Radiocrafts
Embedded Wireless Solutions

Application Note AN006

File transfer using SPPIO

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Introduction

This application note describes how to use the Serial Port Profile with I/O mapping (SPPIO) application profile to transfer data files larger than the buffer size.

The RC2200AT-SPPIO module has a default buffer size of 64, and 68 is the absolute maximum. If data files larger than 68 bytes shall be transferred, precaution must be taken to avoid jamming of the transmitting module.

There are two alternatives:

1. Set the Packet Length to 1, and send one byte per packet over the air. The spacing between each character sent to the module must be large enough for the module to transmit the packet and empty the buffer
2. Use hardware handshake to hold-off data from the host while the transmitting module is emptying its buffer

Do note that Xterminal or other software handshake protocols will not work on the SPPIO as it is a half-duplex radio.

File transfer with Packet Length set to 1

The transmitting module must be configured like this:
PACKET_LENGTH = 1 (ATS7=1)
All other parameters are factory default values.

HyperTerminal (with 19200, 8, 1, N) must be configured as this:
(File – Properties – Settings – ASCII Setup…)
Character delay = 10 ms
Line delay = 10 ms
'Append line feeds to incoming line ends' shall be ticked
'Wrap lines that exceed terminal width' shall be ticked

In HyperTerminal use Transfer – Send text file… to send a data file.

This setting will make the module transmit a data packet on the air as soon as one character is received. Each packet will therefore contain one payload character. The delay configured in the terminal program ensures the module will have the time to transmit the packet before the next character arrives into the UART buffer.

As for all RF links, there can be bit errors due to RF interference on the raw packet data. The CRC error detection will discard such packages, and this will show up like one missing character at the receiver end.

File transfer with hardware handshake

The transmitting module must be configured like this:
UART_FLOW_CTRL = 1
PACKET_LENGTH = 64 (which is default, or any value 2-68). Using 64 ensures low overhead.
AT_ECHO_CHARACTER = 0 (ATS20=0)
All other parameters are factory default values.

HyperTerminal (with 19200, 8, 1, N) must be configured as this:
(File – Properties – Settings – ASCII Setup…)

Character delay = 0 ms
Line delay = 0 ms
'Append line feeds to incoming line ends' shall be ticked
'Wrap lines that exceed terminal width' shall be ticked
(File – Properties – Configure)
Flow control: Hardware

The CTS signal from the module to the PC must be connected. Using the RC2200DB Demo Board, a jumper must be inserted at the pin row between the module itself and the RS232 driver. Please refer to the RC2200DK User Manual for details.

In HyperTerminal use Transfer – Send text file… to send a data file.

This setting will make the module transmit a data packet on the air as soon as 64 characters are received, and then holding off the host by activating the CTS line. Each packet will therefore contain 64 payload characters. The hardware handshake ensures the module will have the time to transmit the packet before more characters arrive into the UART buffer.

As for all RF links, there can be bit errors due to RF interference on the raw packet data. The CRC error detection will discard such packages, and this will show up like 64 missing characters at the receiver end.

Document Revision History

Document Revision	Changes
1.0	First release

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