The following extract of the *External Mode target debug message log* (level 2) is analysed to determine the cause of a deadlock situation observed when using the External Mode communications interface. For details, [see page 26 ff](#explanation).

-[2] CheckExtSerialPacket: Suspending processing until there are 17 bytes in the comms line buffer / RX ring buffer.<LF>

<1 0x7E 0x7E 0x1 0x8 0x0 0x0 0x0 0x0 0x0 0x0 0xA 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x1 0x0 0x0 0x0 0x8 0x0 0x0 0x0 0xA 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x2<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] SendPktToHost: Sending action Packet type is EXT\_MODEL\_START\_RESPONSE (22) with size 0<LF>

[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x8<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x16<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

-[2] SendPktToHost: ... action and size sent.<LF>

[1] model\_init: START\_PACKAGE received. Starting Model...<LF>

[<ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

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-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°>1] m<ISR^°>ain:<ISR^°> Star<ISR^°>ting <ISR^°>RT pr<ISR^°>ocess<ISR^°>es -<ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°>---<ISR^°>-----<ISR^°>-----<ISR^°>-----<ISR^°>----<ISR^°------<ISR^°>----<LF><ISR^°>

<ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3C<LF>

-[2] serial\_set\_string: Sending 0xA3<LF>

-[2] serial\_set\_string: Sending 0xD7<LF>

-[2] serial\_set\_string: Sending 0xA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0x23<LF>

-[2] serial\_set\_string: Sending 0xD7<LF>

-[2] serial\_set\_string: Sending 0xA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x4C<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0x75<LF>

-[2] serial\_set\_string: Sending 0xC2<LF>

-[2] serial\_set\_string: Sending 0x8E<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0xA3<LF>

-[2] serial\_set\_string: Sending 0xD7<LF>

-[2] serial\_set\_string: Sending 0xA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0xF5<LF>

-[2] serial\_set\_string: Sending 0xC2<LF>

-[2] serial\_set\_string: Sending 0x8E<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x19<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xF<LF>

-[2] serial\_set\_string: Sending 0x5C<LF>

-[2] serial\_set\_string: Sending 0x28<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x33<LF>

-[2] serial\_set\_string: Sending 0x33<LF>

-[2] serial\_set\_string: Sending 0x33<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x23<LF>

-[2] serial\_set\_string: Sending 0xD7<LF>

-[2] serial\_set\_string: Sending 0xA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x4C<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x38<LF>

-[2] serial\_set\_string: Sending 0x51<LF>

-[2] serial\_set\_string: Sending 0xEA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x66<LF>

-[2] serial\_set\_string: Sending 0x66<LF>

-[2] serial\_set\_string: Sending 0x66<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x4C<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x80<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x61<LF>

-[2] serial\_set\_string: Sending 0x47<LF>

-[2] serial\_set\_string: Sending 0xAC<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x8C<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x75<LF>

-[2] serial\_set\_string: Sending 0xC2<LF>

-[2] serial\_set\_string: Sending 0x8E<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

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-[2] serial\_set\_string: Sending 0x1<LF>

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-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

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-[2] serial\_set\_string: Sending 0x85<LF>

-[2] serial\_set\_string: Sending 0x1E<LF>

-[2] serial\_set\_string: Sending 0xB8<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0xA6<LF>

-[2] serial\_set\_string: Sending 0x66<LF>

-[2] serial\_set\_string: Sending 0x66<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

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-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

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-[2] serial\_set\_string: Sending 0x1<LF>

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-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x8F<LF>

-[2] serial\_set\_string: Sending 0x5C<LF>

-[2] serial\_set\_string: Sending 0x28<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0xB3<LF>

-[2] serial\_set\_string: Sending 0x33<LF>

-[2] serial\_set\_string: Sending 0x33<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3F<LF>

-[2] serial\_set\_string: Sending 0xC0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xA3<LF>

