

Contents

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1.0 Introduction

2.0 Loopback

3.0 Digital Loopback (DLBK)

4.0 Remote Loopback (RLBK)

5.0 ST-BUS Loopback (SLBK)

6.0 Payload Loopback (PLBK)

7.0 Metallic Loopback (MLBK)

8.0 Remote Time Slot Loopback (RTSL) and Local Time Slot Loopback (LTSL)

1.0 Introduction

This application note describes an overview of the loopback functions for MT9076B T1/E1/J1 single chip transceiver.

Loopback modes are useful for diagnostic testing of the transceiver or equipment. In loopback mode, the transceiver loops the signal from one end of the device to the other end of the sending device, after it has passed through a network or across a particular link. The signals from both ends can be compared for any discrepancy to help to isolate the fault in the transmission path.

2.0 Loopback

There are six types of loopback supported by MT9076B T1/E1/J1 single chip transceiver.

1. Digital loopback (DLBK)
2. Remote loopback (RLBK)
3. ST-BUS loopback (SLBK)
4. Payload loopback (PLBK)
5. Metallic loopback (MLBK)
6. Per time slot remote and local loopback (RTSL, LTSL)

3.0 Digital Loopback (DLBK)

This loopback is useful for testing and debugging applications. In Digital loopback (DLBK), the MT9076B loops data from the transmit side backplane to the receive side backplane and allows the user to connect DSTi to DSTo at the framer/LIU interface using the Coding and Loopback Control Word (Page 1, Address 15H).

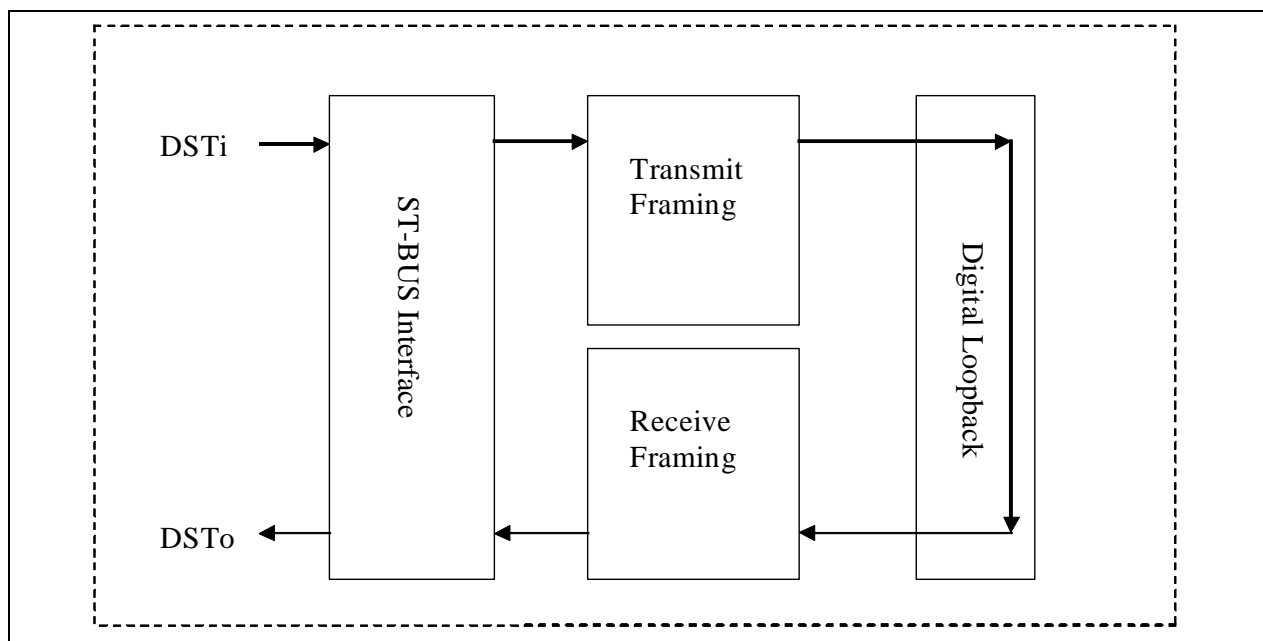


Figure 1 - Typical Digital Loopback Operation

When DLBK bit is set high, the digital stream to the transmit LIU is looped back in place of the digital output of the receive LIU. Data coming out of DSTo will be a delay version of DSTi. When DLBK bit is low, this feature is disabled.

