



MAC Receiver Component

FM3TR Waveform Reference Implementation

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1 Component Name

MAC_Receiver

2 Component Processing Summary

The MAC Receiver interfaces with the FM3TR receiver, the RsBlockDecoder, the RF channel emulator, and the MAC XMIT components for error, control, and hop sequence information.

3 Where used

The MAC receiver is used in all extended FM3TR data mode waveforms.

4 Data Input and Output Ports

The MAC receiver contains no data ports.

5 Control Interfaces

The MAC receiver inherits the control interfaces from CF::Resource.

Additionally, the component has four control interfaces:

MAC_ErrCtrl_Input	Packet error control feedback input interface
MAC_FlowCtrl_Input	Flow control input for adaptive data rate
MAC_Feedback_Output	Feedback interface for the MAC XMIT component
MAC_HopCtrl_Output	Hop control interface for the RF channel emulator component

6 Component SCA Properties

Aside from the DLL execparams, the MAC receiver has no additional SCA properties.

7 Component Attributes/Key Variables

Below is a list of several key variables to the MAC receiver with a brief description of their purpose.

m_error_control_state	Flag set for ACK/NAK depending upon the correct reception of the packet
m_flow_control_state	Flow state set depending upon “water” level at the receiver. This level is indicative of the

FM3TR receiver's input buffer.

8 Processing Details

The MAC receiver is a special component that interfaces with several component on the receiver side of the waveform to pass control information to the transmitter. Three specific pieces of information are observed:

1. *Error control.* Packets received by the RsBlockDecoder are detected as an acknowledgment (ACK) or negative acknowledgment (NAK) contingent upon them being decoded correctly. Erroneous packets are intended for retransmission.
2. *Flow control.* A “water” mark is sent to indicate the state of the FM3TR receiver component's input buffer. If the buffer is nearly full, a “high water mark” is sent which ultimately indicates the transmitter should pause data flow until an “empty” or “low water mark” signal is sent.
3. *Hop control.* The hop control interface is intended to signal the RF channel emulator which hopping frequency and the hopping pattern to use.