

Switch to chain 1 after a TTC-S out of limit
File: H_CRP_TTC_T1LR.xls
Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the steps needed to switch ON the transmitter 1 and the travelling wave tube assembly 1 after an out of limit detected on Ground on the chain 2.

Summary of Constraints

TTC units are managed through ASW TCs with function ID equal to 115, thus the status of the ASW function "TTC Management" has to be "running".

Note that:

- the value of the TM modulation index is always 1.2;
- the Coherent mode and Ranging modulator are 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.

The transponder needs a maximum warm-up of 20 minutes.

All EAT (Event-Action Table) TTC entries are disabled to prevent further TTC reconfigurations.

Before switching ON the branch 1 through physical command it is necessary to mark as failed, in the UIU table, the chain 2.

Spacecraft Configuration

Start of Procedure

CDMU in default configuration.
Downlink active via TX2 and TWTA2.

End of Procedure

CDMU in default configuration.
Downlink active via TX1 and TWT1.
Chain 1 marked as "nominal" in UIU table.
Chain 2 marked as "failed" in UIU table.
All EAT entries related to TTC disabled.

Reference File(s)

Input Command Sequences

Output Command Sequences

HRRT1LR1
HRRT1LR2
HRRT1LR3
HRRT1LRF

Referenced Displays

ANDs	GRDs	SLDs
ZAZ7I999		(None)
ZAZ7J999		
ZAZ7M999		

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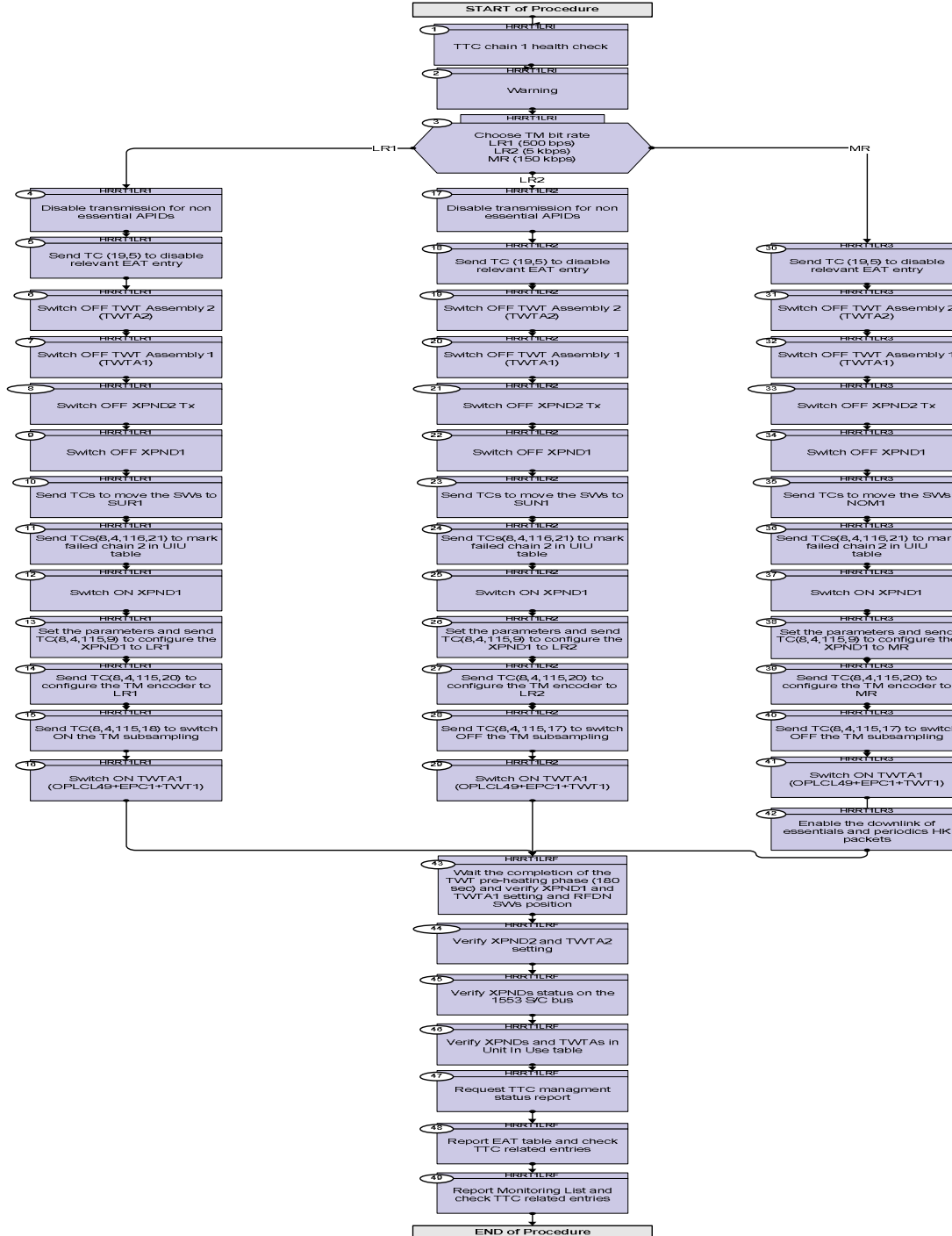
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
15/10/08		1	Created	E. Picallo	
19/12/08		2	EAT disable TTC related entries added Blocking TCs added	E. Picallo	
09/01/09	2	3	CDMU ASW V3.8 and BSW V2.4 alignment	E. Picallo	
14/02/09	2.1	4	Include encoder configuration and XPND bit rate configuration for LR1, LR2 and MBR	E. Picallo	
14/03/09		5	Request TTC function, MOT and EAT reports added Antenna configuration set to Sun acquisition otherwise at LR2 Disable transmission for non essential APIDs at start of sequence for LRs	E. Picallo	
14/03/09		6	Time-tag delta times corrected	E. Picallo	
16/03/09	2.2	7	Mark TTC chain 2 fail before TTC chain 1 switch ON	E. Picallo	
07/04/09	2.3	8	Step 43 : Verify XPND2 and TWTA2 setting added	E. Picallo	
25/09/09	2.5	9	TTC chain 1 health check added comment on TC XPND1 OFF, it leaves LCL23 ON comment on TC XPND2 OFF, it leaves LCL16 ON TM check Xpnd2Tx_L16 Status & Current and XPND2_TX2_SUP_V updated	E. Picallo	

