Alignment of TTC configuration
File: H_CRP_TTC_60RB.xls
Author: E. Picallo

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Procedure Summary

Objectives

This procedure describes the steps needed to change the reached
TTC configuration after the recovery performed on-board by the
ASW when no Ground contact has been established for a time
greater than 60 hours.

Summary of Constraints

Since it is not possible to have in the Unit In Use table a cross
configuration of XPND and TWTA from the point of view of
"Nominal"/"Redundant" status, to keep active the Misssion
Timeline it is necessary to re-align the TTC configuration.

XPND TX, XPND RX, TWT assembly, TWT amplifier, and EPC the
nominal/redundant configuration status is common. Because they belong to
a " superunit" , which is the TTC chain, they switch between nominal to
redundant as a group.

Note that for ranging purpose, receiver and transmitter used have to be
on the same transponder.

Spacecraft Configuration

Start of Procedure

CDMU in default configuration.

End of Procedure

CDMU in default configuration.

Reference File(s)

Input Command Sequences

Output Command Sequences

HRR60RB

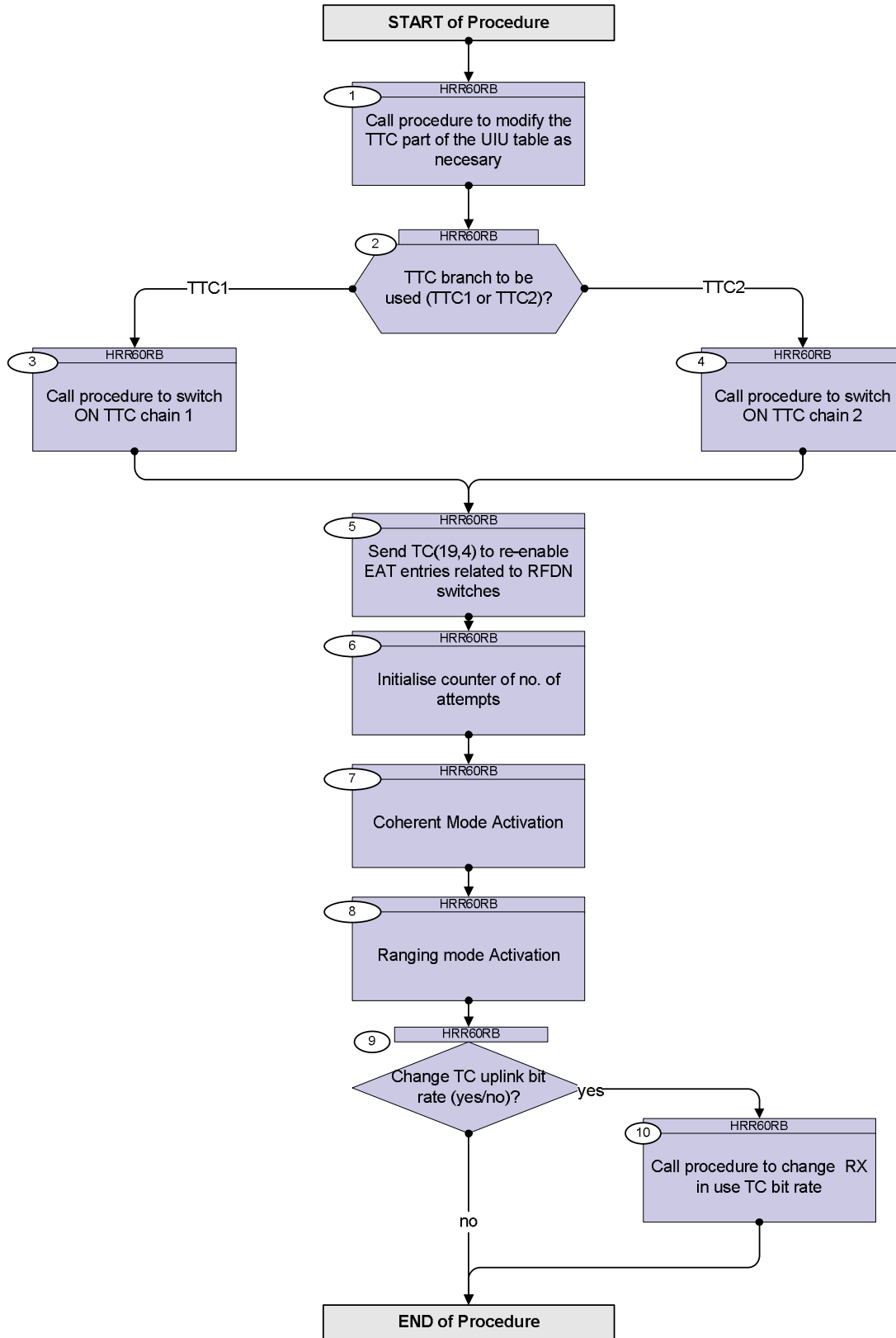## Referenced Displays

ANDs   GRDs   SLDs
(None)

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
05/01/09		1	Created	E. Picallo	
08/01/09		2	CDMU ASW V3.8 and BSW V2.4 alignment	E. Picallo	
09/01/09	2	3	Inittialisation of Ground Loss Recovery Attempt Counter added	E. Picallo	
15/03/09	2.2	4	TTC chain set nominal / redundant as a group constrain addded Coherent mode and ranging mode activation addded Change TC bit rate added	E. Picallo	

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Procedure Flowchart Overview

START of Procedure

1 — HRR60RB
Call procedure to modify the TTC part of the UIU table as necesary

2 — HRR60RB
TTC branch to be used (TTC1 or TTC2)?

— TTC1 —

3 — HRR60RB
Call procedure to switch ON TTC chain 1

— TTC2 —

4 — HRR60RB
Call procedure to switch ON TTC chain 2

5 — HRR60RB
Send TC(19,4) to re-enable EAT entries related to RFDN switches

6 — HRR60RB
Initialise counter of no. of attempts