4.0 Remote Loopback (RLBK)

This loopback allows the user to test the far end of the equipment link. In Remote loopback (RLBK), data received at RTIP and RRING is transmitted back to TTIP and TRING through the jitter attenuator. Data continues to pass through the receive side framer of the MT9076B as it would normally. Data from the transmit-side framer is ignored.

When the RLBK bit of the Coding and Loopback Control Word (Page 1, Address 15H) is set high, Signal received at RTIP and RRING loops through the LIU and the Jitter attenuator to TTIP and TRING. When RLBK bit is low, this feature is disabled.

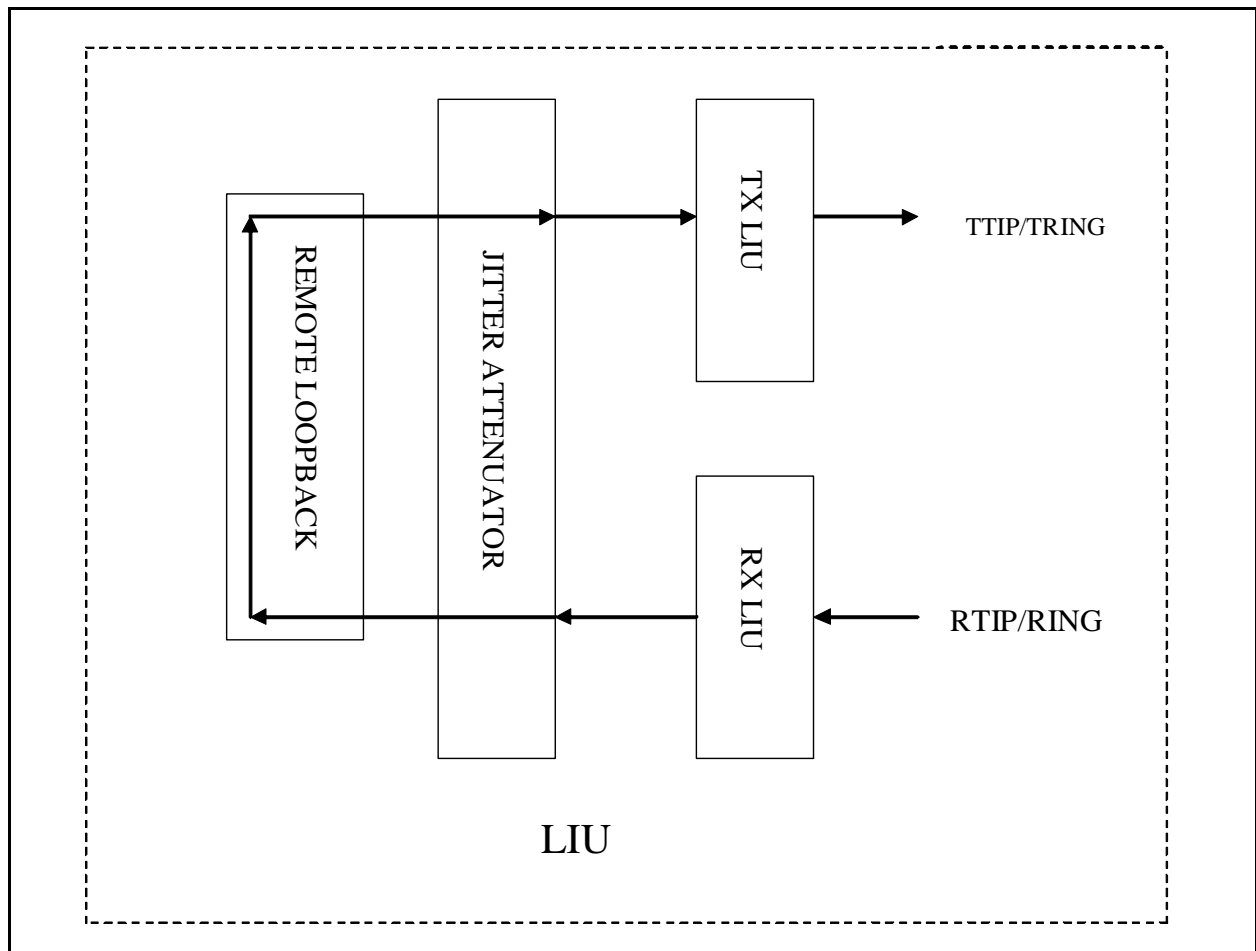


Figure 2 - Typical Remote Loopback Operation

5.0 ST-BUS Loopback (SLBK)

This loopback uses the ST-BUS interface section only and bypasses the LIU and framer section of the device. ST-BUS loopback (SLBK) enables the transmit data from the backplane to be looped back onto the receive side of the backplane.