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Procedure Flowchart Overview



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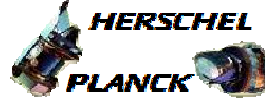
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
TC Seq. Name : HRRT1LR1 (Switch TTC1 OOL Init) Switch to chain 1 after a TTC-S out of limit Initial TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
1		TTC chain 1 health check		Next Step: 2
		Call procedure H_CRP_TTC_T1HC (TTC chain 1 health check)		
2		Warning		Next Step: 3
		In the next step the downlink is deactivated. Therefore no CLCW will be available to acknowledge the TCs Switch to BD mode in order to avoid triggering the TC re-transmission or send TCs time-tagged		
3		Choose TM bit rate LR1 (500 bps) LR2 (5 kbps) MR (150 kbps)		Next Step: LR2 17 MR 30 LR1 4
TC Seq. Name : HRRT1LR1 (Switch TTC1 OOL LR1) Switch to chain 1 after TTC-S OOL Launch/Sun ater sep/Surv LR1 TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>				
4		Disable transmission for non essential APIDs		Next Step: 5
		Execute Procedure: H_CRP_DHS_1001 Disabling transmission for non essential APIDs.		
5		Send TC (19,5) to disable relevant EAT entry		Next Step: 6

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	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandTwt2Off TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command TWTA 2 Off TC(8,4,115,1) GBM IL DSE -SY -- ---	DC07E170	
7		Switch OFF TWT Assembly 1 (TWTA1)		Next Step: 8
		Command TWTA1 OFF - TC(8,4,115,1) performs : Switch TWT Amplifier 1 (TWT1) OFF Switch EPC1 OFF Switch OP-LCL49 (TWTA1) OFF		
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandTwt1Off TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command TWTA 1 Off TC(8,4,115,1) GBM IL DSE -M- -- ---	DC06E170	
8		Switch OFF XPND2 Tx		Next Step: 9
		The following command switches OFF the XPND2 TX, changes the configuration of the TX2 on the 1553 S/C bus (to "OFF" and "Invalid") though leaves the XPND2 LCL ON.		
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandXpnd2Off TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 2 Off TC(8,4,115,1) GBM IL DSE -M- -- ---	DCN81170	
9		Switch OFF XPND1		Next Step: 10
		Command XPND1 OFF - TC(8,4,115,1) performs : Switch XPND TX1 OFF Configure TX1 "OFF" and "INVALID" on the 1553 S/C bus Note that it leaves LCL23 (XPND1) ON		

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	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandXpnd1Off TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 1 Off TC(8,4,115,1) GBM IL DSE -E- - - -	DCN80170	
10		Send TCs to move the SWs to SUR1		Next Step: 11
		Launch/Sun acquisition after separation/Survival (SUR1) RFDN SWs position BBBB D/L path: TX1 - TWTA1 - LGA1 U/L path: LGA1 - RX1 (LGA2/3 - RX2)		
		Notice that at 500 bps another possible RFDN switches configuration would be Sun acquisition otherwise (SUN1) RFDN SWs position BBAB D/L path: TX1 - TWTA1 - LGA1 U/L path: LGA1 - RX1 (MGA - RX2) In this case SW3_SW4 shall be commanded to Pos_B: TC DC58E170 (RfdnArmSW3_SW4LogB) TC DC78E170 (RfdnFireSW3_SW4_log_B)		
		WARNING: if the commands are sent in real time, after the execution of the first pair of commands ("arm" and "fire") Ground station has to re-sweep the uplink to re-acquire the lock and sent the second pair of TCs.		
	ET=+00.00.05 UT=+	Execute Telecommand RfdnArmSW1_SW2_log_A TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Arm Command SW1/SW2 (logical) Position A TC(8,4,115,5) GBM IL DSE -SY - - -	DC47E170	
	ET=+00.00.05 UT=+	Execute Telecommand RfdnFireSW1_SW2_log_A TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Fire SW1/SW2 (logical) Position A TC(8,4,115,7) GBM IL DSE -E- - - -	DC67E170	

