Digianswer / Motorola Phone Module

Product Specification

Revision history:

Version	Date	Author	Description
1.0	01.01.14	Tom Ringtved	Initiating project specification

CONTENTS

1. Scope.

This document serves as a product specification of the “Motorola Bluetooth™ Phone Module”, defining software- hardware architecture, interfaces, functions and limitations. This document is intended for internal definition of the project and as an external introduction to the product. Included is a definition of the intended retail level of this product, in respect to country support and top-level contents.

2. Description and application.

The “Motorola Bluetooth™ Phone Module” is an external adapter, for enabling of specific Motorola labelled mobile phones to interface to Bluetooth.

This device includes all the hardware, drivers and software applications to enable mobile phone platform with ad hoc networking, per-to-per file transfers, data synchronisation, wireless headset support etc. etc. The software suite includes applications for Bluetooth network management and country settings.

The customer ready package are intended to include the necessary documentation for most end users to experience an easy non-complicated installation of the adapter, drivers and software. Though, this is an OEM decision.

3. Applicable documents.

This document describes an end-user ready product on interface-level and top-level. The “Motorola Bluetooth™ Phone Module” is a product containing two main modules, a Bluetooth radio interface module and a mobile phone interface module.

4. Functional description.

This chapter provide an overall functional description of the device and deliverables, and list those limitations that might not be obvious to all parties.

4.1. Platform functions and limitations

4.1.1. Mobile phone interface module

The mobile phone interface module is a custom designed interface with the following characteristics:

- Voltage support (continuous) 2.7VDC to 6.5VDC.
- Operating temperature range -30°C to +60°C
- Supports RS232 protocol

  Initial configuration:
  bit rate: 57600
  data bits: 8
  stop bits: 1
  parity: none

4.1.2. Bluetooth module

The Bluetooth module will be a standard Bluetooth interface, with the following characteristics:

- Bluetooth V1.0B specification & profile compliant
- Support for standard transmit mode (Class 2), 0 dBm (1 mW)
- The antenna is an internal part of the form factor
- By a selective placement of two adapters, the coverage is within 10 m in a 180-degree horizontal plane.
- The Bluetooth module is firmware upgradeable
- All protocols included to support the profiles listed in section 7.8

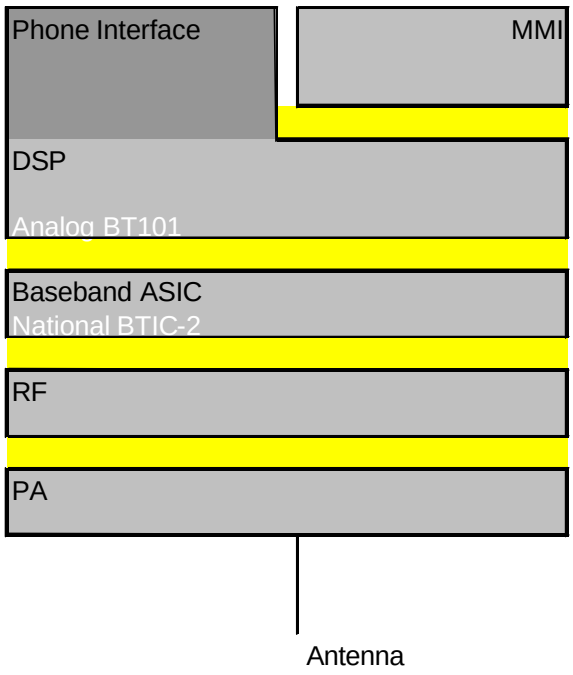
This module does not have any obvious limitations.

4.1.3. MMI module

The MMI module covers the input/output functionalities of the HW platform, and does not include the MMI of the user software. The user software interface will be described elsewhere.

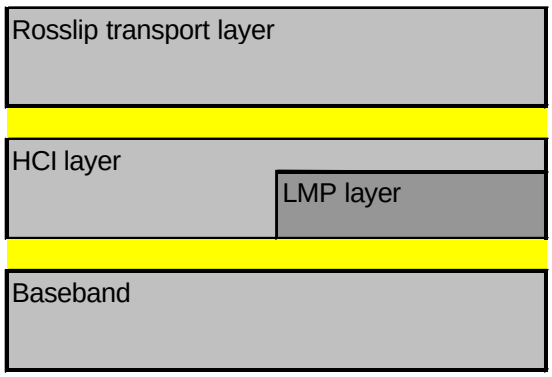
4.2. Hardware overview

The hardware platform is build up around the Analog BT101 running at 36 MHz. The National BTIC-2 ASIC handles the lower layer base-band functionalities of the Bluetooth functions, including encryption and interfacing to the RF radio part. The MMI interface contains discrete components only. For further information about the RF and PA design, refer to the current version of the BOM, since these parts are running through a constant development.



