

Tx2 and TM encoder in use configuration for HR
File: H_CRP_TTC_T2HR.xls
Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the steps needed to change the TM bit rate to 1.5 Mbps when the downlink and the uplink are already established at 150 Kbps.

This procedure does not use the logical addressing, thus must be executed under Ground control (the commands used cannot be inserted in the MTL).

Summary of Constraints

TC(8,4,115,18) and TC(8,4,115,20), thus the status of the ASW function "TTC Management" has to be "running".

Note that:

- the value of the TM modulation index is always 1.2;
- the value of the Output power level is always - 4dBm;
- the External reference and Internal bit pattern generator are always OFF.

It is highlighted that the Ranging is not possible with high rate.

If the ASW function "On board Scheduling" is stopped the TCs can not be added into the MTL.

If the function is running, up to four time-tagged TCs are released per second.

It is recommended to command ON the coherent mode parameter by Ground only after confirmation of onboard lock.

Spacecraft Configuration

Start of Procedure

CDMU in default configuration;
Downlink active via TX2 and TWTA2;
TM bit rate equal to 150 Kbps;
XPND configuration: CM OFF or CM ON and RNG OFF or CM ON and RNG ON.

End of Procedure

CDMU in default configuration;
Downlink active via TX2 and TWTA2;
TM bit rate equal to 1.5 Mbps;
XPND configuration: CM unchanged and RNG OFF.

Reference File(s)

Input Command Sequences

Output Command Sequences

HRRT2HR

Referenced Displays

ANDs GRDs SLDs

Tx2 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T2HR.xls
 Author: E. Picallo



ZAZ7I999
 ZAZ7J999

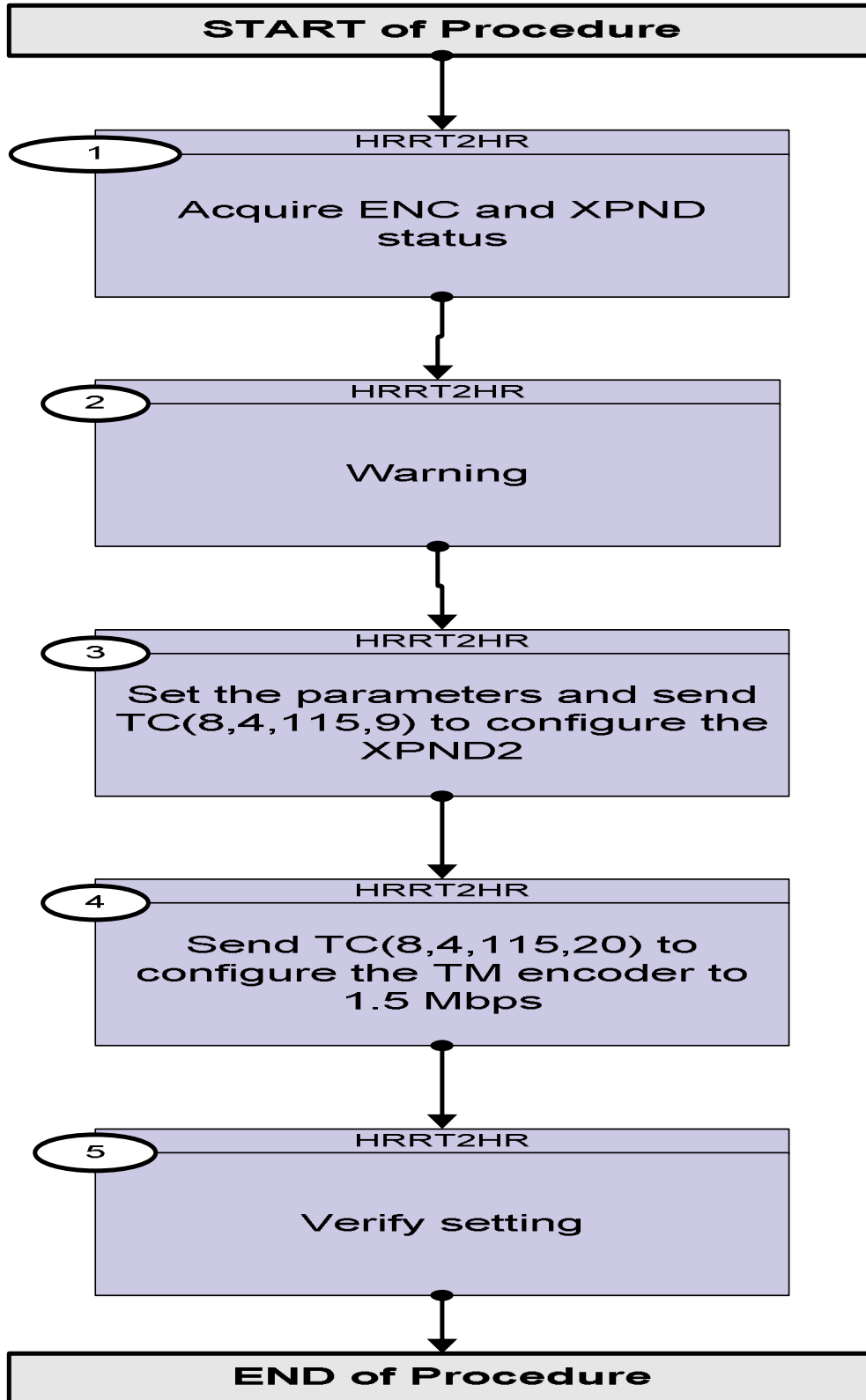
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/07/08	1	1	Created	E. Picallo	
16/12/08	2	2	TC DCT18170 Configure Xpnd mask update <input type="checkbox"/> TCs XPND Config & TM ENC Config blocked <input type="checkbox"/> TC XPND Config do not update CM and RM	E. Picallo	