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	ET=+00.00.05 UT=+	Execute Telecommand RfdnArmSW3_SW4_log_A TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Arm Command SW3/SW4 (logical) Position A TC(8,4,115,5)	DC48E170	
	ET=+00.00.05 UT=+	Execute Telecommand RfdnFireSW3_SW4_log_A TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Fire SW3/SW4 (logical) Position A TC(8,4,115,7)	DC68E170	
11		Send TCs(8,4,116,21) to mark failed chain 2 in UIU table		Next Step: 12
		Mark Unit OK telecommand is used to modify the health status of a unit as OK. Note that for XPND TX, XPND RX, TWT assembly, TWT amplifier, and EPC the Fail / Not Fail configuration status is common.		
	ET=+00.00.05 UT=+	Execute Telecommand MarkFailUnitB_XpndRx TC Control Flags : Subsch. ID : 10 Det. descr. : Fdir Mark Failed Unit B XPND RX, TC(8,4,116,21)	DCA9H170	
12		Switch ON XPND1		Next Step: 13
		Command XPND1 ON - TC(8,4,115,2) performs : Switch LCL23 (XPND1) ON Configure TX1 "ON" and "VALID" on the 1553 S/C bus Switch XPND TX1 ON		
	ET=+00.00.30 UT=+	Execute Telecommand TtcCommandXpnd1On TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 1 On TC(8,4,115,2)	DCN83170	

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13		Set the parameters and send TC(8,4,115,9) to configure the XPND1 to LR1		Next Step: 14
	ET=+00.00.30 UT=+	Execute Telecommand XpndConfigure_Templ Command Parameter(s) : XpndId DH018170 XpndA (Def) XpndConfMask1Unus DH220170 11 <bin> XpndConfMask1_ER DH221170 ON XpndConfMask1_CM DH222170 ON XpndConfMask1_RM DH223170 ON XpndConfMask1_HRM DH224170 ON XpndConfMask1_MRM DH225170 ON XpndConfMask1LRM1 DH226170 ON XpndConfMask1LRM2 DH227170 ON XpndConfMask1_RMI DH228170 Update XpndConfMask1_TMI DH229170 Update XpndConfMask2_PG DH230170 ON XpndConfMask2Unus DH231170 1111111111 <bin> XpndConfMask2OPLS DH232170 Update XpndConfDW1Unus DH020170 0 <dec> (Def) XpndConfDW1_ER DH021170 OFF (Def) XpndConfDW1_CM DH022170 OFF (Def) XpndConfDW1_RM DH023170 OFF (Def) XpndConfDW1_HRM DH024170 OFF (Def) XpndConfDW1_MRM DH025170 OFF (Def) XpndConfDW1LRM1 DH026170 ON XpndConfDW1LRM2 DH027170 OFF (Def) XpndConfDW1_RMI DH028170 0.6 XpndConfDW1_TMI DH029170 1.2 XpndConfDW2_PG DH030170 OFF (Def) XpndConfDW2Unus DH031170 0 <dec> (Def) XpndConfDW2OPLS DH032170 -4 TC Control Flags : GBM IL DSE -SY -- --- Subsch. ID : 10 Det. descr. : TEMPLATE Configure Xpnd TC(8,4,115,9)	DCT18170	
14		Send TC(8,4,115,20) to configure the TM encoder to LR1		Next Step: 15
	ET=+00.00.05 UT=+	Execute Telecommand TtcConfigTmEncInUseLow1 TC Control Flags : GBM IL DSE -E- -- --- Subsch. ID : 10 Det. descr. : TTC: Config TM Enc In Use Mode Low 1,500 bps, TC(8,4,115,20)	DC12F170	

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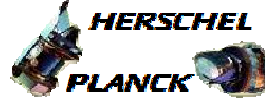
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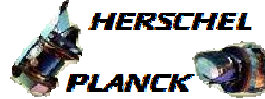
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23		Send TCs to move the SWs to SUN1		Next Step: 24
		Sun acquisition otherwise (SUN1) RFDN SWs position BBAB D/L path: TX1 - TWTA1 - LGA1 U/L path: LGA1 - RX1 (MGA - RX2)		
		WARNING: if the commands are sent in real time, after the execution of the first pair of commands ("arm" and "fire") Ground station has to re-sweep the uplink to re-acquire the lock and send the second pair of TCs.		
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	ET=+00.00.05 UT=+	Execute Telecommand RfdnFireSW1_SW2_log_A TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Fire SW1/SW2 (logical) Position A TC(8,4,115,7) GBM IL DSE -E- -- ---	DC67E170	
	ET=+00.00.05 UT=+	Execute Telecommand RfdnArmSW3_SW4LogB TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Arm SW3/SW4 (logical) Position B TC(8,4,115,6) GBM IL DSE --Y -- ---	DC58E170	

