

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Procedure Summary

Objectives

This automated TM check procedure describes the steps needed to verify the overall TT&C Subsystem status in all S/C modes.

Summary of Constraints

Spacecraft Configuration

Start of Procedure

CDMU in default configuration.

End of Procedure

CDMU in default configuration.

Reference File(s)

Input Command Sequences

Output Command Sequences

Referenced Displays

ANDs	GRDs	SLDs
WALC1584		(None)
ZAZ7I999		
ZAZ7J999		
ZAZ7M999		
ZAZ7N999		

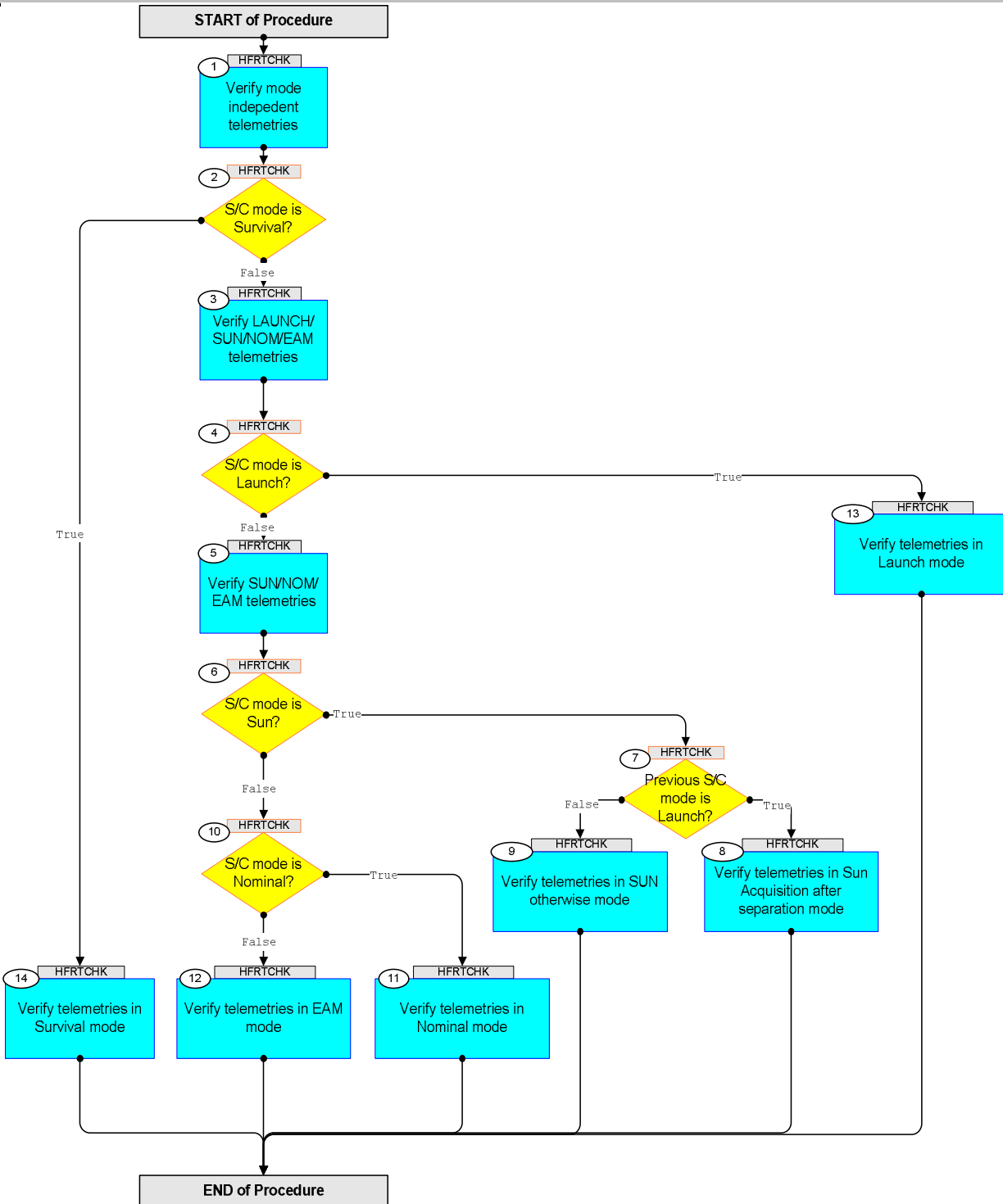
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
28/10/08		1	Created	E. Picallo	
02/02/09	2	2	minor expected values correction after HSVT2	E. Picallo	
30/03/09		3	Launch Mode config updated according to H-P-2-ASP-TS-1780 issue 2	E. Picallo	
16/04/09		4	RXs temp, TXs temp and TWTs Ao limits updated	E. Picallo	
17/04/09		5	Launch mode : TWTA_1_L49 ON and TwtAssA ON in UIU	E. Picallo	
17/04/09		6	Launch mode: XPND1_TX1_SUP_V updated	E. Picallo	
17/04/09	2.3	7	sequence generation	E. Picallo	
05/05/09	2.4	8	clarification about coherent and ranging status at separation (step 8.3)□ correction TWT Amp status in UIU table in SUN o/w (step 9.5)	E. Picallo	
18/06/09	2.5	9	Update according to new baseline both XPNDs LCLs switch ON	E. Picallo	