7 — HRR60RB
Coherent Mode Activation

8 — HRR60RB
Ranging mode Activation

9 — HRR60RB
Change TC uplink bit rate (yes/no)?

yes

10 — HRR60RB
Call procedure to change RX in use TC bit rate

no

END of Procedure

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HRR60RB (Alignment TTC config) Alignment of TTC configuration *TimeTag Type: N* *Sub Schedule ID:*		
1		*Call procedure to modify the TTC part of the UIU table as necesary*		Next Step: 2
		During the TTC on-board autonomous reconfiguration procedure triggered after 60 hours LOS, only the TTC units status (ON/OFF) are updated in the UIU but the logical status (Nominal / Redundant) and the functional status (failed / not failed) are not. **When contact is reestablished the UIU logical and functional status need to be updated in line with the final TTC configuration.** **Note that for XPND TX, XPND RX, TWT assembly, TWT amplifier, and EPC the nominal/redundant configuration status is common. Because they belong to a *" superunit"* , which is the TTC chain, they switch between nominal to redundant as a group, i.e. is not possible to have 'XPND TX Nominal' and 'EPC Redundant'. However, the on/off statuses are maintained by physical unit and it is possible to have 'XPND TX Off' and 'EPC ON'.** **If Tx2 and TWT2 are ON and it is desired to set the chain 2 as the one in use, consider in the called procedure to Mark TTC chain 2 units as "nominal" in UIU (step 5)**		
		Execute Procedure: **H_CRP_DHS_3017** **Unit in Use table maintenance**		
2		*TTC branch to be used (TTC1 or TTC2)?*		Next Step: TTC1 3 TTC2 4
3		*Call procedure to switch ON TTC chain 1*		Next Step: 5
		In the called procedure, skip step 3/16/29 (to disable relevant EAT entries since they are already disabled) and then choose the desired TM bit rate.		
		Execute Procedure: **H_CRP_TTC_T101** **Switch ON Tx1 and TWTA1**		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
4		*Call procedure to switch ON TTC chain 2*		Next Step: 5
		In the called procedure, skip step 3/16/29 (to disable relevant EAT entries since they are already disabled) and then choose the desired TM bit rate.		

