

Switch OFF TX2 and TWTA2
 File: H_CRP_TTC_T200.xls
 Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the steps needed to switch OFF the transmitter 2 RF output and the travelling wave tube assembly 2 (redundant downlink branch).

This procedure does not use the logical addressing, thus must be executed under Ground control (the commands used cannot be inserted in the MTL).

Summary of Constraints

TX2 RF output and TWTA2 are 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;
 Downlink active via TX2 and TWTA2;

End of Procedure

CDMU in default configuration;
 Downlink disabled (TX2 RF output and TWTA2 OFF);
 XPND2 LCL (16) closed;
 TX2 configured "ON" and "VALID" on the 1553 S/C bus;
 TWTA2 OPLCL (50) open;

Reference File(s)

Input Command Sequences

Output Command Sequences

HRRT200

Referenced Displays

ANDs	GRDs	SLDs
ZAZ7I999		
ZAZ7J999		

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
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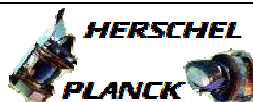
Status : Version 3 - Unchanged
 Last Checkin: 17/04/09

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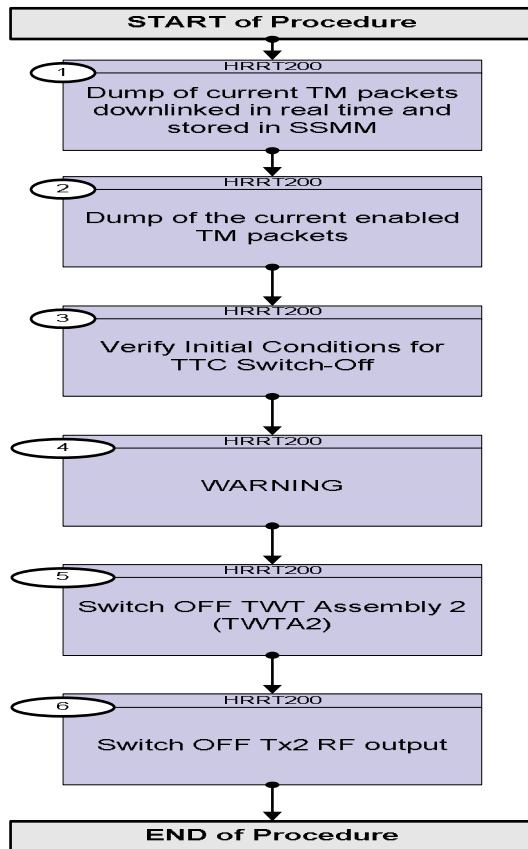


30/07/08	1	1	Created	E. Picallo	
02/12/08	2	2	Send TC Tx Off & TWTA Off Blocked	E. Picallo	
17/04/09	2.3	3	Dump of current TM packets downlinked in real time and stored in SSMM and dump of the current enabled TM packets added	E. Picallo	

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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 : HRRT200 (Switch OFF Tx2+TWTA2) Switch OFF Tx2 and TWTA2 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 Initial Conditions for TTC Switch-Off		Next Step: 4
3.1		Tx2 power line status verification		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify LCL16 (XPND2 Tx) status Telemetry Xpnd2Tx_L16_S WM92C565	= ON	AND=ZAZ7I999
		Verify LCL16 (XPND2 Tx) Telemetry Xpnd2Tx_L16_I WM908565	>= 0.41 A <= 0.55 A	AND=ZAZ7I999
		Verify Tx2 Status Telemetry TX2 ON-OFF Stat RMB16442	= ON	AND=ZAZ7I999
3.2		TWTA2 status verification		☐
		Verify OPLCL50 (TWTA 2) Status Telemetry Twta_2_L50_1S WM92E565	= ON	AND=ZAZ7J999
		Verify TWTA2 current Telemetry Twta_2_L50_I WM910565	>= 2.2 A <= 2.8 A	AND=ZAZ7J999
		Verify TWT2 Status Telemetry TWT2_ONOFF_STS RMB10439	= ON	AND=ZAZ7J999
		Verify EPC2 Status Telemetry EPC2_ONOFF_STS RMB07439	= ON	AND=ZAZ7J999
3.3		XPND Tx2 status verification		☐
		Verify Coherent Mode status Telemetry X2 Coher MOD-CM RMB47442	= OFF	AND=ZAZ7I999
		Verify Ranging Modulator status Telemetry X2 Rang MD - RM RMB48442	= OFF	AND=ZAZ7I999
4		WARNING		Next Step: 5
		In the next step the downlink is deactivated. Therefore no CLCW will be available to acknowledge the TCs 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 Switch to DB mode in order to avoid triggering the TC re-transmission.		
5		Switch OFF TWT Assembly 2 (TWTA2)		Next Step: 6
		Command TWTA2 OFF - TC(8,4,115,1) performs : Switch TWT Amplifier 2 (TWT2) OFF Switch EPC2 OFF Switch OP-LCL50 (TWTA2) OFF		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.00 UT=+	Execute Telecommand TtcCommandTwta2Off <i>TC Control Flags :</i> GBM IL DSE -SY -- --- <i>Subsch. ID : 10</i> <i>Det. descr. : Ttc Command TWTA 2 Off TC(8,4,115,1)</i>	DC07E170	
6		Switch OFF Tx2 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')		
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandTx2Off <i>TC Control Flags :</i> GBM IL DSE -E- -- --- <i>Subsch. ID : 10</i> <i>Det. descr. : Ttc Command Tx 2 Off TC(8,4,115,1)</i>	DC04E170	
End of Procedure				