

Switch OFF TX and TWTA in use
File: H_FCP_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, thus can be executed under Ground control or not (the commands used can be inserted in the MTL to remove the downlink at the end of DTCP).

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.

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 TWTAL/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

HFRTU00I
HFRTU00

Referenced Displays

ANDs	GRDs	SLDs
ZAZ7I999		
ZAZ7J999		

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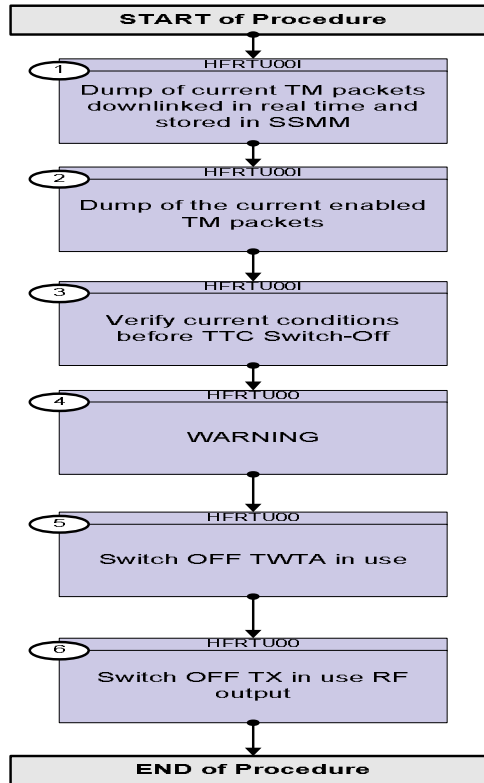
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
14/07/08	1	1	Created	R. Miniscalco	
02/12/08	2	2	Send TC Tx Off & TWTA Off Blocked	E. Picallo	
17/04/09	2.3	3	Dump of current TM packets downlinked in real time and stored in SSMM and dump of the current enabled TM packets added	E. Picallo	
30/06/09	2.5	4	Procedure spilt into two sequences	E. Picallo	

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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 : HFRTU00I (Tx+TWTA inuseOFFIni) Switch OFF Tx and TWTA in use Initial TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>				
1		Dump of current TM packets downlinked in real time and stored in SSMM		Next Step: 2
1.1		Send TC(14,6) to acquire the list of current TM packets downlinked in real time and stored in SSMM		<input type="checkbox"/>
		When CDMU receives this request, the real time down-linking and SSMM storage status are determined for all telemetry packet {Application ID, Type, Sub-Type} and a report (14,7) is generated.		
		Execute Telecommand <div style="text-align: right;">RepDownlinkTMStorage</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Report Telemetry Packets Down-linking/ Storage Status	DC141160	
1.2		Verify that TM(14,7) has been received		<input type="checkbox"/>
		Verify Packet Reception Telemetry Packets DownLinking-Storage Status Report Packet Details: <div style="text-align: right;"> APID: 16 Type: 14 Subtype: 7 PI1: PI2: </div>	(14,7)-1400	
		Verify Packet Telemetry (Pkt = (14,7)-1400) <div style="text-align: right;">N DE042160</div>		
		The following parameters are repeated N times:		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <div style="text-align: right;">APID DE047160</div>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <div style="text-align: right;">Type DE043160</div>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <div style="text-align: right;">Sub-Type DE046160</div>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <div style="text-align: right;">Transmit_Flag DE048160</div>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = (14,7)-1400) Storage_Flag DE049160		
2		Dump of the current enabled TM packets		Next Step: 3
2.1		Send TC(14,3) to acquire the list of the current enabled TM packets		<input type="checkbox"/>
		When this request is received, the enabled telemetry source packet of the CDMU are determined and a report (14,4) is generated.		
		Execute Telecommand ReportEnabledTm TC Control Flags : Subsch. ID : 10 Det. descr. : Report Enabled Telemetry Packets GBM IL DSE --Y -- ---	DC904180	
2.2		Verify that TM(14,4) has been received		<input type="checkbox"/>
		Verify Packet Reception TM Packet Generation Status Report Packet Details: APID: 16 Type: 14 Subtype: 4 PI1: PI2:	TMpktGenRep	
		Verify Packet Telemetry (Pkt = TmpktGenRep) N DE140180		
		The following parameters are repeated N times:		
		Verify Packet Telemetry (Pkt = TmpktGenRep) Type DE141180		
		Verify Packet Telemetry (Pkt = TmpktGenRep) Sub-Type DE142180		
		Verify Packet Telemetry (Pkt = TmpktGenRep) Packet-ID DE143180		
3		Verify current conditions before TTC Switch-Off		Next Step: 4
3.1		Verifications if XPND1-TWTA1 in use		<input type="checkbox"/>

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		Verify LCL23 (XPND1 Tx) status Telemetry Xpnd1Tx_L23_S WM12D565	= ON	AND=ZAZ7I999
		Verify Tx1 Status Telemetry TX1 ON-OFF Stat RMB15442	= 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		AND=ZAZ7I999
		Verify OPLCL49 (TWTA 1) Status Telemetry TwtA_1_L49_1S WM22E565	= ON	AND=ZAZ7J999
		Verify EPC1 Status Telemetry EPC1_ONOFF_STS RMB05439	= ON	AND=ZAZ7J999
		Verify TWT1 Status Telemetry TWT1_ONOFF_STS RMB09439	= ON	AND=ZAZ7J999
3.2		Verifications if XPND2-TWTA2 in use		<input type="checkbox"/>
		Verify LCL16 (XPND2 Tx) status Telemetry Xpnd2Tx_L16_S WM92C565	= ON	AND=ZAZ7I999
		Verify Tx2 Status Telemetry TX2 ON-OFF Stat RMB16442	= ON	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
		Verify OPLCL50 (TWTA 2) Status Telemetry TwtA_2_L50_1S WM92E565	= ON	AND=ZAZ7J999
		Verify TWT2 Status Telemetry TWT2_ONOFF_STS RMB10439	= ON	AND=ZAZ7J999
		Verify EPC2 Status Telemetry EPC2_ONOFF_STS RMB07439	= ON	AND=ZAZ7J999
<p>TC Seq. Name : HFRTU00 (Tx+TWTA in use OFF) Switch OFF Tx and TWTA in use</p> <p>TimeTag Type: B Sub Schedule ID:</p> <p><input type="checkbox"/></p>				
4		WARNING		Next Step: 5

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>In the next step the downlink is deactivated. Therefore no CLCW will be available to acknowledge the TCs</p> <p>Send the next TCs time-tagged selecting a execution time in the future such that no ore of four time-tagged TCs are released per second or</p> <p>Switch to BD mode in order to avoid triggering the TC re-transmission</p>		
5		Switch OFF TWTA in use		Next Step: 6
		<p>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</p>		
	ET=+00.00.00 UT=+	<p>Execute Telecommand</p> <p style="text-align: right;">TtcCommandTwtaInUseOff</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE -SY -- ---</p> <p>Subsch. ID : 10 Det. descr. : Ttc Command Twta In Use Off TC(8,4,115,1)</p>	DC08E170	
6		Switch OFF TX in use RF output		Next Step: END
		<p>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')</p>		
	ET=+00.00.05 UT=+	<p>Execute Telecommand</p> <p style="text-align: right;">TtcCommandTxInUseOff</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE -E- -- ---</p> <p>Subsch. ID : 10 Det. descr. : Ttc Command Tx InUse Off TC(8,4,115,1)</p>	DC05E170	
End of Procedure				