-[2] serial\_set\_string: Sending 0xD7<LF>

-[2] serial\_set\_string: Sending 0xA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xAE<LF>

-[2] serial\_set\_string: Sending 0x14<LF>

-[2] serial\_set\_string: Sending 0x7A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3D<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°>**[1] E**<ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xB8<LF>

-[2] serial\_set\_string: Sending 0x51<LF>

-[2] serial\_set\_string: Sending 0xEA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x4C<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0xCC<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°>**xtS**<ISR^°>**etPkt**<ISR^°>**: wai**<ISR^°>**tFor**<ISR^°>**Ack =**<ISR^°> **FALS**<ISR^°>**E ->** <ISR^°>**clear**<ISR^°> **to s**<ISR^°>**end**<LF><ISR^°>

**-[2]**<ISR^°> **seri**<ISR^°>**al\_se**<ISR^<1 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3><LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

°><ISR^°><ISR^°>**t\_s**<ISR^°>**tri**<ISR^[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xC2<LF>

-[2] serial\_set\_string: Sending 0x8F<LF>

-[2] serial\_set\_string: Sending 0x5A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

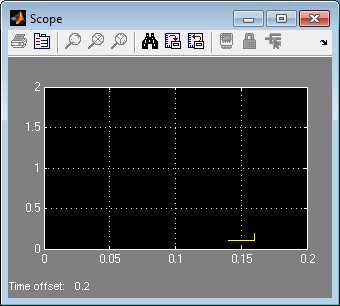
[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°>**ng:**<ISR^°> **Send**<ISR^°>**ing** <ISR^°>**0x7E**<LF><ISR^°>

**-[2]**<ISR^°> **seri**<ISR^°>**al\_s**<ISR^°>**et\_st**<ISR^°>**ring:**<ISR^°> **Send**<ISR^°>**ing** <ISR^°>**0x7E**<ISR^°><LF>

**-[2**<ISR^°>**] ser**<ISR^°>**ial\_s**<ISR^°>**et\_st**<ISR^°>**rin**<ISR^

… at this stage (t = 0x3EC28F5A = 0.37999994 s ≈ 0.38 s, signal value: 0x3F999999 = 0.29999998 ≈ 0.3, see scope block below), the External Mode communication appears to be stuck. The ISR is started but never reaches its exit point; debug messages are no longer transmitted…



Halting target execution reveals that the code gets stuck in function *ExtSetPkt*: The value of integer variable *deadlockCntr* shown in the debugger window below hints at a deadlock situation: *deadlockCntr* has gone from 0 through at least one sign reversal at +32767 / -32768 and currently assumes the arbitrary value of -10523. In addition, variable *numPending* indicates that there are no pending packets available for processing. Since *isFIFOFreeEmpty()* returns *false* the section for breaking the deadlock is never entered – queue *FIFOFree* is empty if all available FIFO buffers are in use. As this is not the case here, we have encountered a deadlock situation which has not been considered by the programmers of the External Mode interface.

Resuming target code execution and issuing user action “Stop” causes an “EXT\_MODEL\_STOP” packet (0x0B) to be sent from host to target. The packet is intercepted from within blocked function *ExtSetPkt*, but does not help to break the deadlock:

(…)

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xC2<LF>

-[2] serial\_set\_string: Sending 0x8F<LF>

-[2] serial\_set\_string: Sending 0x5A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x99<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°><ISR^°>**ng:**<ISR^°> **Send**<ISR^°>**ing** <ISR^°>**0x7E**<LF><ISR^°>

**-[2]**<ISR^°> **seri**<ISR^°>**al\_s**<ISR^°>**et\_st**<ISR^°>**ring:**<ISR^°> **Send**<ISR^°>**ing** <ISR^°>**0x7E**<ISR^°><LF>

**-[2**<ISR^°>**] ser**<ISR^°>**ial\_s**<ISR^°>**et\_st**<ISR^°>**rin**<ISR^**<2 0x7E 0x7E 0x1 0x8 0x0 0x0 0x0 0x0 0x0>**<LF>