When bit SLBK bit of the Coding and Loopback Control Word (Page 1, Address 15H) is set high, the ST-BUS stream DSTi loops back to DSTo at the ST-BUS/Framer interface. Data coming out of DSTo will be a delay version of DSTi. When SLBK bit is low, this feature is disabled.

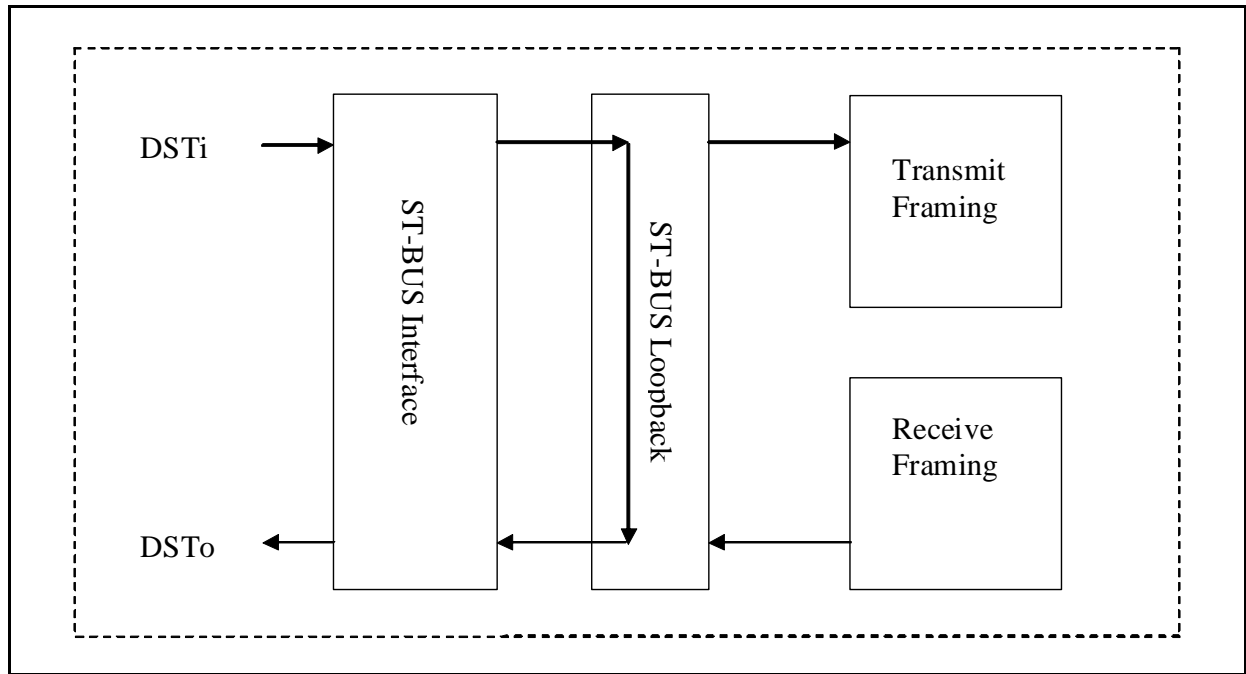


Figure 3 - Typical ST-BUS Loopback Operation

6.0 Payload Loopback (PLBK)

Payload loopback is useful to verify that the user is receiving a properly formatted data pattern. This loopback re-frames and re-formats the data.

When the bit PLBK of the Coding and Loopback Control Word (Page 1, Address 15H) is set high, payload loopback is activated. Received signal from RTIP and RRING, passes through the LIU and the framer and loops back to TTIP and TRING. When PLBK bit is low, this feature is disabled.

