Switch ON TX and TWTA in use
File: H_MPP_TTC_TU01.xls
Author: E. Picallo

esa

Procedure Summary

Objectives

This procedure describes the steps needed to switch ON the transmitter and the travelling wave tube assembly in use (that is marked as "Nominal" and "Not Failed" in the "Unit in Use" table).

This procedure uses the logical addressing.The commands are inserted in the MTL to enable the downlink at the begin of DTCP. The assigned Subschedule ID is 30 (DTCP AOS)

Summary of Constraints

TX and TWTA in use are switched ON a through ASW TCs(8,4,115,1), thus the status of the ASW function "TTC Management" has to be "running".

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.

Note that:
- the value of the TM modulation index is always 1.2;
- the Coherent mode and Ranging modulator are expected to be set OFF because these parameters have to be commanded ON after confirmation of onboard lock;
- 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 transponder needs a maximum warm-up of 20 minutes.

TWTA ON command must be duplicated to ensure MTL robustness against a PCDU I/F switchover.

Spacecraft Configuration

Start of Procedure

CDMU in default configuration;
Downlink not active (TX1/2 and TWTA1/2 OFF);
XPND LCL (23/16) closed;
TX in use configured "ON" and "VALID" on the 1553 S/C bus;
TWTA OPLCL (49/50) open;

End of Procedure

CDMU in default configuration;
Downlink enabled via TX and TWTA marked as "Nominal" and "Not Failed" in the "Unit in Use" table (nominally the branch 1).

Reference File(s)

Input Command Sequences

Output Command Sequences

HMRTU01

Referenced Displays

ANDs **GRDs** **SLDs**

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Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
05/09/08		1	Created	E. Picallo	
06/10/08		2	Duplication of TWTA ON command in line with MTL robustness baseline.	E. Picallo	
17/11/08	2	3	MTL roboust against TTC Recovery. Re-inforce TWTA ON @ 18sec	E. Picallo	

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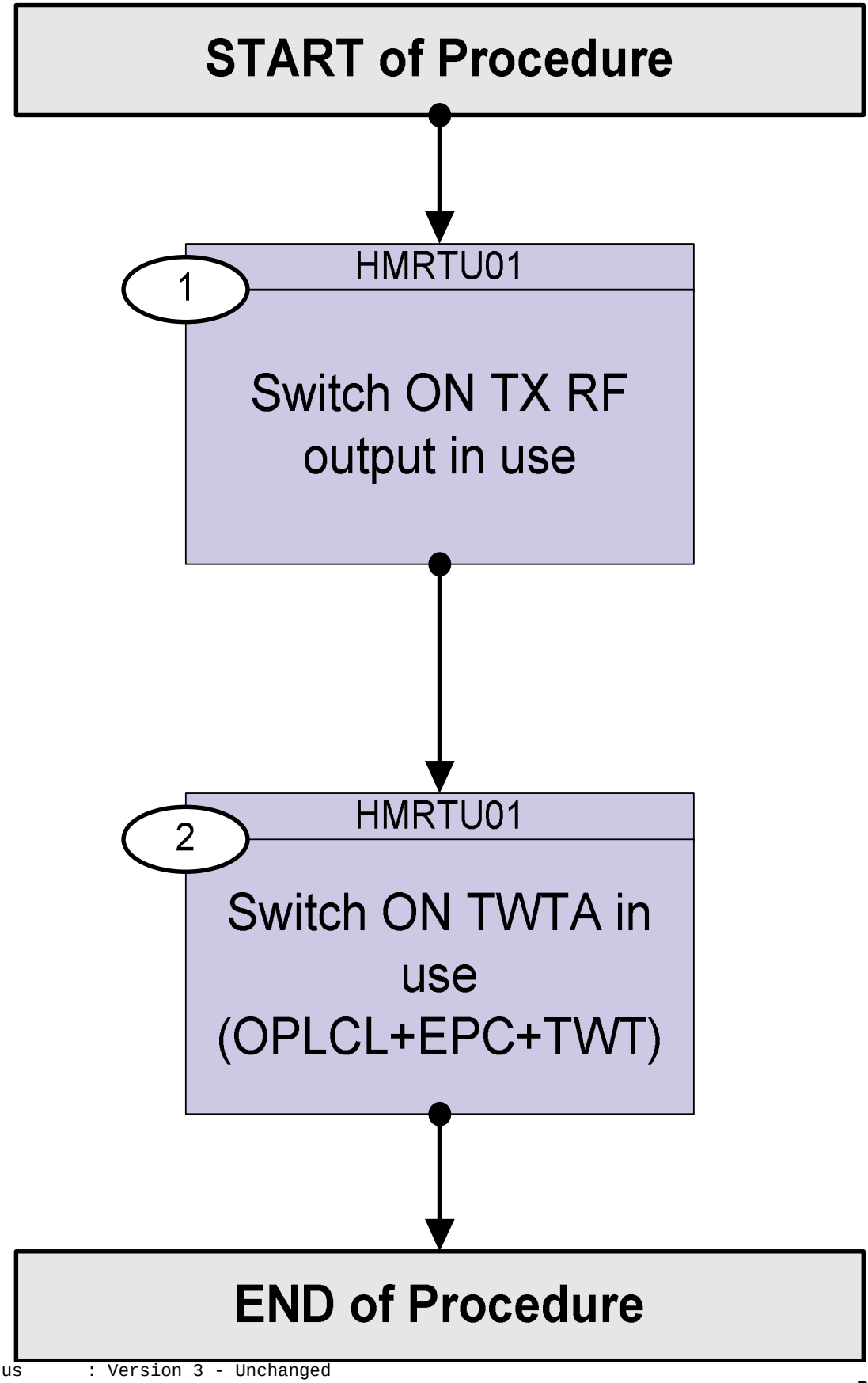
Procedure Flowchart Overview



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Procedure Flowchart Overview

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
		TC Seq. Name :HMRTU01 (Tx+TWTA use ON) Switch ON Tx and TWTA in use *TimeTag Type: B* *Sub Schedule ID: 30*		
1		*Switch ON TX RF output in use*		Next Step: 2
	ET=+00.00.00 UT=	Execute Telecommand **TtcCommandTxInUseOn** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Ttc Command Tx InUse On TC(8,4,115,2)	**DC15E170**	
2		*Switch ON TWTA in use (OPLCL+EPC+TWT)*		Next Step: END
	ET=+00.00.05 UT=	Execute Telecommand **TtcCommandTwtaInUseOn** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Ttc Command Twta In Use On TC(8,4,115,2)	**DC18E170**	
	ET=+00.00.18 UT=+	Execute Telecommand **TtcCommandTwtaInUseOn** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Ttc Command Twta In Use On TC(8,4,115,2)	**DC18E170**	
		Duplication of TWTA ON TC comes from the need to ensure that the TC is executed on board even in case of PCDU I/F switchover or TTC switch-over. **A time interval between the two TWTA ON TCs is of 8 sec, would be in line with the CDMU OBSW implementation to cope with a PCDU I/F switchover.** **i.e. MTL robust against a PCDU failure.**		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Additionally since the TWT status is used to decide to switch on or not the complete TWTA (LCL+EPC+TWT) and the TX at the end of the TTC recovery. **In case the recovery occurs between the EPC and TWT ON commanding, there is a risk to end with the RF OFF.** **In order to be robust against this unlikely scenario, the delay between the 2 TWTA ON TC in the MTL at the start of each DTCP shall be greater than the duration of the TTC Recovery Sequence (i.e. currently 18s).**		
		End of Procedure		