

Switch OFF Tx1 and TWTAL  
File: H\_CRP\_TTC\_T100.xls  
Author: E. Picallo



## Procedure Summary

### Objectives

This procedure describes the steps needed to switch OFF the transmitter 1 RF output and the travelling wave tube assembly 1 (nominal downlink branch).

This procedure does not use the logical addressing

### Summary of Constraints

TWTAL 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

```
CDMU in default configuration;  
TWTAL OP-LCL 49 ON;  
XPND1 LCL 23 ON;  
Tx1 configured "ON" and "VALID" on the 1553 S/C bus;  
Tx1 RF output ON;  
Downlink active.  
XPND1 coherent mode disabled  
XPND1 ranging mode disabled
```

#### End of Procedure

```
CDMU in default configuration;  
TWTAL OP-LCL 49 OFF;  
XPND1 LCL 23 ON;  
Tx1 configured "ON" and "VALID" on the 1553 S/C bus;  
Tx1 RF output OFF;  
Downlink disabled.  
XPND1 coherent mode disabled  
XPND1 ranging mode disabled
```

### Reference File(s)

#### Input Command Sequences

#### Output Command Sequences

HRRT100

### Referenced Displays

ANDs	GRDs	SLDs
ZAZ7I999		
ZAZ7J999		

Switch OFF Tx1 and TWTAl  
File: H\_CRP\_TTC\_T100.xls  
Author: E. Picallo



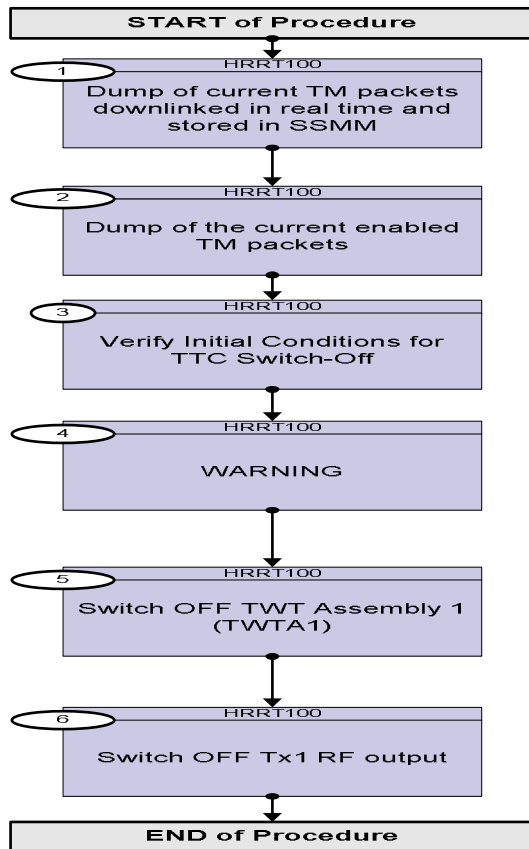
**Configuration Control Information**

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/07/08	1	1	Created	E. Picallo	
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	

Switch OFF Tx1 and TWTAl  
File: H\_CRP\_TTC\_T100.xls  
Author: E. Picallo



### Procedure Flowchart Overview



Switch OFF Tx1 and TWTAl  
 File: H\_CRP\_TTC\_T100.xls  
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<b>Beginning of Procedure</b>				
TC Seq. Name : HRRT100 (Switch OFF Tx1+TWTAl) Switch OFF Tx1 and TWTAl  TimeTag Type: Y 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"/>
		<b>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.</b>		
		Execute Telecommand <div style="text-align: right;"><b>RepDownlinkTMStorage</b></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 <b>Telemetry Packets DownLinking-Storage Status Report</b> 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>		
		<b>The following parameters are repeated N times:</b>		
		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>		

Switch OFF Tx1 and TWTAl  
 File: H\_CRP\_TTC\_T100.xls  
 Author: E. Picallo



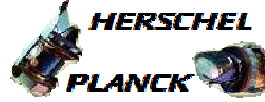
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = (14,7)-1400)  Storage_Flag DE049160		
2		Dump of the current enabled TM packets		Next Step: 3
2.1		Send TC(14,3) to acquire the list of the current enabled TM packets		<input type="checkbox"/>
		<b>When this request is received, the enabled telemetry source packet of the CDMU are determined and a report (14,4) is generated.</b>		
		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		
		<b>The following parameters are repeated N times:</b>		
		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 Initial Conditions for TTC Switch-Off		Next Step: 4
3.1		Tx1 status verification		<input type="checkbox"/>

Switch OFF Tx1 and TWTAl  
 File: H\_CRP\_TTC\_T100.xls  
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify LCL23 ( XPND1 Tx ) status Telemetry Xpnd1Tx_L23_S WM12D565	= ON	AND=ZAZ7I999
		Verify LCL23 ( XPND1 Tx ) current Telemetry Xpnd1Tx_L23_I WM109565	>= 0.41 A <= 0.55 A	AND=ZAZ7I999
		Verify Tx1 Status Telemetry TX1 ON-OFF Stat RMB15442	= ON	AND=ZAZ7I999
3.2		TWTAl status verification		□
		Verify OPLCL49 (TWTAl) Status Telemetry Twta_1_L49_1S WM22E565	= ON	AND=ZAZ7J999
		Verify TWTAl current Telemetry Twta_1_L49_I WM210565	>= 2.2 A <= 2.8 A	AND=ZAZ7J999
		Verify EPC1 Status Telemetry EPC1_ONOFF_STS RMB05439	= ON	AND=ZAZ7J999
		Verify TWT1 Status Telemetry TWT1_ONOFF_STS RMB09439	= ON	AND=ZAZ7J999
3.3		XPND Tx1 status verification		□
		Verify Telemetry X1 Coher MOD-CM RMB26442	= OFF	AND=ZAZ7I999
		Verify Telemetry X1 Rang MOD-RM RMB27442	= OFF	AND=ZAZ7I999
4		WARNING		Next Step: 5
		<b>In the next step the downlink is deactivated. Therefore no CLCW will be available to acknowledge the TCs</b>  <b>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</b>  <b>Switch to DB mode in order to avoid triggering the TC re-transmission.</b>		
5		Switch OFF TWT Assembly 1 (TWTAl)		Next Step: 6
		<b>Command TWTAl OFF - TC(8,4,115,1) performs :</b> <b>Switch TWT Amplifier 1 (TWT1) OFF</b> <b>Switch EPC1 OFF</b> <b>Switch OP-LCL49 (TWTAl) OFF</b>		

Switch OFF Tx1 and TWTAl  
 File: H\_CRP\_TTC\_T100.xls  
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.00 UT=+	Execute Telecommand  <b>TtcCommandTwtalOff</b>  <i>TC Control Flags :</i>  GBM IL DSE -SY -- ---  <i>Subsch. ID : 10</i> <i>Det. descr. : Ttc Command TWTA 1 Off TC(8,4,115,1)</i>	DC06E170	
6		Switch OFF Tx1 RF output		Next Step: END
		<b>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')</b>		
	ET=+00.00.05 UT=+	Execute Telecommand  <b>TtcCommandTx1Off</b>  <i>TC Control Flags :</i>  GBM IL DSE -E- -- ---  <i>Subsch. ID : 10</i> <i>Det. descr. : Ttc Command Tx 1 Off TC(8,4,115,1)</i>	DC03E170	
<b>End of Procedure</b>				