
Software Requirements Specification

for

Remote Access

Version 1.0 approved

LMTechnologies Ltd.

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Revision History

Name	Date	Reason For Changes	Version
Kanwalpreet Singh	03-02-09	Initial Draft	1.0

1. Introduction

1.1 Purpose

The purpose of this document is to give a brief overview of remote access feature incorporated in LM048 firmware. Remote access offers configuration of a local LM048 Bluetooth device by remote connected Host SPP application.

1.2 Document Conventions

The terms remote application and remote SPP Host Application have been used interchangeably throughout this document.

1.3 Intended Audience and Reading Suggestions

The document is intended for developers, marketing staff and product testing team to help them understand the remote access mechanism. This document mentions command structure, handshake and configuration parameters relevant to remote access mode.

1.4 Project Scope

Remote access allows configuration of LM048 device from a remote connected Host SPP application. Different settings such as UART Baud rate can be configured as required by sending the specified commands and then waiting for command response.

1.5 References

- 1) LM048 Product Manual.

2. Overall Description

2.1 Product Perspective

The remote access is an advanced feature implemented to remotely control LM048 device operation. This feature will only work with a remote application that confirms to the command structure and handshaking protocol defined in the concluding sections.

2.2 Product Features

Remote Access Include:

- 1) Configure remote device Uart Baud Rate during active connection.

2.3 Operating Environment

The remote access feature is available in LM048 firmware versions later than v4.50.

2.4 Design and Implementation Constraints

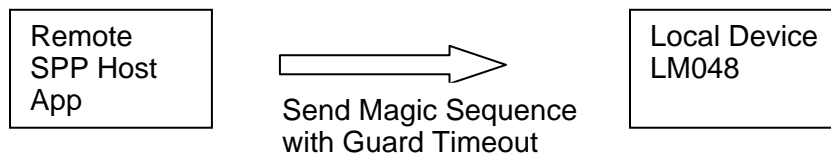
The handshake involved in entering remote access mode may fail in certain circumstances where the handshake sequences are sent without confirming to the timing restrictions. The feature will not work with a remote connected device such as LM048 or any other SPP device unless the remote application implements the remote access handshakes and commands.

3. Software Features

3.1 Remote Access Handshake Sequence

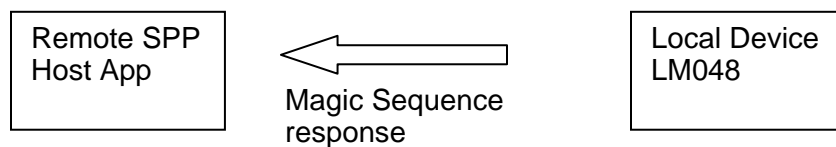
The remote access mechanism involves few handshakes before remote configuration is executed. The remote application must confirm to handshake protocol for remote configuration as outlined below:

3.1.1 Send Magic Sequence to Enter Remote access mode:



To put the local connected device in remote configuration mode, remote host application must send the magic sequence with a guard time. Remote application must stop sending any data once magic sequence has been sent and should wait for response from local device. The magic sequence will be checked by local device. If the sequence received doesn't match with magic sequence, the local device will transmit it on serial port considering it to be part of data transfer.

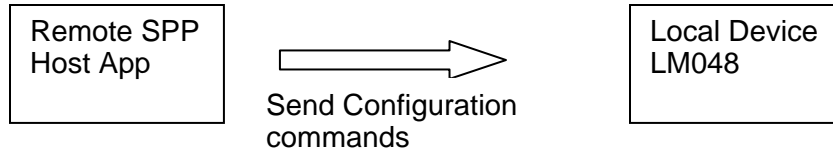
3.1.2 Wait for magic sequence response:



The remote application must wait for response from local device after sending the magic sequence. The response must be checked to verify whether the local device has entered remote access mode or not. If the response doesn't match the desired

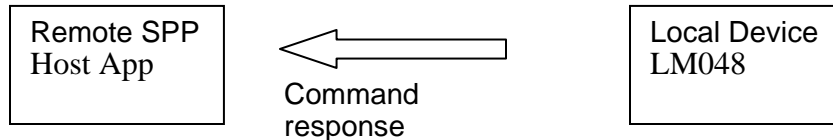
sequence then received response must be considered as part of data transfer. If the desired response is received then remote application must send the command sequence for remote configuration.

