Switch OFF TX and TWTA in use
File: H_MPP_TTC_TU00.xls
Author: E. Picallo

Procedure Summary

Objectives

This procedure describes the steps needed to switch OFF the transmitter RF output 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 remove the downlink at the end of DTCP. The assigned Subschedule ID is 31 (DTCP LOS)

Summary of Constraints

Tx and TWTA in use is switched OFF 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.

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

Spacecraft Configuration

Start of Procedure

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

End of Procedure

CDMU in default configuration;
Downlink disabled (TX1/2 RF output 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.

Reference File(s)

Input Command Sequences

Output Command Sequences

HMRTU00

Referenced Displays

ANDs	GRDs	SLDs

Configuration Control Information

Status   : Version 2 - Unchanged
Last Checkin: 06/10/08

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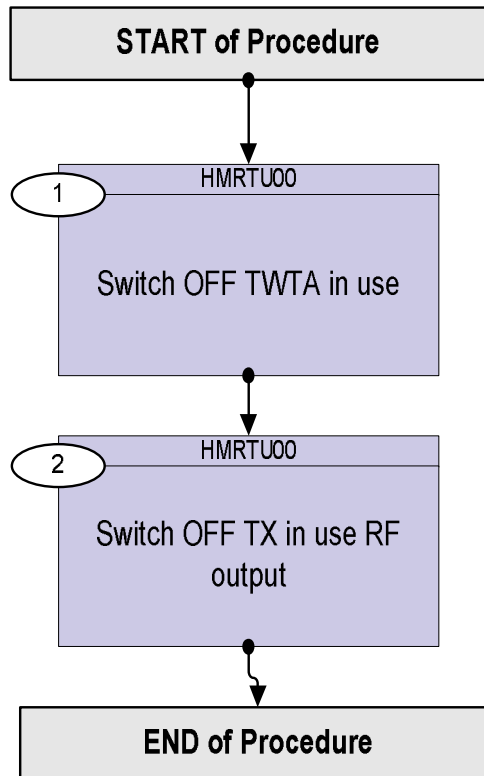| DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
05/09/08		1	Created	E. Picallo	
06/10/08	2	2	Duplication of TWTA OFF command in line with MTL robustness baseline.	E. Picallo	

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Procedure Flowchart Overview

```
        ┌──────────────────────────────┐
        │     START of Procedure       │
        └──────────────────────────────┘
                      │
                      ▼
              ┌─────── HMRTU00 ───────┐
        ( 1 )─┤                       │
              │   Switch OFF TWTA in use │
              │                       │
              └───────────────────────┘
                      │
                      ▼
              ┌─────── HMRTU00 ───────┐
        ( 2 )─┤                       │
              │  Switch OFF TX in use RF │
              │         output        │
              └───────────────────────┘
                      │
                      ▼
        ┌──────────────────────────────┐
        │      END of Procedure        │
        └──────────────────────────────┘
```

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HMRTU00 (Tx+TWTA in use OFF) Switch OFF Tx and TWTA in use *TimeTag Type: B* *Sub Schedule ID: 31*		
1		*Switch OFF TWTA in use*		Next Step: 2
		Command TWTA in use OFF - TC(8,4,115,1) performs : **Switch TWT Amplifier in use (TWT in use) OFF** **Switch EPC in use OFF** **Switch OP-LCL 49 or 50 (TWTA in use) OFF**		

	ET=+00.00.00
	UT=+
		Execute Telecommand
		           TtcCommandTwtaInUseOff
		
		TC Control Flags :
		                 GBM IL DSE
		                 --Y -- ---
		
		Subsch. ID : 31
		Det. descr. : Ttc Command Twta In Use Off
		TC(8,4,115,1)
			DC08E170	

	ET=+00.00.08
	UT=
		Execute Telecommand
		           TtcCommandTwtaInUseOff
		
		TC Control Flags :
		                 GBM IL DSE
		                 --Y -- ---
		
		Subsch. ID : 31
		Det. descr. : Ttc Command Twta In Use Off
		TC(8,4,115,1)
			DC08E170	

		Duplication of TWTA OFF TC comes from the need to ensure that the TC is executed on board even in case of PCDU I/F switchover. The time interval between the two TWTA ON TCs is set to 8 sec, in line with the CDMU OBSW implementation to cope with a PCDU I/F switchover. This is considered as the baseline to maintain the MTL robust against a PCDU failure.		
2		*Switch OFF TX in use RF output*		Next Step: END
		The following command switch OFF the Tx; the status of the XPND LCL does not change (it remains closed) as well as the configuration of the Tx on the 1553 s/c bus (it remains 'ON' and 'valid')		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.05 UT=	Execute Telecommand **TtcCommandTxInUseOff** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 31* Det. descr. : Ttc Command Tx InUse Off TC(8,4,115,1)	**DC05E170**	

End of Procedure