XStream modules as repeaters

Contents

MaxStream

Application Note

XST-AN001a

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Abstract

Three flexible methods for configuring MaxStream XStream modules for operation as repeaters.

Store and forward repeater

The modules can be configured as simple "store and forward" repeaters by attaching a hardware loopback ("repeater") adapter that loops received data back into the module for retransmission. This mode allows the radio to store and forward up to 430 bytes.

Usage Guidelines

- Two loopback repeaters cannot be within transmission range of each other as they will continually repeat data back and forth to each other.
- The module initiating the communication will receive an echo of its own transmitted packet.
- The repeater will buffer incoming received data and retransmit it when there is a break in receiving of more data.
- In the absence of a loopback adapter, use a paper clip to short between TXD and RXD, pins 2 & 3, of the DB9 female RS232 connector.

Streaming repeater

Because of the great price value of the modules, it is cost effective to configure two modules ('module 1' & 'module 2') to act as a streaming repeater between a source and a destination module. To configure this repeater, assign the two modules each to a different channel (ATHP) and connect the serial ports using a null-modem connection. Module 1 should share a channel with the source module and module 2 should share a different channel with the destination module. The source module will transmit data to module 1 which passes through the null-modem connection to module 2 which forwards the data to the destination.

This configuration allows for less delay in the transmission as the repeater node can both receive and transmit at the same time. It allows for several repeaters in a row in order to reach a destination.

Usage Guidelines

- This system works best if either the packets are small or if modules can be configured with retries (ATRR) to overcome any interference the module may cause between them.
- Multiple streaming repeaters can be cascaded to extend the reach even further, each leg of the system should use a separate channel.
- Data travels through the repeater fastest using this method. May be used to transfer large files.
- A source radio can roam among several repeaters as long as the "module 1" in each repeater uses a common channel, i.e. ATHP=0 for all "module 1"s.

Application specific repeater

Because MaxStream modules operate in a peer-to-peer mode (no module must be designated a master of the network) a system designer can take advantage of flexible network topologies. Devices attached to each of the modules can accept data received by the attached module before using the same module to rebroadcast the data to a device further away. MaxStream customers have deployed self configuring and self healing networks by developing sophisticated algorithms that take advantage of this feature unique to MaxStream modules.

Usage Guidelines

- Devices attached to the modules must have their own addressing capability and either "store and forward" or routing capability.

- System designers may use a certain channel (ATHP) for discovery and configuring the network while using other channels for extended communication. This allows technique allows for more efficient data transfers while minimizing latency and interference.

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