TTC Tope TM checks
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 Author: E. Picallo



Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
TC Seq. Name :HFRTCHK (TTC Tope TM checks)				
TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
1		Verify mode independent telemetries		Next Step: 2
1.1		Verify Rxs FCL output voltage and current TM		<input type="checkbox"/>
		Verify Voltage telemetry for XPND1 Rx Xpnd1_Rx_FCL3_V WM703565	>= 27.96 V <= 28.71 V	AND=WALC1584
		Verify Current telemetry for XPND1 Rx Xpnd1_Rx_FCL3_I WM702565	>= 0.20 A <= 0.35 A	AND=WALC1584
		Verify Voltage telemetry for XPND2 Rx Xpnd2_Rx_FCL4_V WM403565	>= 27.96 V <= 28.71 V	AND=WALC1584
		Verify Current telemetry for XPND2 Rx Xpnd2_Rx_FCL4_I WM402565	>= 0.20 A <= 0.35 A	AND=WALC1584
1.2		Verify Rx1 Analogue Telemetry verification		<input type="checkbox"/>
		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	>= -15.0 degC <= 50.0 degC	AND=ZAZ7I999
1.3		Verify RX2 Analogue Telemetry		<input type="checkbox"/>
		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	>= -15.0 degC <= 50.0 degC	AND=ZAZ7I999
1.4		Verify TXs temperatures verification		<input type="checkbox"/>

