

Tx1 and TM encoder in use configuration for HR
File: H_CRP_TTC_T1HR.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

XPND1 and the TM encoder are configured using TC(8,4,115,9), 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 TX1 and TWTAL;
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 TX1 and TWTAL;
TM bit rate equal to 1.5 Mbps;
XPND configuration: CM unchanged and RNG OFF.

Reference File(s)

Input Command Sequences

Output Command Sequences

HRRT1HR

Referenced Displays

Tx1 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T1HR.xls
 Author: E. Picallo



ANDs **GRDs** **SLDs**
 ZAZ7I999
 ZAZ7J999

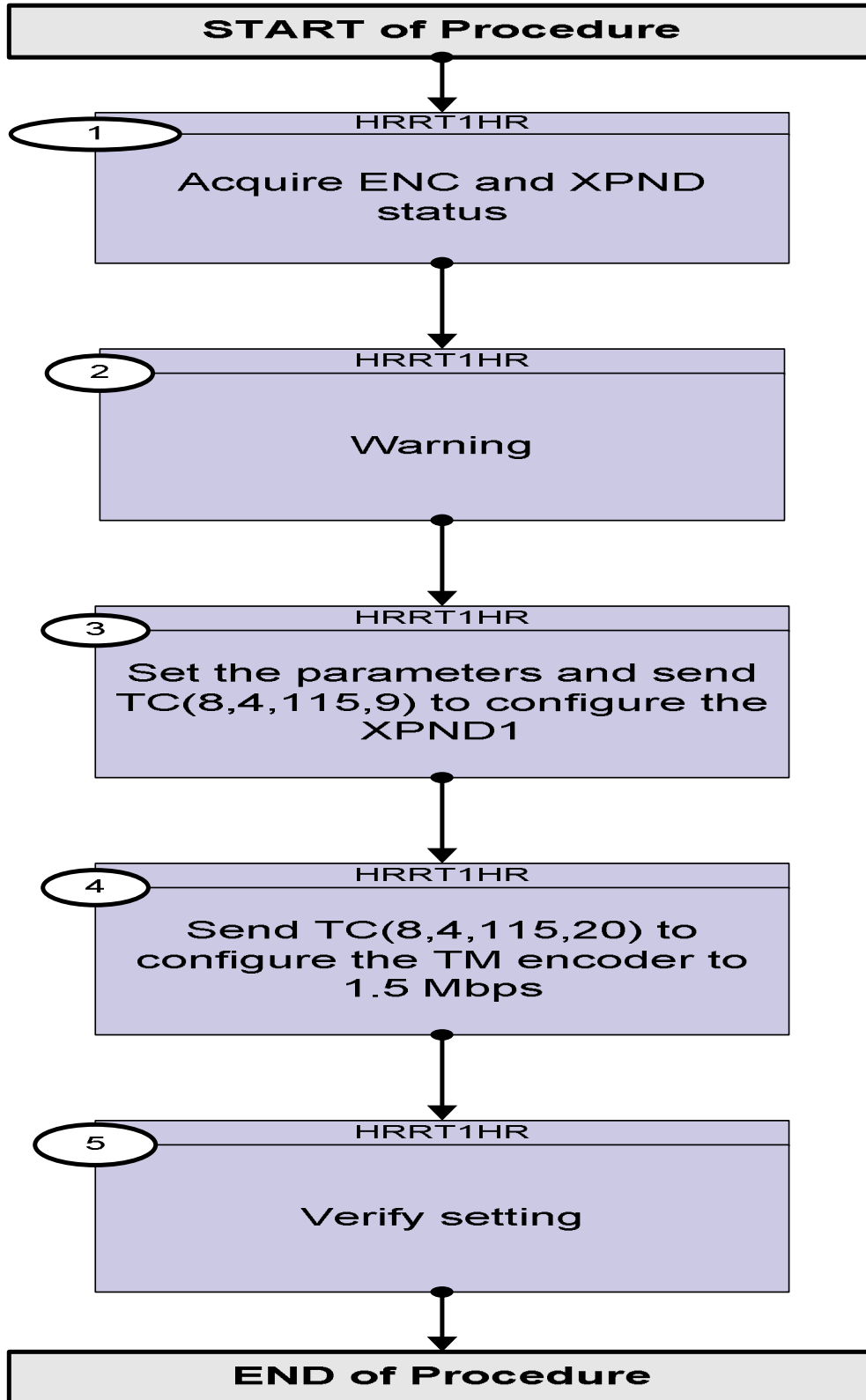
Configuration Control Information

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	E. Picallo	

Tx1 and TM encoder in use configuration for HR
File: H_CRP_TTC_T1HR.xls
Author: E. Picallo



Procedure Flowchart Overview



Tx1 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T1HR.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
<p>TC Seq. Name : HRRT1HR (Tx1 for HR) Tx1 and TM encoder in use configuration for HR</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p style="text-align: center;">□</p>				
1		Acquire ENC and XPND status		Next Step: 2
		Verify AGC/Uplink Level Telemetry X1 AGC TMUplnk RMB20442	>= -141.0 dbmW	AND=ZAZ7I999
		Verify RX1 Lock status Telemetry X1 Rx Lock - RL RMB24442	= Locked	AND=ZAZ7I999
		Verify Telemetry TME_BITRATE DEMRF160	= 150 Kbps	AND=ZAZ7J999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442	= OFF	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442	= OFF	AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442	= ON	AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= OFF	AND=ZAZ7I999
		Verify Coherent Mode status Telemetry X1 Coher MOD-CM RMB26442		AND=ZAZ7I999
		Verify Ranging Modulator status Telemetry X1 Rang MOD-RM RMB27442	= OFF	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 XPND1		Next Step: 4

Tx1 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T1HR.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: center;">XpndConfigure_Templ</p> Command Parameter(s) : XpndId DH018170 XpndA (Def) 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 111111111111 <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 TC Control Flags : GBM IL DSE -SY -- --- Subsch. ID : 10 Det. descr. : TEMPLATE Configure Xpnd TC(8,4,115,9)	DCT18170	
		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> TC Control Flags : GBM IL DSE -E -- --- Subsch. ID : 10 Det. descr. : TTC: Config TM Enc In Use Mode High 1.5Mbps, TC(8,4,115,20)	DC27F170	

Tx1 and TM encoder in use configuration for HR
 File: H_CRP_TTC_T1HR.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5		Verify setting		Next Step: END
		Verify Telemetry TME_BITRATE DEMRF160	= 1.5 Mbps	AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= ON	AND=ZAZ7I999
		Verify Coherent Mode status Telemetry X1 Coher MOD-CM RMB26442		AND=ZAZ7I999
		Verify Ranging Modulator status Telemetry X1 Rang MOD-RM RMB27442	= OFF	AND=ZAZ7I999
		Verify RNG Modulation Index Telemetry X1 RNGMD ID-RMI RMB32442	= 0 rad	AND=ZAZ7I999
End of Procedure				