Tx2 and TM encoder in use configuration for HR
File: H_CRP_TTC_T2HR.xls
Author: E. Picallo



Procedure Flowchart Overview



Tx2 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T2HR.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
Beginning of Procedure					
TC Seq. Name :HRRT2HR (Tx2 for HR) Tx2 and TM encoder in use configuration for HR TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>					
1		Acquire ENC and XPND status		Next Step: 2	
		Verify RX2 AGC Level Telemetry X2 AGC TMUplnk RMB41442	>= -141.0 dbmW	AND=ZAZ7I999	
		Verify RX2 Lock statusTelemetry X2 Rx Lock - RL RMB45442	= Locked	AND=ZAZ7I999	
		Verify Telemetry TME_BITRATE DEMRF160	= 150 Kbps	AND=ZAZ7J999	
		Verify Low Rate-1 status Telemetry X2 LowRate-1 MD RMB51442	= OFF	AND=ZAZ7I999	
		Verify Low Rate-2 status Telemetry X2 LowRate-2 MD RMB52442	= OFF	AND=ZAZ7I999	
		Verify Medium Rate Modulator status Telemetry X2 MedRate-MRM RMB50442	= ON	AND=ZAZ7I999	
		Verify High Rate Modulator status Telemetry X2 HIRateMD-HRM RMB49442	= OFF	AND=ZAZ7I999	
		Verify Coherent Mode status Telemetry X2 Coher MOD-CM RMB47442		AND=ZAZ7I999	
		Verify Ranging Modulator status Telemetry X2 Rang MD - RM RMB48442		AND=ZAZ7I999	
2		Warning		Next Step: 3	
		<p>The current TM bit rate is not HR. Therefore a TM bit rate switch will be performed.</p> <p>A specific feature of this switching, is that it shall be done by several TC. Specifically, separate TC will be necessary to set-up the TM encoder, and the XPND.</p> <p>In the time interval between those TC, the TM flux will be some TM disruption, and no CLCW will be available to acknowledge the TC. Therefore send those TCs blocked (encoded in a single CLTU) or send TCs TT.</p>			
3		Set the parameters and send TC(8,4,115,9) to configure the XPND2		Next Step: 4	