		Execute Procedure:
		  H_CRP_TTC_T201
		  Switch ON TX2 and TWTA2		

5		*Send TC(19,4) to re-enable EAT entries related to RFDN switches*		Next Step: 6
		When this request is received, the action-telecommand associated with the corresponding event shall be enabled. **In the TC(19,4) it is necessary to set the following parameters:** **N, number of events to be enabled, in this case equal to 8.** **APID, repeated N times, identifier of the Application Process generating this event report, in this case always equal to 16 (CDMU).** **Event ID, repeated N times, identifier of the event to be enabled, in this case equal to 0x9200 (SW1 position failure), 0x9201 (SW1 position failure), 0x9202 (SW2 position failure), 0x9203 (SW2 position failure), 0x9204 (SW3 position failure), 0x9205 (SW3 position failure), 0x9206 (SW4 position failure), 0x9207 (SW4 position failure).**		

		Execute Telecommand **EnableActions**
		
		Command Parameter(s) :
		         N_Repetition DH041170
		     APID_for_EAT_TC DH236170
		            EventId DH146170
		     APID_for_EAT_TC DH236170
		            EventId DH146170
		     APID_for_EAT_TC DH236170
		            EventId DH146170
		     APID_for_EAT_TC DH236170
		            EventId DH146170
		     APID_for_EAT_TC DH236170
		            EventId DH146170
			DCT84170
			
			8 <dec>
			CDMS (Def)
			9200 <hex>
			CDMS (Def)
			9201 <hex>
			CDMS (Def)
			9202 <hex>
			CDMS (Def)
			9203 <hex>
			CDMS (Def)
			9204 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch

		APID_for_EAT_TC DH236170
		EventId DH146170
		APID_for_EAT_TC DH236170
		EventId DH146170
		APID_for_EAT_TC DH236170
		EventId DH146170
		
		TC Control Flags :
		                   GBM IL DSE
		                   --Y -- ---
		Subsch. ID : 10
		Det. descr. : TEMPLATE Enable Actions TC(19,4)
			CDMS (Def)
			9205 <hex>
			CDMS (Def)
			9206 <hex>
			CDMS (Def)
			9207 <hex>	

5.1		*Check the Event Action Table*		
		Verify in the report that EATentries related to RFDN SWs and TTC related entries are enabled.		

		Execute Telecommand
		                   ReptEvtActTable
		
		TC Control Flags :
		                   GBM IL DSE
		                   --Y -- ---
		Subsch. ID : 10
		Det. descr. : TEMPLATE Report The contents of the event/action table TC(19,6)
			DCT86170	

6		*Initialise counter of no. of attempts*		Next Step: 7
6.1		*Verify Ground Loss Recovery Attempt Counter*		
		Verify Telemetry **GndLossCtr** DEA58170		(None)
6.2		*Reset Ground Loss Recovery Attempt Counter*		
		Reset Ground Loss Recovery Attempt Counter TC is used for resetting the ground loss attempt counter of recoveries. **Note: if the Attempt Count =0 then recovery sequence first scan the LOS table to find out row corresponding to current position of RFDN switches in order to minimize the commanding on them.**		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch

		Execute Telecommand
		                    ResGroundLossRecAttCnt
		
		TC Control Flags :
		                    GBM IL DSE
		                    --Y -- ---
		Subsch. ID : 10
		Det. descr. : Reset Ground Loss Recovery Attempt Counter TC(8,4,116,27)
			DCN1C170	

6.3		*Verify Ground Loss Recovery Attempt Counter*		
		Verify Telemetry **GndLossCtr** **DEA58170**	**= 0 <dec>**	(None)
7		*Coherent Mode Activation*		Next Step: 8
		Execute Procedure: **H_FCP_TTC_TUCM** **Transponder in use Coherent Mode Activation/Deactivation**		
8		*Ranging mode Activation*		Next Step: 9
		Execute Procedure: **H_FCP_TTC_TURM** **Transponder in use Ranging Activation/Deactivation**		
9		*Change TC uplink bit rate (yes/no)?*		Next Step: yes 10 no END
10		*Call procedure to change RX in use TC bit rate*		Next Step: END
		Execute Procedure: **H_FCP_TTC_RUBR** **Select RX in use TC bit rate**		

End of Procedure