-1, EPIC®-S, ELIC®, FALC®54, FALC®56, FALC®-E1, FALC®-LH, IDEC®, IOM®, IOM®-1, IOM®-2, IPAT®-2, ISAC®-P, ISAC®-S, ISAC®-S TE, ISAC®-P TE, ITAC®, IWE®, MUSAC®-A, OCTAT®-P, QUAT®-S, SICAT®, SICOFI®, SICOFI®-2, SICOFI®-4, SICOFI®-4μC, SLICOFI®, are registered trademarks of Infineon Technologies AG.

ACE™, ASM™, ASF™, BlueMoon™, POTSWIRE™, QuadFALC™, SCOUT™ are trademarks of Infineon Technologies AG.

BLUETOOTH™ is a trademark owned by its proprietor and used by Infineon Technologies AG under license.

**Edition 4/2001**

**Published by Infineon Technologies AG,**

**Wireless Systems,**

**St.-Martin-Str. 76,**

**D-81541 München**

© Infineon Technologies AG

All Rights Reserved.

**Attention please!**

The information presented in this document does not constitute a part of any quotation or contract. Infineon Technologies especially emphasizes the following:

As far as patents or other rights of third parties are concerned, liability is expressly excluded for applications, processes and circuits implemented within components or assemblies.

The information describes the type of component and shall not be considered as assured characteristics or representation.

Terms of delivery and rights to change design reserved.

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.

Infineon Technologies AG is an approved CECC manufacturer.

#### **Packing**

Please use the recycling operators known to you. We can also help you - get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport.

For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components<sup>1</sup> of the Infineon Technologies AG, may only be used in life-support devices or systems<sup>2</sup> with the express written approval of Infineon Technologies AG.

1. A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.
2. Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life, such as, for example, in medical, air traffic, defense, or life-sustaining automotive applications. If they fail, it is reasonable to assume that the health of the user or another person may be endangered.

## 1 Reference Design Application

In this document, the BlueMoon™ I baseband controllers PMB 6752 (V1.4) and PMB 6754 (V1.4) together with the Bluetooth ProBlue FW 3.4.4 and the RF IC PMB 6615 are described. These ICs together with the firmware provide the BLUETOOTH Radio (RF), Baseband (BB), Link Manager (LM), and Host Controller Interface (HCI) / HCI-UART functionality according to the BLUETOOTH core specification V1.1.

The BlueMoon™ I controllers PMB 6752 and PMB 6754 and RF IC PMB 6615 form a family of devices for the baseband and radio part of a BLUETOOTH™ system. BLUETOOTH wireless technology is an open industry standard for short range wireless communication with both data and voice transmission capability (up to 723 kbit/s data asymmetrically or up to 3 voice calls simultaneously). The devices are designed for use in cordless voice applications (base and mobile station) or for data applications like interconnection between mobile phones (GSM etc.) and laptops, palmtops, and PCs. The chipset is highly integrated and realizes most of the system functions needed in such an equipment.

The BlueMoon™ I controllers PMB 6752 and PMB 6754 interface to the RF IC PMB 6615 as transceiver for 2.4GHz ISM frequency band thus realizing a power class 2 Bluetooth device. Optionally, the PAs PMB 4823 or PMB 6827 can be added in order to realize a power class 1 Bluetooth device which is supported by the BlueMoon™ I controllers PMB 6752 and PMB 6754 and firmware ProBlue. Together with the BLUETOOTH software ProBlue incorporating Baseband (BB), Link Manager (LM), and Host Controller Interface (HCI) functionality a system with BLUETOOTH wireless technology can be developed.

The BlueMoon™ I controllers PMB 6752 and PMB 6754 are fabricated in an advanced CMOS technology. The IC PMB 6752 is available in an LFBGA-81 package. As a package variant the IC PMB 6754 is available in a TQFP-100 package. The BlueMoon™ I RF IC PMB 6615 is fabricated in an advanced BiCMOS technology and is available in an TSSOP-38 package.