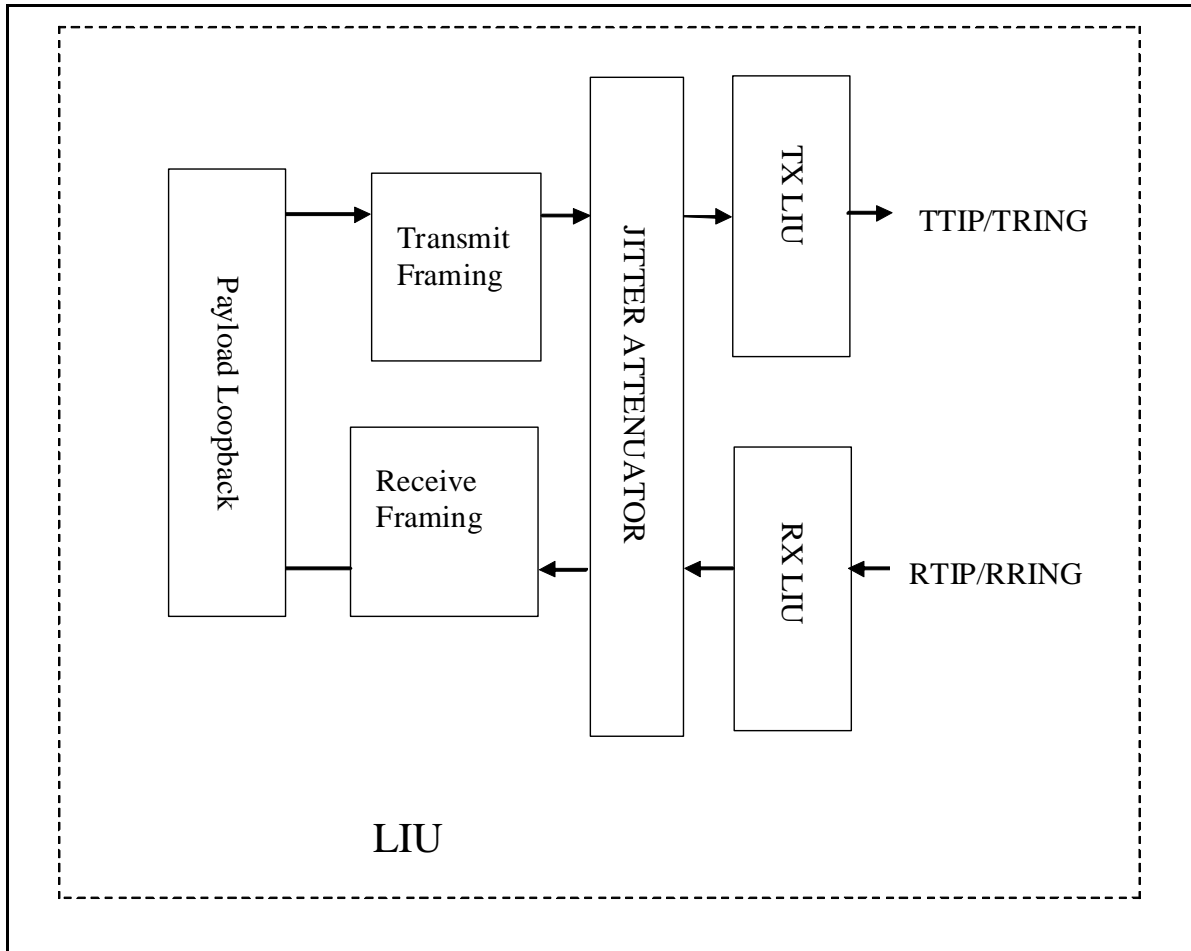


Figure 4 - Typical Payload Loopback Operation

7.0 Metallic Loopback (MLBK)

Metallic loopback is useful to isolate the external signal RTIP and RRING from the receiver and internally connect the analog outputs TTIP and TRING to the receiver analog inputs RTIP and RRING. Data received at RTIP and RRING is replaced with the data being transmitted.

When the bit MLBK of the Coding and Loopback Control Word (Page 1, Address 15H) is set high, metallic loopback is activated. When MLBK bit is low, this feature is disabled.