3.1.3 Configuration Commands in remote access mode:



Remote application will send the remote configuration commands and then wait for command responses. If the command opcode and parameters are valid then local device will perform the configuration. Otherwise, the command will be rejected and error response will be sent to remote application.

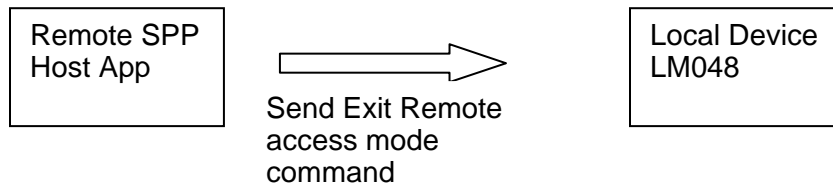
3.1.4 Wait for command response:



The remote application must wait for command response before sending next configuration command.

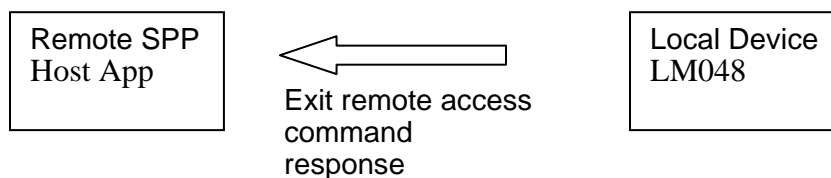
Steps 3.1.3 and 3.1.4 will be repeated till all configuration commands are executed.

3.1.5 Exit remote access mode:



To exit the remote access mode and switch to data transfer mode, the remote application must send the Exit remote command and wait for response.

3.1.6 Exit remote access mode response:



When response of exit remote access command is received, the remote application and the local device must switch to data transfer mode.

3.2 Communication Parameters

3.2.1 Magic Sequence

The Magic sequence “0xAA 0xAA 0xAA 0xAA 0xAA 0xAA 0xAA 0xAA” must be sent by remote application with Guard time of 500-1000 msec.

3.2.2 Magic Sequence Response

Successful Response for magic sequence is “0xAA 0xAA”.

3.2.3 Command Structure

The command structure consists of Command OpCode(1 byte) followed by command parameter (1 byte).

Command Opcode	Command Parameter
1 Byte	1 Byte

3.2.3.1 Change Baud Rate Command

Command	Opcode	Command Parameter
Change UART Baudrate	0x01	0x01 - 9600 bps 0x02 - 19200 bps 0x03 - 38400 bps 0x04 - 57600 bps 0x05 - 115200 bps

3.2.3.2 Exit Remote Access mode

Command	Opcode	Command Parameter
Exit Remote Access Mode	0x00	0x80

3.2.4 Command Response Structure

The response consists of Command OpCode (1 byte) followed by status (1 byte).

Command Opcode	Status
1 Byte	1 Byte

3.2.4.1 Change Baud Rate Response

Response Type	Cmd Opcode	Status
Change UART Baudrate	0x01	0x00 - Success 0x01 - Fail

3.2.4.2 Exit Remote Access mode response

Response Type	Cmd Opcode	Command Parameter
Exit Remote Access Mode	0x00	0x00 – Success 0x01 - Unable to exit

4. Dependencies and Impact on performance

4.1 Dependencies

The remote access feature will be available only when enabled in local LM048 device. By default, this feature is enabled.

4.2 Impact on Data Throughput

Local LM048 device constantly searches the magic sequence in the data stream received from the remote application, the data throughput reduces substantially. If remote access feature is not required by remote application, then this feature must be disabled in local device by using AT command (see References for details) for maximum data throughput supported by LM048 device.

Appendix A: Glossary

Aberrations used:

BT	Bluetooth
SPP	Serial Port Profile
LM048	BT2.0+EDR Class1 serial adapter
SPP	Serial Port Profile