[ 0x7E 0x7E 0x1 0x0 0x0 0x0 0x8 0x0 0x0 0x0 **0xB** 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x2<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

The very last packet shown in the above log is the ACK\_PACKET sent by the target to acknowledge the receipt of the “EXT\_MODEL\_STOP” packet. The debugger reveals that variable *numFIFOPkts* has increased from “0” to “1” and pointers *FreeFIFOHead*, *PktFIFOHead* as well as *PktFIFOTail* have been modified. This is consistent with the storage of the received packet in the PktFIFO queue and the corresponding removal of a packet from the FreeFIFO queue.

User action “Disconnect” initiates the release of the model on the host. Since the target does not respond to this request, the host detects a timeout of more than 60 s and forces the External Mode interface on the host to disconnect.

The target code intercepts an “EXT\_DISCONNECT\_REQUEST” packet (0x01). Note that, as before, the receipt of this packet occurs from within *ExtSetPkt* (🡪 “**<2**”), i. e. the target is still waiting for an ACK\_PACKET to break the deadlock.

(…)

**<2 0x7E 0x7E 0x1 0x8 0x0 0x0 0x0 0x0 0x0>**<LF>

[ 0x7E 0x7E 0x1 0x0 0x0 0x0 0x8 0x0 0x0 0x0 **0x1** 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

-[2] ExtModeMalloc: Current request: 418 bytes<LF>

-[2] ExtModeMalloc: Unaligned allocation address: 0x19D6<LF>

-[2] ExtModeMalloc: Need 2 alignment byte(s)<LF>

-[2] ExtModeMalloc: Adjusted size: 420<LF>

-[2] ExtModeMalloc: Aligned allocation address: 0x19D4<LF>

-[2] ExtModeMalloc: Bytes allocated: 4292, bytes free: 2208<LF>

-[2] ExtModeMalloc: Current request: 418 bytes<LF>

-[2] ExtModeMalloc: Unaligned allocation address: 0x1832<LF>

-[2] ExtModeMalloc: Need 2 alignment byte(s)<LF>

-[2] ExtModeMalloc: Adjusted size: 420<LF>

-[2] ExtModeMalloc: Aligned allocation address: 0x1830<LF>

-[2] ExtModeMalloc: Bytes allocated: 4712, bytes free: 1788<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x2<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