Tx2 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T2HR.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment																																																																																							
		Execute Telecommand <p style="text-align: center;">XpndConfigure_Templ</p> <i>Command Parameter(s) :</i> <table border="0" style="width: 100%;"> <tr><td style="width: 30%;">XpndId</td><td>DH018170</td><td>XpndB</td></tr> <tr><td>XpndConfMask1Unus</td><td>DH220170</td><td>11 <bin></td></tr> <tr><td>XpndConfMask1_ER</td><td>DH221170</td><td>ON</td></tr> <tr><td>XpndConfMask1_CM</td><td>DH222170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfMask1_RM</td><td>DH223170</td><td>ON</td></tr> <tr><td>XpndConfMask1_HRM</td><td>DH224170</td><td>ON</td></tr> <tr><td>XpndConfMask1_MRM</td><td>DH225170</td><td>ON</td></tr> <tr><td>XpndConfMask1LRM1</td><td>DH226170</td><td>ON</td></tr> <tr><td>XpndConfMask1LRM2</td><td>DH227170</td><td>ON</td></tr> <tr><td>XpndConfMask1_RMI</td><td>DH228170</td><td>Update</td></tr> <tr><td>XpndConfMask1_TMI</td><td>DH229170</td><td>Update</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>XpndConfMask2_PG</td><td>DH230170</td><td>ON</td></tr> <tr><td>XpndConfMask2Unus</td><td>DH231170</td><td>11111111111 <bin></td></tr> <tr><td>XpndConfMask2OPLS</td><td>DH232170</td><td>Update</td></tr> <tr><td>XpndConfDW1Unus</td><td>DH020170</td><td>0 <dec> (Def)</td></tr> <tr><td>XpndConfDW1_ER</td><td>DH021170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW1_CM</td><td>DH022170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW1_RM</td><td>DH023170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW1_HRM</td><td>DH024170</td><td>ON</td></tr> <tr><td>XpndConfDW1_MRM</td><td>DH025170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW1LRM1</td><td>DH026170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW1LRM2</td><td>DH027170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW1_RMI</td><td>DH028170</td><td>0 (Def)</td></tr> <tr><td>XpndConfDW1_TMI</td><td>DH029170</td><td>1.2</td></tr> <tr><td>XpndConfDW2_PG</td><td>DH030170</td><td>OFF (Def)</td></tr> <tr><td>XpndConfDW2Unus</td><td>DH031170</td><td>0 <dec> (Def)</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>XpndConfDW2OPLS</td><td>DH032170</td><td>-4</td></tr> </table> <p><i>TC Control Flags :</i> GBM IL DSE -SY -- ---</p> <p><i>Subsch. ID : 10</i> <i>Det. descr. : TEMPLATE Configure Xpnd TC(8,4,115,9)</i></p>	XpndId	DH018170	XpndB	XpndConfMask1Unus	DH220170	11 <bin>	XpndConfMask1_ER	DH221170	ON	XpndConfMask1_CM	DH222170	OFF (Def)	XpndConfMask1_RM	DH223170	ON	XpndConfMask1_HRM	DH224170	ON	XpndConfMask1_MRM	DH225170	ON	XpndConfMask1LRM1	DH226170	ON	XpndConfMask1LRM2	DH227170	ON	XpndConfMask1_RMI	DH228170	Update	XpndConfMask1_TMI	DH229170	Update				XpndConfMask2_PG	DH230170	ON	XpndConfMask2Unus	DH231170	11111111111 <bin>	XpndConfMask2OPLS	DH232170	Update	XpndConfDW1Unus	DH020170	0 <dec> (Def)	XpndConfDW1_ER	DH021170	OFF (Def)	XpndConfDW1_CM	DH022170	OFF (Def)	XpndConfDW1_RM	DH023170	OFF (Def)	XpndConfDW1_HRM	DH024170	ON	XpndConfDW1_MRM	DH025170	OFF (Def)	XpndConfDW1LRM1	DH026170	OFF (Def)	XpndConfDW1LRM2	DH027170	OFF (Def)	XpndConfDW1_RMI	DH028170	0 (Def)	XpndConfDW1_TMI	DH029170	1.2	XpndConfDW2_PG	DH030170	OFF (Def)	XpndConfDW2Unus	DH031170	0 <dec> (Def)				XpndConfDW2OPLS	DH032170	-4	DCT18170	TC	
XpndId	DH018170	XpndB																																																																																										
XpndConfMask1Unus	DH220170	11 <bin>																																																																																										
XpndConfMask1_ER	DH221170	ON																																																																																										
XpndConfMask1_CM	DH222170	OFF (Def)																																																																																										
XpndConfMask1_RM	DH223170	ON																																																																																										
XpndConfMask1_HRM	DH224170	ON																																																																																										
XpndConfMask1_MRM	DH225170	ON																																																																																										
XpndConfMask1LRM1	DH226170	ON																																																																																										