Further information on BlueMoon™ I is available under [www.infineon.com/bluetooth](http://www.infineon.com/bluetooth).

### 1.1 Functional Block Diagram

### 1.2 System Integration

The BlueMoon™ I system using PMB 6752 or PMB 6754 and PMB 6615 realizing BLUETOOTH wireless technology is shown in the following figure.

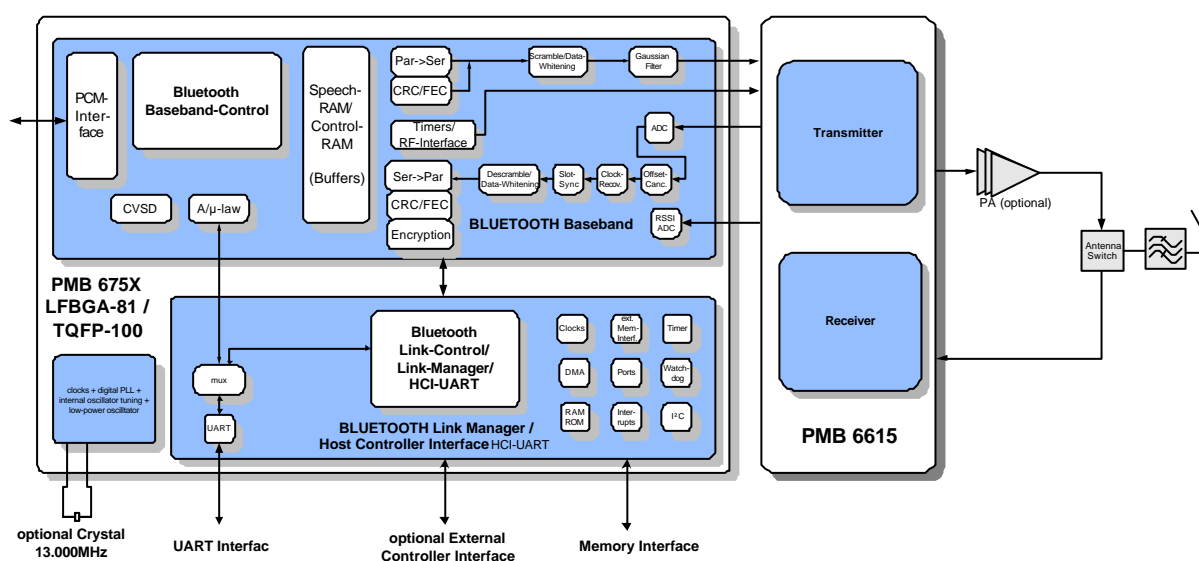


Figure 1-1: Block diagram of the BlueMoon™ I system

**1.2.1 PMB 6752 / PMB 6754 – BlueMoon™ I BLUETOOTH Controller**

The BlueMoon™ I BLUETOOTH Controllers PMB 6752 and PMB 6754 are developed for use in BLUETOOTH data applications with the UART as physical HCI interface. The ICs have on one side the interface to the RF transceivers PMB 6615 / 6625 and the optional PAs PMB 4823 and PMB 6827. On the other side the IC provides the UART interface for full duplex data communication and the PCM interface for voice connection.

**1.1.1 ProBlue FW**

The ProBlue FW provides BLUETOOTH Baseband (BB), Link Manager (LM), and Host Controller Interface (HCI) functionality. For the physical UART interface the logical HCI-UART is provided.

**1.1.2 PMB 6615 – BLUETOOTH RF Transceiver**

The PMB 6615 is an RF transceiver circuit with a very high level of integration for BLUETOOTH's 2.4GHz frequency band. The receiver is highly integrated without needing an external SAW filter; the LNA is also on chip. The complete receiver needs no external adjustment. A VCO and the PLL are integrated, too. The IC can be programmed by a 3-wire bus interface. Two low drop voltage regulators are integrated in order to achieve a sufficiently stable supply voltage for the transceiver circuit and especially for the on-chip VCO and the following buffer stages.