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	ET=+00.00.05 UT=+	Execute Telecommand RfdnFireSW3_SW4_log_B TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Fire SW3/SW4 (logical) Position B TC(8,4,115,8) GBM IL DSE --Y -- --	DC78E170	
24		Send TCs(8,4,116,21) to mark failed chain 2 in UIU table		Next Step: 25
		Mark Unit OK telecommand is used to modify the health status of a unit as OK. Note that for XPND TX, XPND RX, TWT assembly, TWT amplifier, and EPC the Fail / Not Fail configuration status is common.		
	ET=+00.00.05 UT=+	Execute Telecommand MarkFailUnitB_XpndRx TC Control Flags : Subsch. ID : 10 Det. descr. : Fdir Mark Failed Unit B XPND RX, TC(8,4,116,21) GBM IL DSE --Y -- --	DCA9H170	
25		Switch ON XPND1		Next Step: 26
		Command XPND1 ON - TC(8,4,115,2) performs : Switch LCL23 (XPND1) ON Configure TX1 "ON" and "VALID" on the 1553 S/C bus Switch XPND TX1 ON		
	ET=+00.00.30 UT=+	Execute Telecommand TtcCommandXpnd1On TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 1 On TC(8,4,115,2) GBM IL DSE --Y -- --	DCN83170	
26		Set the parameters and send TC(8,4,115,9) to configure the XPND1 to LR2		Next Step: 27

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.30 UT=+	Execute Telecommand XpndConfigure_Templ Command Parameter(s) : XpndId DH018170 XpndA (Def) XpndConfMask1Unus DH220170 11 <bin> XpndConfMask1_ER DH221170 ON XpndConfMask1_CM DH222170 ON XpndConfMask1_RM DH223170 ON XpndConfMask1_HRM DH224170 ON XpndConfMask1_MRM DH225170 ON XpndConfMask1LRM1 DH226170 ON XpndConfMask1LRM2 DH227170 ON XpndConfMask1_RMI DH228170 Update XpndConfMask1_TMI DH229170 Update XpndConfMask2_PG DH230170 ON XpndConfMask2Unus DH231170 111111111111 <bin> XpndConfMask2OPLS DH232170 Update XpndConfDW1Unus DH020170 0 <dec> (Def) XpndConfDW1_ER DH021170 OFF (Def) XpndConfDW1_CM DH022170 OFF (Def) XpndConfDW1_RM DH023170 OFF (Def) XpndConfDW1_HRM DH024170 OFF (Def) XpndConfDW1_MRM DH025170 OFF (Def) XpndConfDW1LRM1 DH026170 OFF (Def) XpndConfDW1LRM2 DH027170 ON XpndConfDW1_RMI DH028170 0.6 XpndConfDW1_TMI DH029170 1.2 XpndConfDW2_PG DH030170 OFF (Def) XpndConfDW2Unus DH031170 0 <dec> (Def) XpndConfDW2OPLS DH032170 -4 TC Control Flags : GBM IL DSE -SY -- --- Subsch. ID : 10 Det. descr. : TEMPLATE Configure Xpnd TC(8,4,115,9)	DCT18170	
27		Send TC(8,4,115,20) to configure the TM encoder to LR2		Next Step: 28
	ET=+00.00.05 UT=+	Execute Telecommand TtcConfigTmEncInUseLow2 TC Control Flags : GBM IL DSE -E- -- --- Subsch. ID : 10 Det. descr. : TTC: Config TM Enc In Use Mode Low 2 - 5kbps, TC(8,4,115,20)	DC17F170	
28		Send TC(8,4,115,17) to switch OFF the TM subsampling		Next Step: 29

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.05 UT=+	Execute Telecommand TtcSwitchTmSubsAMPLOff TC Control Flags : Subsch. ID : 10 Det. descr. : TTC: Switch TM Subsampling Off TC(8,4,115,17) GBM IL DSE --Y -- --	DC03F170	
29		Switch ON TWTA1 (OPLCL49+EPC1+TWT1)		Next Step: 43
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandTwtA1On TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command TWTA 1 On TC(8,4,115,2) GBM IL DSE --Y -- --	DC16E170	
<p>TC Seq. Name : HRRT1LR3 (Switch TTC1 OOL MBR) Switch to chain 1 after TTC-S OOL Nominal/Earth acquisition MBR</p> <p>TimeTag Type: B Sub Schedule ID: <input type="checkbox"/></p>				
30		Send TC (19,5) to disable relevant EAT entry		Next Step: 31
		<p>When this request is received, the action-telecommand associated with the corresponding event shall be disabled. In the TC(19,5) it is necessary to set the following parameters:</p> <p>N, number of events to be disabled APID, identifier of the Application Process generating this event report, in this case always equal to 16 (CDMU). Event ID, identifier of the event to be disabled, in this case equal to: 37400 & 37416 (TWTA1 failure), 37401 & 37417 (TWTA2 failure), 37402 (XPND1 RX failure), 37403 (XPND2 RX failure), 160 (XPND1 invalid RT), 161 (XPND2 invalid RT).</p>		