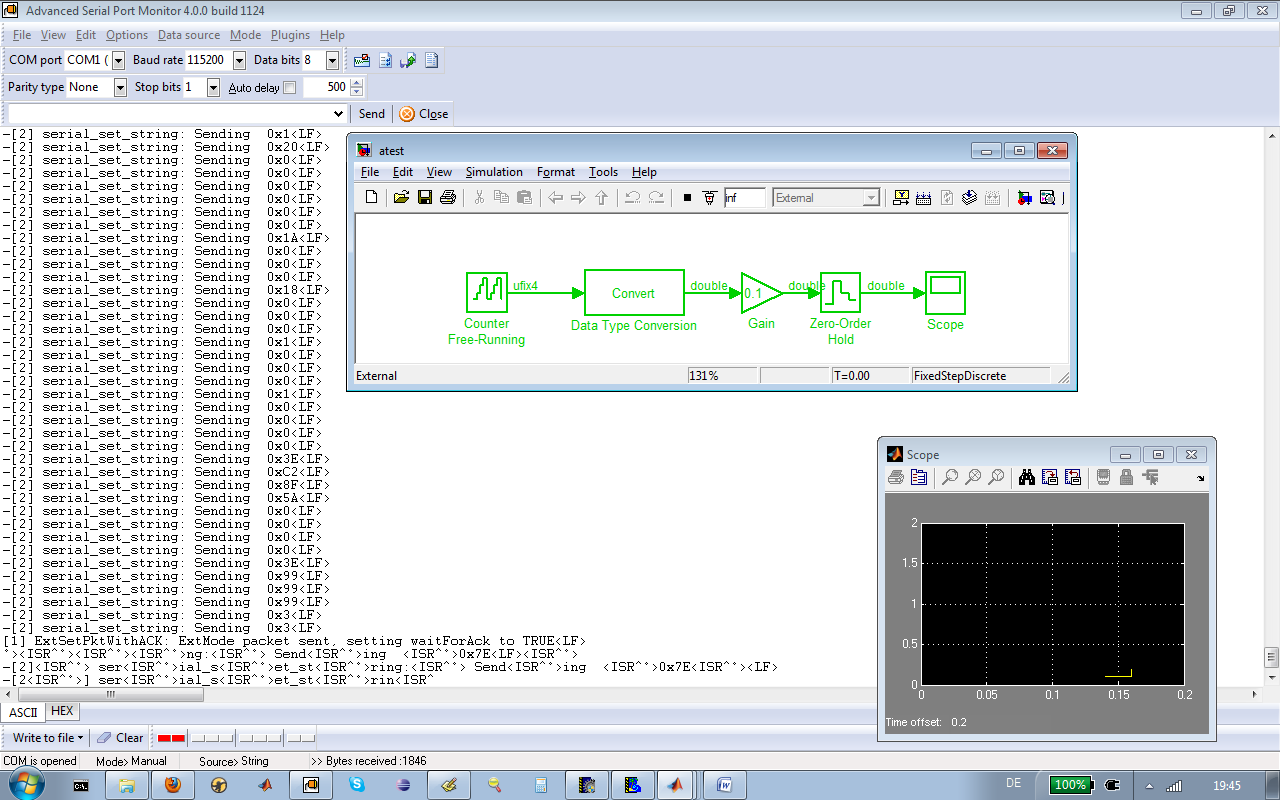
-[2] serial\_set\_string: Sending 0x3<LF>

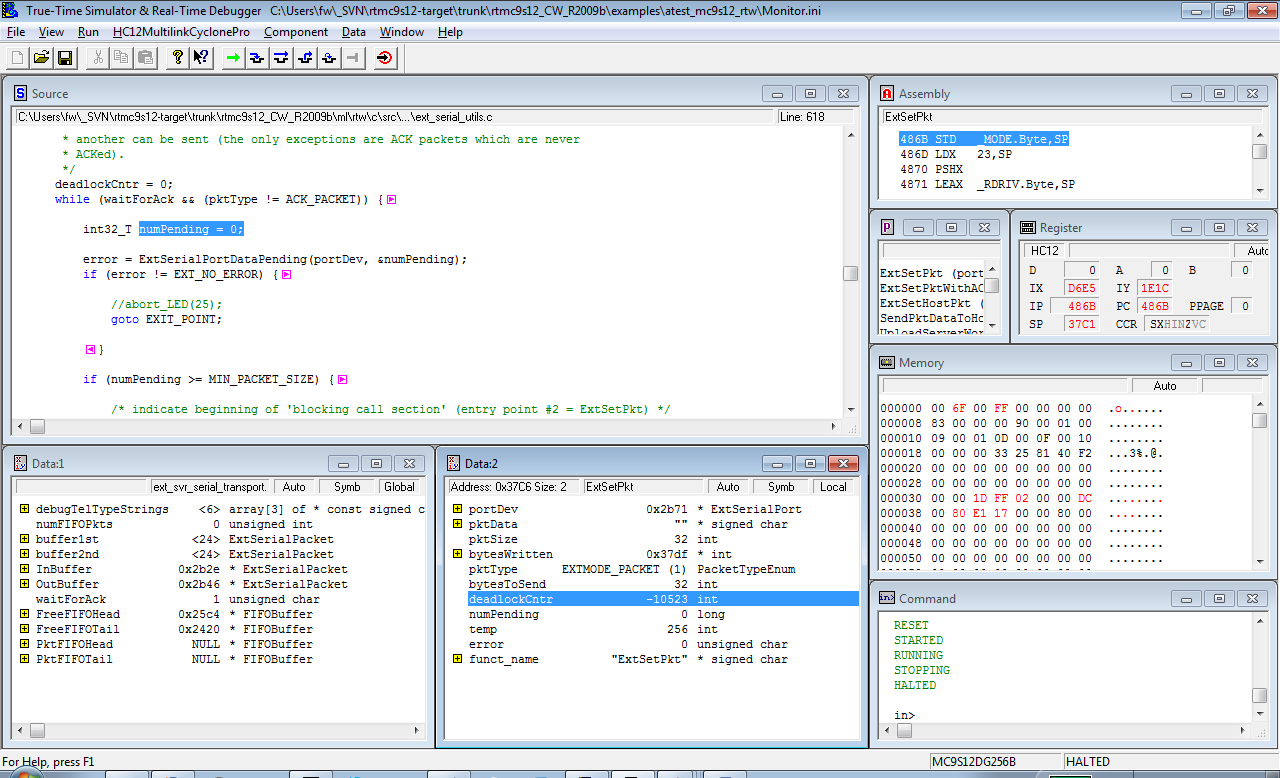
As before, the packet is stored in the PktFIFO buffer thereby removing the last available packet from the FreeFIFO queue. This allows the code to progress into the section which the designers of the External Mode interface thought might help breaking the deadlock.