4.3. Firmware overview

The firmware is build as described by the Bluetooth specification, see figure below. Refer to the specification for a detailed description. The Rosslip transport layer is a data transparent layer, where the host driver is able to write and read directly into the processor registers. The HCI layer removes the HCI overhead, and together with the LMP layer, exchanges data with the HCI transport and L2CAP-layer on the phone. The Base-band layer contains all the specified base-band protocols, plus the additional control of the RF hardware including and the handling of the diversity (if implemented) antennas.



5. Mechanical description.

5.1. Form factor.

Drawings of the form factor are included in appendix A. It's designed to be used for the "Motorola Bluetooth™ Phone Module" only. The form factor has the following characteristics:

- Plastic part material is ABS, PC or nylon to pass all relevant flammability requirements and to achieve sufficient material strength
- Material has a minimum thickness of 0.7 mm to pass UL requirements
- The colour is black as default (not further defined)
- Support on the inside back for all considerable labels, brand label on upper shield, and certification label on lower shield. The label supports is made as and recess in upper and lower part of shield.
- The form factor contains two parts; upper part and a inside lead part. The assembly of these two parts must be able to withstand all dropdown tests specified in Chapter 14. There are no requirements to reuse of form factors after de-assembly.
- The first hard-tooling for the antenna part is designed for production of 500.000 pieces

The form factor does not support on/off switch or separate logo plug-in in tooling.

5.2. Labelling.

Dimensions and design is TBD, must follow all CE and FCC directives, or OEM customer specific requirements.

6. Electrical Description.

6.1. Connector description

The phone receptacle is a custom designed 16 pin connector.

6.2. Electrical compatibility

The adapter is a RS232 interface, with 3.3V support. The adapter supports the two power management modes. The power-up mode, which is less than 100 mA consumption before initialization and normal operation mode, which is after initialization.

6.3. Card and Socket services

The adapter must be compliant to the most popular card and socket services.

SW contents

6.4. Supported profiles

The following profiles are supported in the “Motorola Bluetooth™ Phone Module” with all the mandatory services specified for the profile in the Bluetooth revision 1.0B profile specification.

- Generic Access Profile
- Service Discovery Application Profile
- Serial Port Profile
- Headset Profile

There are no obviously limitations to these profiles.

7. End-user documentation

7.1. Printed Documentation

7.1.1. Installation Guide

Describes how to install the Motorola Bluetooth™ Phone Module on the target system. This will describe in details how to install hardware, drivers and the applications. The Installation Guide contains four sections:

7.1.1.1. Installing your Hardware

Step-by-Step guide, with drawings, on how to connect the Bluetooth device to the mobile phone. This is basically identifying the right socket and plug in the card.

7.1.1.2. Installing the Application Software

This section contains a step-by-step guide, on how to setup the mobile phone with the Bluetooth module.

8. Retail packing

8.1. Physical dimensions

TBD or customer specific.

8.2. Design and layout

TBD or customer specific.

8.3. Language versioning

TBD or customer specific.

9. Deliverables

The intended deliverables for this product is:

- Bluetooth Phone Module
- Installation quick guide on paper

All of these items are customer/OEM specific.

10. Time schedule.

This section is confidential – only achievable under specified circumstances.

11. Cost calculations

This section is confidential – only achievable under specified circumstances.

12. Quality, Conformance and compliance testing

12.1. Bluetooth Logo certification

The Phone Module is Bluetooth™ logo certified, under those circumstances available approximately 2 months before ready to ship. Refer to www.bluetooth.com for current available test specifications.

12.2. Safety approvals

Refer to the document “Digianswer Product Approvals & Certifications” for a listing of Digianswer safety requirements.

12.3. Type approvals

Refer to the document “Digianswer Product Approvals & Certifications” for a listing of Digianswer type approval requirements.

12.4. WHQL compliance

This compliance is yet TBD. As writing, no such compliance exists for Bluetooth products.

12.5. Environmental testing

The Phone Module will be exposed to a ALT test series verifying the quality of the product.