XpndConfMask1LRM2	DH227170	ON																																																																																										
XpndConfMask1_RMI	DH228170	Update																																																																																										
XpndConfMask1_TMI	DH229170	Update																																																																																										
XpndConfMask2_PG	DH230170	ON																																																																																										
XpndConfMask2Unus	DH231170	11111111111 <bin>																																																																																										
XpndConfMask2OPLS	DH232170	Update																																																																																										
XpndConfDW1Unus	DH020170	0 <dec> (Def)																																																																																										
XpndConfDW1_ER	DH021170	OFF (Def)																																																																																										
XpndConfDW1_CM	DH022170	OFF (Def)																																																																																										
XpndConfDW1_RM	DH023170	OFF (Def)																																																																																										
XpndConfDW1_HRM	DH024170	ON																																																																																										
XpndConfDW1_MRM	DH025170	OFF (Def)																																																																																										
XpndConfDW1LRM1	DH026170	OFF (Def)																																																																																										
XpndConfDW1LRM2	DH027170	OFF (Def)																																																																																										
XpndConfDW1_RMI	DH028170	0 (Def)																																																																																										
XpndConfDW1_TMI	DH029170	1.2																																																																																										
XpndConfDW2_PG	DH030170	OFF (Def)																																																																																										
XpndConfDW2Unus	DH031170	0 <dec> (Def)																																																																																										
XpndConfDW2OPLS	DH032170	-4																																																																																										
		Notice that in the configuration of the XPND the coherent mode is unchanged. Although if the receiver losses lock for more than 0.2 s, then the transponder reverts back to noncoherent mode. When receiver locks again, the transponder automatically returns to the memorised mode.																																																																																										
4		Send TC(8,4,115,20) to configure the TM encoder to 1.5 Mbps		Next Step: 5																																																																																								
		Execute Telecommand <p style="text-align: center;">TtcConfigTmEncInUseHigh</p> <i>TC Control Flags :</i> GBM IL DSE -E- -- ---	DC27F170	TC																																																																																								
		<i>Subsch. ID : 10</i> <i>Det. descr. : TTC: Config TM Enc In Use Mode High 1.5Mbps, TC(8,4,115,20)</i>																																																																																										
5		Verify setting		Next Step: END																																																																																								
		Verify Telemetry <p style="text-align: center;">TME_BITRATE DEMRF160</p> <p style="text-align: center;">= 1.5 Mbps</p>		AND=ZAZ7J999																																																																																								
		Verify High Rate Modulator status Telemetry <p style="text-align: center;">X2 HIRateMD-HRM RMB49442</p> <p style="text-align: center;">= ON</p>		AND=ZAZ7I999																																																																																								

Tx2 and TM encoder in use configuration for HR File: H_CRP_TTC_T2HR.xls Author: E. Picallo	 
--	--

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Coherent Mode status Telemetry X2 Coher MOD-CM RMB47442		AND=ZAZ7I999	
		Verify Ranging Modulator status Telemetry X2 Rang MD - RM RMB48442	= OFF	AND=ZAZ7I999	
		Verify RNG Modulation Index Telemetry X2 RNGMD ID-RMI RMB53442	= 0 rad	AND=ZAZ7I999	
End of Sequence					
End of Procedure					