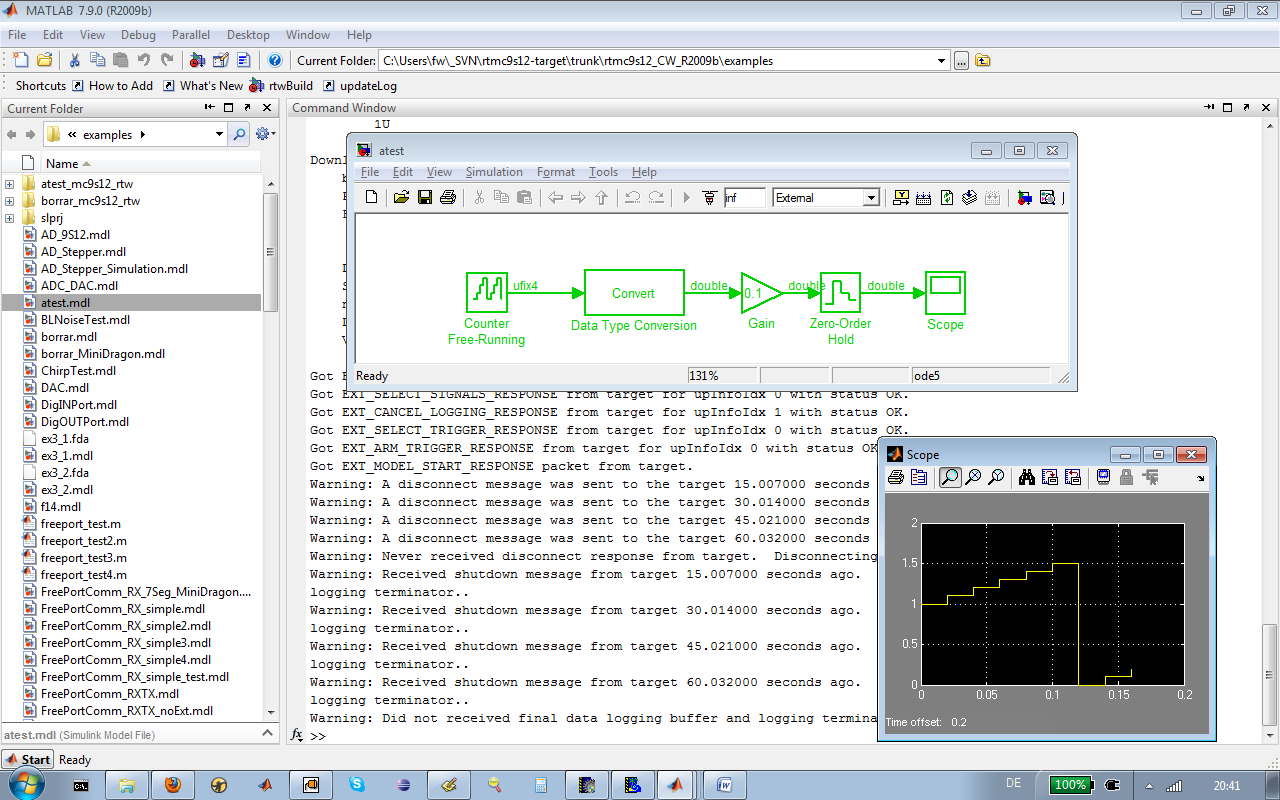
A batch of 2 additional FIFO buffers is allocated (2x 400 bytes plus 18 bytes for the buffer administration structures) and an ACK\_PACKET is sent to the host to acknowledge the receipt of the “EXT\_DISCONNECT\_REQUEST” packet. However, the deadlock is not broken by this, as memory shortage was not the problem in the first place. The target code remains stuck in *ExtSetPkt*.