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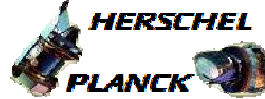
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandTwtalOff TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command TWTA 1 Off TC(8,4,115,1) GBM IL DSE -M- - - - -	DC06E170	
33		Switch OFF XPND2 Tx		Next Step: 34
		The following command switches OFF the XPND2 TX, changes the configuration of the TX2 on the 1553 S/C bus (to "OFF" and "Invalid") though leaves the XPND2 LCL ON.		
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandXpnd2Off TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 2 Off TC(8,4,115,1) GBM IL DSE -M- - - - -	DCN81170	
34		Switch OFF XPND1		Next Step: 35
		Command XPND1 OFF - TC(8,4,115,1) performs : Switch XPND TX1 OFF Configure TX1 "OFF" and "INVALID" on the 1553 S/C bus Note that it leaves LCL23 (XPND1) ON		
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandXpnd1Off TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 1 Off TC(8,4,115,1) GBM IL DSE -E- - - - -	DCN80170	
35		Send TCs to move the SWs NOM1		Next Step: 36
		Nominal/Earth acquisition (NOM1) RFDN SWs position ABAB D/L path: TX1 - TWTA1 - MGA U/L path: MGA - RX1 (LGA1 - RX2)		
		WARNING: if the commands are sent in real time, after the execution of the first pair of commands ("arm" and "fire") Ground station has to re-sweep the uplink to re-acquire the lock and sent the second pair of TCs.		

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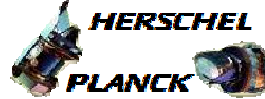
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.05 UT=+	Execute Telecommand RfdnArmSW1_SW2LogB TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Arm SW1/SW2 (logical) Position B TC(8,4,115,6) GBM IL DSE -SY -- ---	DC57E170	
	ET=+00.00.05 UT=+	Execute Telecommand RfdnFireSW1_SW2_log_B TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Fire SW1/SW2 (logical) Position B TC(8,4,115,8) GBM IL DSE -E- -- ---	DC77E170	
	ET=+00.00.05 UT=+	Execute Telecommand RfdnArmSW3_SW4LogB TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Arm SW3/SW4 (logical) Position B TC(8,4,115,6) GBM IL DSE -SY -- ---	DC58E170	
	ET=+00.00.05 UT=+	Execute Telecommand RfdnFireSW3_SW4_log_B TC Control Flags : Subsch. ID : 10 Det. descr. : Rfdn Fire SW3/SW4 (logical) Position B TC(8,4,115,8) GBM IL DSE -E- -- ---	DC78E170	
36		Send TCs(8,4,116,21) to mark failed chain 2 in UIU table		Next Step: 37
		Mark Unit OK telecommand is used to modify the health status of a unit as OK. Note that for XPND TX, XPND RX, TWT assembly, TWT amplifier, and EPC the Fail / Not Fail configuration status is common.		
	ET=+00.00.05 UT=+	Execute Telecommand MarkFailUnitB_XpndRx TC Control Flags : Subsch. ID : 10 Det. descr. : Fdir Mark Failed Unit B XPND RX, TC(8,4,116,21) GBM IL DSE --Y -- ---	DCA9H170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
37		Switch ON XPND1		Next Step: 38
		Command XPND1 ON - TC(8,4,115,2) performs : Switch LCL23 (XPND1) ON Configure TX1 "ON" and "VALID" on the 1553 S/C bus Switch XPND TX1 ON		
	ET+=00.00.30 UT=+	Execute Telecommand TtcCommandXpnd1On TC Control Flags : Subsch. ID : 10 Det. descr. : Ttc Command Xpnd 1 On TC(8,4,115,2)	DCN83170 GBM IL DSE --Y -- ---	
38		Set the parameters and send TC(8,4,115,9) to configure the XPND1 to MR		Next Step: 39
	ET+=00.00.30 UT=+	Execute Telecommand XpndConfigure_Templ Command Parameter(s) : XpndId DH018170 XpndConfMask1Unus DH220170 XpndConfMask1_ER DH221170 XpndConfMask1_CM DH222170 XpndConfMask1_RM DH223170 XpndConfMask1_HRM DH224170 XpndConfMask1_MRM DH225170 XpndConfMask1LRM1 DH226170 XpndConfMask1LRM2 DH227170 XpndConfMask1_RMI DH228170 XpndConfMask1_TMI DH229170 XpndConfMask2_PG DH230170 XpndConfMask2Unus DH231170 XpndConfMask2OPLS DH232170 XpndConfDW1Unus DH020170 XpndConfDW1_ER DH021170 XpndConfDW1_CM DH022170 XpndConfDW1_RM DH023170 XpndConfDW1_HRM DH024170 XpndConfDW1_MRM DH025170 XpndConfDW1LRM1 DH026170 XpndConfDW1LRM2 DH027170 XpndConfDW1_RMI DH028170 XpndConfDW1_TMI DH029170 XpndConfDW2_PG DH030170 XpndConfDW2Unus DH031170 XpndConfDW2OPLS DH032170 TC Control Flags : Subsch. ID : 10 Det. descr. : TEMPLATE Configure Xpnd TC(8,4,115,9)	DCT18170 XpndA (Def) 11 <bin> ON ON ON ON ON ON ON ON Update Update ON 1111111111 <bin> Update 0 <dec> (Def) OFF (Def) OFF (Def) OFF (Def) OFF (Def) OFF (Def) ON OFF (Def) OFF (Def) OFF (Def) 0.6 1.2 OFF (Def) 0 <dec> (Def) -4	