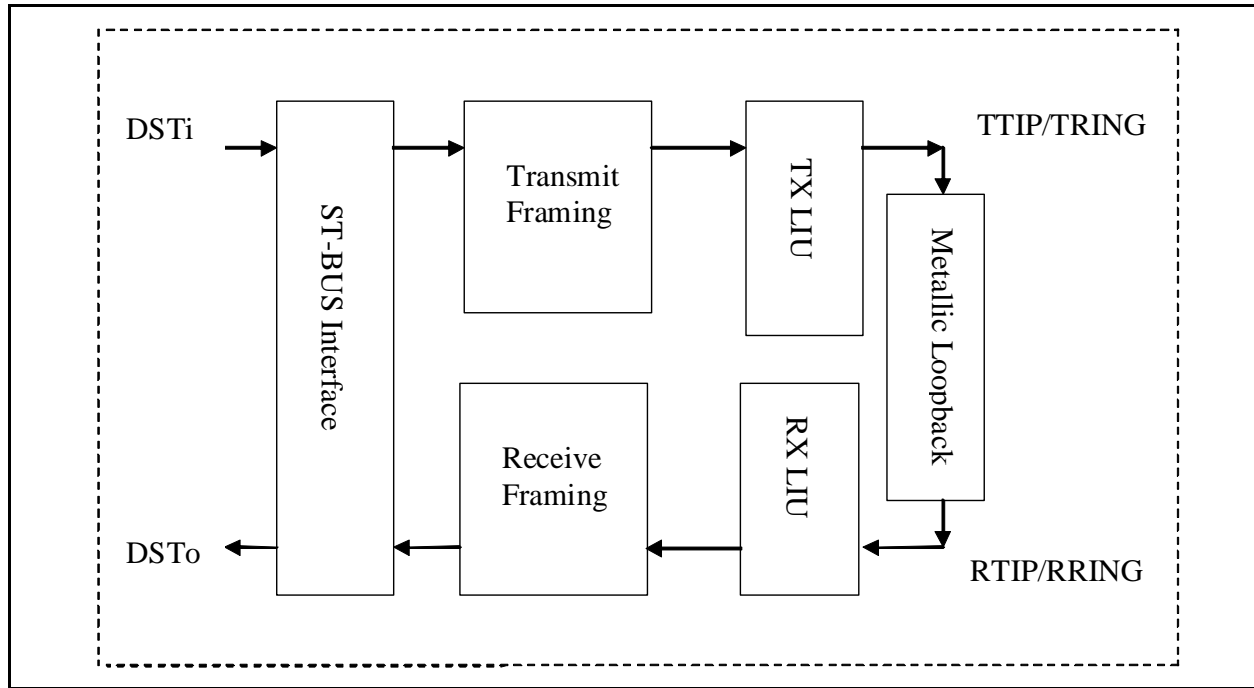


Figure 5 - Typical Metallic Loopback Operation

8.0 Remote Time Slot Loopback (RTSL) and Local Time Slot Loopback (LTSL)

Remote time slot loopback is used to loop around receive PCM time slots to the transmit PCM time slots. Local time slot loopback is used to loop around DSTi time slots towards the DSTo time slots.

While in T1 mode, when bit 5 (RTSL) in the Per Time Slot Control Words (Pages 7 and 8) is set to one, the corresponding DS1 receive time slot is looped to the corresponding DS1 transmit time slot. This received time slot will also be present on DSTo. If zero, this loopback is disabled.

When bit 4 (LTSL) is set to one, the corresponding DS1 transmit time slot is looped to the corresponding DS1 receive time slot. This transmit time slot will also be present on the transmit DS1 stream. If zero, this loopback is disabled.

While in E1 mode, when bit 5 (RTSL) in the Per Time Slot Control Words (Pages 7 and 8) is set to one, the corresponding PCM 30 receive time slot is looped to the corresponding PCM 30 transmit time slot. This received time slot will also be present on DSTo. If zero, this loopback is disabled.

When bit 4 (LTSL) is set to one, the corresponding PCM 30 transmit time slot is looped to the corresponding PCM 30 receive time slot. This transmit time slot will also be present on the transmit PCM 30 stream. If zero, this loopback is disabled.

Remote time slot loopback and local timeslot loopback should not be simultaneously activated in the same time slot.



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