Note:

Since the host has been properly released (after 60 s), resetting the target allows the host to reconnect and start code execution again. The entire process is thus repeated. The target gets stuck at exactly the same moment in time (t = 0x3EC28F5A = 0.37999994 s ≈ 0.38 s, signal value: 0x3F999999 = 0.29999998 ≈ 0.3, see above), i. e. this is a reproducible phenomenon.







Increasing the size of the External Mode transmission buffer (SCI1) from 1024 to 2048 bytes causes the communication system to get stuck at approximately the same location (3 data packages *earlier*, i. e. at t = 0x3EA3D70A = 0.32 s, signal value: 0x00000000 = 0, see below).

Observe that, prior to entering the deadlock situation, *ExtSetPkt* is called from some process outside the ISR to transmit a 32-byte packet (type: EXTMODE\_PACKET, t = 0x3EAE147A = 0.3399997 s ≈ 0.34 s, value: 0x3DCCCCCC = 0.09999994 ≈ 0.1). At this moment, variable *OutBuffer* still holds the previous EXTMODE\_PACKET (timestamp of t = 0x3EAED70A = 0.32, value: 0) and variable *waitForAck* is true.

Note that the process outside the ISR which calls *ExtSetPkt* is the background task:

while (startModel) {

rtExtModeOneStep(rtmGetRTWExtModeInfo(S),

rtmGetNumSampleTimes(S),

(boolean\_T\*)&rtmGetStopRequested(S));

}

At some stage during the call to *rtExtModeOneStep* from within the background task, the program flow is held within the potentially infinite while loop in *ExtSetPkt*:

while (waitForAck && (pktType != ACK\_PACKET)) {

(…)

}

The target is caught within this loop until the awaited ACK\_PACKET from the host is finally intercepted:

<ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°>**<2 0x**<ISR^**<2 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3>**<LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

This reveals the actual cause of the deadlock problem:

Log data indicates that *ExtSetPkt* repeatedly calls upon function *ExtSerialPortDataPending* to check the reception buffer for newly arrived packets / data bytes. Eventually, this function indicates the availability of a valid packet (at least MIN\_PACKET\_SIZE bytes). *ExtSetPkt* thus makes a call to *ExtGetPktBlocking* to retrieve the packet and move it to the *PktFIFO* queue for further processing. However, during this call, the ongoing background task is interrupted by the next core timer ISR. As the core timer process also triggers the execution of *rtExtModeOneStep*, function *ExtSetPkt* is entered again (re-entrance).