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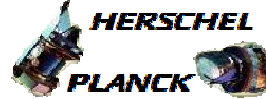
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
39		Send TC(8,4,115,20) to configure the TM encoder to MR		Next Step: 40
	ET=+00.00.05 UT=+	Execute Telecommand TtcConfTmEncInUseMedium TC Control Flags : GBM IL DSE -E- - - - - Subsch. ID : 10 Det. descr. : TTC: Config TM Enc In Use Mode Medium 150 kbps, TC(8,4,115,20)	DC22F170	
40		Send TC(8,4,115,17) to switch OFF the TM subsampling		Next Step: 41
	ET=+00.00.05 UT=+	Execute Telecommand TtcSwitchTmSubsamploff TC Control Flags : GBM IL DSE --Y - - - - Subsch. ID : 10 Det. descr. : TTC: Switch TM Subsampling Off TC(8,4,115,17)	DC03F170	
41		Switch ON TWTA1 (OPLCL49+EPC1+TWT1)		Next Step: 42
	ET=+00.00.05 UT=+	Execute Telecommand TtcCommandTwtalOn TC Control Flags : GBM IL DSE --Y - - - - Subsch. ID : 10 Det. descr. : Ttc Command TWTA 1 On TC(8,4,115,2)	DC16E170	
42		Enable the downlink of essentials and periodics HK packets		Next Step: 43
		Execute procedures H_FCP_DHS_1003 (Set the default values for the TRANSMIT/STORAGE flags with TC(14,5)) H_FCP_DHS_1009 (Enable the default HK (essential + periodic) packets with TC(14,1))		

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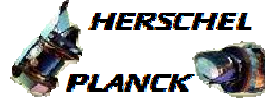
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
TC Seq. Name : HRRT1LRP (Switch TTC1 OOLFinal) Switch to chain 1 after a TTC-S OOL Final TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
43		Wait the completion of the TWT pre-heating phase (180 sec) and verify XPND1 and TWT1 setting and RFDN.SWs position		Next Step: 44
43.1		Rx1 power line status verification		<input type="checkbox"/>
		Verify FCL3 (XPND1 Rx) voltage Telemetry Xpnd1_Rx_FCL3_V WM703565	>= 27.96 V <= 28.71 V	(None)
		Verify FCL3 (XPND1 Rx) current Telemetry Xpnd1_Rx_FCL3_I WM702565	>= 0.199 A <= 0.351 A	AND=ZAZ7I999
43.2		Rx1 analogue telemetry verification		<input type="checkbox"/>
		Verify RX1 AGC Level Telemetry XPD1_RX1_AGC_LV RMB09442	>= -141.0 dbmW <= -45.0 dbmW	AND=ZAZ7I999
		Verify RX1 PLL SPE Telemetry XPD1_RX1_PLL_SP RMB11442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999
		Verify Rx1 TC bit rate Telemetry RX1_125-4K Stat RMB17442		AND=ZAZ7I999
		Verify Rx1 Supply Voltage Telemetry XPND1_RX1_SUP_V RMB07442	>= 4.8 V <= 5.5 V	AND=ZAZ7I999
		Verify Rx1 temperature Telemetry RX1_TEMP RMB02442		AND=ZAZ7I999
43.3		Tx1 power line status verification		<input type="checkbox"/>
		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
43.4		Tx1 analogue telemetry verification		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Tx1 Status Telemetry TX1 ON-OFF Stat RMB15442	= ON	AND=ZAZ7I999
		Verify Tx1 RF Output Power Telemetry XPDI_RF1_OUT_PW RMB13442	<= -4.2 dbmW >= -5.2 dbmW	AND=ZAZ7I999
		Verify Tx1 Supply Voltage Telemetry XPND1_TX1_SUP_V RMB05442	>= 6.0 V <= 6.9 V	AND=ZAZ7I999
		Verify Tx1 Temperature Telemetry TX1_TEMP RMB01442		AND=ZAZ7I999
43.5		Verify XPNDs status on the 1553 S/C bus		□
		Verify XPND1 status X1 Status - XS RMB22442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442		AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442		AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442		AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442		AND=ZAZ7I999
		Verify Ranging Modulator status Telemetry X1 Rang MOD-RM RMB27442	= OFF	AND=ZAZ7I999
		Verify Coherent Mode status Telemetry X1 Coher MOD-CM RMB26442	= OFF	AND=ZAZ7I999
		Verify Ranging Modulation Index Telemetry X1 RNGMD ID-RMI RMB32442	= 0.6 rad	AND=ZAZ7I999
		Verify Telemetry Modulation Index Telemetry X1 TM MD ID-TMI RMB33442	= 1.2 rad	AND=ZAZ7I999
		Verify Power level at transmitter output Telemetry X1 OutPowLevSet RMB35442	= -4 dbmW	AND=ZAZ7I999
		Verify Internal Bit Pattern Generator status Telemetry X1 IntBitPatGen RMB34442	= OFF	AND=ZAZ7I999
		Verify External Reference status Telemetry X1 Ext Ref - ER RMB25442	= OFF	AND=ZAZ7I999
		Verify Receiver lock status Telemetry X1 Rx Lock - RL RMB24442		AND=ZAZ7I999
		Verify RX AGC Level Telemetry X1 AGC TMUplnk RMB20442	>= -141.0 dbmW <= -45.0 dbmW	AND=ZAZ7I999