The detected ACK\_PACKET is thus moved to the *PktFIFO* queue and variable *waitForAck* is set to *false*, thereby triggering the transmission of the packet in *OutBuffer* (timestamp: t = 0x3EA3D70A = 0.32 s, signal value: 0x00000000):

<ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°><ISR^°>**<2 0x**<ISR^**<2 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3>**<LF>

[ 0x7E 0x7E 0x2 0x0 0x0 0x0 0x0 0x3 0x3 ]<LF>

[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;<LF>

[1] ExtSetPkt: waitForAck = FALSE -> clear to send<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x7E<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x20<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1A<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x18<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x1<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3E<LF>

-[2] serial\_set\_string: Sending 0xA3<LF>

-[2] serial\_set\_string: Sending 0xD7<LF>

-[2] serial\_set\_string: Sending 0xA<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x0<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

-[2] serial\_set\_string: Sending 0x3<LF>

[1] ExtSetPktWithACK: ExtMode packet sent, setting waitForAck to TRUE<LF>

°><ISR^°><ISR^°>**73 0**<ISR^°>**x7E 0**<ISR^°>**x2 0**<ISR^°>**x0 0x**<ISR^°>**0 0x0**<ISR^°> **0x0** <ISR^°>**0x1 0**<ISR^°>**x0><LF>**<ISR^°>

**[ 0x**<ISR^°>**7E 0x**<ISR^°>**7E 0x**<ISR^°>**2 0x**<ISR^°>**0 0x0**<ISR^°> **0x0** <ISR^°>**0x0 0**<ISR^°>**x3 0x**<ISR^°>**3 ]<LF>**<ISR^°>

**[1]**<ISR^

Upon terminating, the ISR sets variable *waitForAck* to true and returns control to the background task. The latter continues its operation – in this case debug function *ExtSerialPortPeekRB* resumes with the display of the current RX buffer contents. Note that the displayed information can no longer be relied on – the last two bytes are not 0x03 0x03 as expected, but seem to have changed to 0x01 0x00. The interruption has removed some bytes from the RX buffer, so the bytes we peek at are not necessarily valid anymore. However, the subsequent call to *GetExtSerialPacket* retrieves the next packet and moves it to *InBuffer*. This packet represents the acknowledgement from the host that the previously sent EXTMODE\_PACKET has been received correctly. Debug function *DisplayActualReceivedPacket* therefore displays a correctly received ACK\_PACKET.

Unfortunately, the next interrupt occurs before the background task can set variable *waitForAck* to false. As shown in the above log, the background task is still in the process of displaying debug message *“[1] ExtGetPktBlocking: Received ACK\_PACKET -> waitForAck = FALSE;”:*

/\* Process ACK packets, don't pass on to application. \*/

if (InBuffer->PacketType == ACK\_PACKET) {

PRINT\_DEBUG\_MSG\_LVL1("Received ACK\_PACKET -> waitForAck = FALSE;");

PRINT\_DEBUG\_MSG\_NL1;

**waitForAck = FALSE;**

goto EXIT\_POINT;

}

Consequently, the target gets stuck inside the call to *rtExtModeOneStep* (called from within the core timer ISR), as *waitForAck* remains true. Note that the host is operating correctly: From its point of view, all received packets have been correctly acknowledged, so there is no need to send another ACK\_PACKET.

This situation can be avoided in a number of ways:

* Function *ExtGetPktBlocking* is made a *critical code section*, i. e. interrupts are forbidden and re-enabled prior and after the call to this function, respectively. With regard to real-time performance, this is not a good option.
* Removal of the call to function *rtExtModeOneStep* from the core timer ISR.
* Deactivation of the call to function *rtExtModeOneStep* within the core timer ISR when the model code is being run, i. e. while variable *startModel* is true.
* Replacement of the “background task” by a real background task (RTOS) and removal of the call to function *rtExtModeOneStep* from all other foreground tasks.

At present, suggestion 2 has been implemented.