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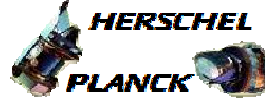
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify PLL Phase Error Telemetry X1 RX PLL PhErr RMB19442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999
		Verify Squelch Status Telemetry X1 SqlchSt - SS RMB23442		AND=ZAZ7I999
		Verify Tx1 TC Bit Rate Telemetry X1 TcBitRateTCB RMB61442		AND=ZAZ7I999
43.6		TM Encoder (in use) verification		<input type="checkbox"/>
		Verify Telemetry TME_BITRATE DEMRF160		AND=ZAZ7J999
43.7		TWTA1 setting verification		<input type="checkbox"/>
		Verify OPLCL49 (TWTA 1) Status Telemetry Twta_1_L49_1S WM22E565	= ON	AND=ZAZ7J999
		Verify TWTA1 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 EPC1 Anode Voltage Telemetry EPC1_ANODE_VOLT RMB01439	>= 1077.0 V <= 1137.0 V	AND=ZAZ7J999
		Verify EPC1 Helix current Telemetry EPC1_HELIX_CURR RMB02439	>= 0.19 mA <= 1.20 mA	AND=ZAZ7J999
		Verify EPC1 Automatic Restart Status Telemetry EPC1_AUT_RSTART RMB06439	= NOTACTIVE	AND=ZAZ7J999
		Verify EPC1 Temperature Telemetry EPC1_TEMP RMB11439		AND=ZAZ7J999
		Verify TWT1 Status Telemetry TWT1_ONOFF_STS RMB09439	= ON	AND=ZAZ7J999
43.8		RFDN SWS position verification		<input type="checkbox"/>
		Verify Telemetry RFDN SW1 Pos A RMB05436		AND=ZAZ7J999
		Verify Telemetry RFDN SW1 Pos B RMB09436		AND=ZAZ7J999
		Verify Telemetry RFDN SW2 Pos A RMB06436		AND=ZAZ7J999

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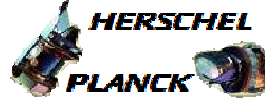
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RFDN SW2 Pos B RMB10436		AND=ZAZ7J999
		Verify Telemetry RFDN SW3 Pos A RMB07436		AND=ZAZ7J999
		Verify Telemetry RFDN SW3 Pos B RMB11436		AND=ZAZ7J999
		Verify Telemetry RFDN SW4 Pos A RMB08436		AND=ZAZ7J999
		Verify Telemetry RFDN SW4 Pos B RMB12436		AND=ZAZ7J999
44		Verify XPND2 and TWTA2 setting		Next Step: 45
44.1		RX2 power line status verification		<input type="checkbox"/>
		Verify FCL4 (XPND2 Rx) voltage Telemetry Xpnd2_Rx_FCL4_V WM403565	>= 27.96 V <= 28.71 V	(None)
		Verify FCL4 (XPND2 Rx) current Telemetry Xpnd2_Rx_FCL4_I WM402565	>= 0.20 A <= 0.35 A	AND=ZAZ7I999
44.2		RX2 Analogue Telemetry verification		<input type="checkbox"/>
		Verify RX2 AGC Level Telemetry XPD2_RX2_AGC_LV RMB10442		AND=ZAZ7I999
		Verify RX2 PLL SPE Telemetry XPD2_RX2_PLL_SP RMB12442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat RMB18442		AND=ZAZ7I999
		Verify RX2 Supply Voltage Telemetry XPND2_RX2_SUP_V RMB08442	>= 4.8 V <= 5.5 V	AND=ZAZ7I999
		Verify Rx2 temperature Telemetry RX2_TEMP RMB04442		AND=ZAZ7I999
44.3		TX2 power line status verification		<input type="checkbox"/>
		Verify LCL16 (XPND2 Tx) voltage Telemetry Xpnd2Tx_L16_S WM92C565	= ON	AND=ZAZ7I999

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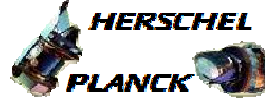
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify LCL16 (XPND2 Tx) current Telemetry Xpnd2Tx_L16_I WM908565	>= 0.3 A <= 0.4 A	AND=ZAZ7I999
44.4		TX2 Analogue Telemetry verification		□
		Verify TX2 Status Telemetry TX2 ON-OFF Stat RMB16442	= OFF	AND=ZAZ7I999
		Verify RF2 Output Power Telemetry XPD2_RF2_OUT_PW RMB14442	< -13.0 dbmW	AND=ZAZ7I999
		Verify TX2 Supply Voltage Telemetry XPND2_TX2_SUP_V RMB06442	>= 6.0 V <= 6.9 V	AND=ZAZ7I999
		Verify TX2 Temperature Telemetry TX2_TEMP RMB03442		AND=ZAZ7I999
44.5		Verify TWTA2 setting		□
		Verify OPLCL50 (TWTA 2) Status Telemetry TwtA_2_L50_1S WM92E565	= OFF	AND=ZAZ7J999
		Verify Telemetry TwtA_2_L50_I WM910565	>= 0.0 A <= 0.1 A	AND=ZAZ7J999
		Verify EPC2 Status Telemetry EPC2_ONOFF_STS RMB07439	= OFF	AND=ZAZ7J999
		Verify EPC2 Anode Voltage Telemetry EPC2_ANODE_VOLT RMB03439		AND=ZAZ7J999
		Verify EPC2 Helix current Telemetry EPC2_HELIX_CURR RMB04439		AND=ZAZ7J999
		Verify EPC2 Automatic Restart Status Telemetry EPC2_AUT_RSTART RMB08439	= NOTACTIVE	AND=ZAZ7J999
		Verify EPC2 Temperature Telemetry EPC2_TEMP RMB12439		AND=ZAZ7J999
		Verify TWT2 Status Telemetry TWT2_ONOFF_STS RMB10439	= OFF	AND=ZAZ7J999
45		Verify XPNDs status on the 1553 S/C bus		Next Step: 46
		Verify Telemetry XPND1On_Off DEFCK160	= ON	AND=ZAZ7I999
		Verify Telemetry XPND1Val_Inval DEFCK160	= Valid	AND=ZAZ7I999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry XPND2On_Off DEF1160	= OFF	AND=ZAZ7I999
		Verify Telemetry XPND2Val_Invalid DEF5160	= Invalid	AND=ZAZ7I999
46		Verify XPNDs and TWTAs in Unit In Use table		Next Step: 47
46.1		XPND1 UIU table status verification		<input type="checkbox"/>
		Verify Telemetry XpndRx1FuncSts DEL58170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx1Use DEL56170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx1LogSts DEL57170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndRx1FailSts DEL59170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx1FuncSts DEL27170	= On	AND=ZAZ7M999
		Verify Telemetry XpndTx1Use DEL29170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx1LogSts DEL28170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndTx1FailSts DEL26170	= Not_Failed	AND=ZAZ7M999
46.2		XPND2 UIU table status verification		<input type="checkbox"/>
		Verify Telemetry XpndRx2FuncSts DEL62170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx2Use DEL60170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx2LogSts DEL61170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndRx2FailSts DEL63170	= Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx2FuncSts DEL31170	= Off	AND=ZAZ7M999
		Verify Telemetry XpndTx2Use DEL33170	= Not_In_Use	AND=ZAZ7M999

Switch to chain 1 after a TTC-S out of limit
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry XpndTx2LogSts DEL32170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndTx2FailSts DEL30170	= Failed	AND=ZAZ7M999
46.3		TWTA1 UIU table status verification		□
		Verify Telemetry TwtalFuncSts DEL19170	= On	AND=ZAZ7M999
		Verify Telemetry TwtalUse DEL21170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtalLogSts DEL20170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtalFailSts DEL18170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc1FuncSts DEG25170	= On	AND=ZAZ7M999
		Verify Telemetry Epc1Use DEG27170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Epc1LogSts DEG26170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Epc1FailSts DEG24170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmplFuncSts DEH13170	= On	AND=ZAZ7M999
		Verify Telemetry TwtAmplUse DEH15170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmplLogSts DEH14170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtAmplFailSts DEH12170	= Not_Failed	AND=ZAZ7M999
46.4		TWTA2 UIU table status verification		□
		Verify Telemetry TwtA2FuncSts DEL23170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtA2Use DEL25170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtA2LogSts DEL24170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtA2FailSts DEL22170	= Failed	AND=ZAZ7M999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>Check that the following EAT entries are disabled:</p> <p>EventID Event Description 0x00A0 XPND1_NOT_VIT_RT_INV 0x00A1 XPND2_NOT_VIT_RT_INV 0x9218 EPC1_HelixCur_OutHi_Lim 0x9219 EPC2_HelixCur_OutHi_Lim 0x9228 EPC1_HelixCur_OutLo_Lim 0x9229 EPC2_HelixCur_OutLo_Lim 0x921A XPND1 RX Failure 0x921B XPND2 RX Failure</p>		
49		Report Monitoring List and check TTC related entries		Next Step: END
		<p>Execute Telecommand</p> <p style="text-align: center;">ReportMonitList</p> <p>TC Control Flags :</p> <p style="text-align: center;">GBM IL DSE --Y -- --</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Report current monitoring list, TC(12,8) no appl. data</p>	DC51F170	
		<p>Verify that the TTC entries status are as follows</p> <p>Monitoring ID= 17,76,77 (TTC Chain 1) are enabled , and Monitoring ID= 18,96,97 (TTC Chain 2) are disabled</p> <p>where:</p> <p>MonID Parameter ID</p> <p>17 XPND1_RX_Power: DID_ASW_CCC_RES_5:6 76 DID_EPC1_HELIX_CURRENT (4.25 mA Threshold) 77 DID_EPC1_HELIX_CURRENT (0.6 mA Threshold)</p> <p>18 XPND2_RX_Power: DID_ASW_CCC_RES_5:7 96 DID_EPC2_HELIX_CURRENT (4.25 mA Threshold) 97 DID_EPC2_HELIX_CURRENT (0.6 mA Threshold)</p>		
End of Procedure				