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Tx1 Temperature Telemetry TX1_TEMP RMB01442	>= -15.0 degC <= 50.0 degC	AND=ZAZ7I999
		Verify TX2 Temperature Telemetry TX2_TEMP RMB03442	>= -15.0 degC <= 50.0 degC	AND=ZAZ7I999
1.5		Verify TWTAs protections and temperatures		□
		Verify EPC1 Automatic Restart Status Telemetry EPC1_AUT_RSTART RMB06439	= NOTACTIVE	AND=ZAZ7J999
		Verify EPC2 Automatic Restart Status Telemetry EPC2_AUT_RSTART RMB08439	= NOTACTIVE	AND=ZAZ7J999
		Verify EPC1 Temperature Telemetry EPC1_TEMP RMB11439	>= -15.0 degC <= 50.0 degC	AND=ZAZ7J999
		Verify EPC2 Temperature Telemetry EPC2_TEMP RMB12439	>= -15.0 degC <= 50.0 degC	AND=ZAZ7J999
		Verify RFDN Isolator 1 Temp Telemetry RFDN_ISOL1_TEMP RMB01436	>= -15.0 degC <= 35.0 degC	AND=ZAZ7J999
		Verify RFDN Isolator 2 Temp Telemetry RFDN_ISOL2_TEMP RMB02436	>= -15.0 degC <= 35.0 degC	AND=ZAZ7J999
		Verify RFDN Diplexer 1 Temp Telemetry RFDN_DIPL1_TEMP RMB03436	>= -15.0 degC <= 35.0 degC	AND=ZAZ7J999
		Verify RFDN Diplexer 2 Temp Telemetry RFDN_DIPL2_TEMP RMB04436	>= -15.0 degC <= 35.0 degC	AND=ZAZ7J999
2		S/C mode is Survival?		Next Step: False 3 True 14
		Verify Telemetry CurrentMode DEL34170	= Survival	(None)
3		Verify LAUNCH/SUN/NOM/EAM telemetries		Next Step: 4
3.1		XPND2 UIU table status verification		□
		Verify Telemetry XpndRx2FuncSts DEL62170	= On	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry XpndRx2Use DEL60170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx2LogSts DEL61170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndRx2FailSts DEL63170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx2FuncSts DEL31170	= Off	AND=ZAZ7M999
		Verify Telemetry XpndTx2Use DEL33170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx2LogSts DEL32170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndTx2FailSts DEL30170	= Not_Failed	AND=ZAZ7M999
3.2		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	= Redundant	AND=ZAZ7M999
		Verify Telemetry Twta2FailSts DEL22170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc2FuncSts DEG29170	= Off	AND=ZAZ7M999
		Verify Telemetry Epc2Use DEG31170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Epc2LogSts DEG30170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Epc2FailSts DEG28170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FuncSts DEH17170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtAmp2Use DEH19170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmp2LogSts DEH18170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FailSts DEH16170	= Not_Failed	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
3.3		<i>RFDN UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry Rfdn1Use DEH51170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn1LogSts DEH50170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Rfdn1FailSts DEH48170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Rfdn3Use DEH59170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn3LogSts DEH58170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Rfdn3FailSts DEH56170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Rfdn2Use DEH55170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn2LogSts DEH54170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Rfdn2FailSts DEH52170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Rfdn4Use DEH63170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn4LogSts DEH62170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Rfdn4FailSts DEH60170	= Not_Failed	AND=ZAZ7M999
4		<i>S/C mode is Launch?</i>		Next Step: False 5 True 13
		Verify Telemetry CurrentMode DEL34170	= LaunchMode	(None)
5		<i>Verify SUN/NOM/EAM telemetries</i>		Next Step: 6
5.1		<i>Rx1 AGC and PLL Analogue Telemetry verification</i>		<input type="checkbox"/>
		Verify RX1 AGC Level Telemetry XPD1_RX1_AGC_LV RMB09442	>= -141.0 dbmW	AND=ZAZ7I999
		Verify RX1 PLL SPE Telemetry XPD1_RX1_PLL_SP RMB11442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5.2		Verify TTC LCLs		<input type="checkbox"/>
		Verify Telemetry Xpnd1Tx_L23_S WM12D565	= ON	(None)
		Verify Telemetry Xpnd1Tx_L23_I WM109565	>= 0.41 A <= 0.55 A	(None)
		Verify Telemetry Twta_1_L49_1S WM22E565	= ON	(None)
		Verify Telemetry Twta_1_L49_2S WM22K565	= ON	(None)
		Verify Telemetry Twta_1_L49_I WM210565	>= 2.24 A <= 2.80 A	(None)
		Verify Telemetry Xpnd2Tx_L16_S WM92C565	= ON	(None)
		Verify Telemetry Xpnd2Tx_L16_I WM908565	>= 0.3 A <= 0.4 A	(None)
		Verify Telemetry Twta_2_L50_1S WM92E565	= OFF	(None)
		Verify Telemetry Twta_2_L50_2S WM92K565	= OFF	(None)
		Verify Telemetry Twta_2_L50_I WM910565	>= 0.0 A <= 0.1 A	(None)
5.3		Verify TX1 Analogue Telemetry		<input type="checkbox"/>
		Verify Tx1 Status Telemetry TX1 ON-OFF Stat RMB15442	= ON	AND=ZAZ7I999
		FM3 (Herschel XPND1) output power = -4.75+-10%		
		Verify RF1 Output Power Telemetry XPD1_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 <= 6.93 V	AND=ZAZ7I999
5.4		TX2 Analogue Telemetry verification		<input type="checkbox"/>
		Verify TX2 Status Telemetry TX2 ON-OFF Stat RMB16442	= OFF	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify RF2 Output Power Telemetry XPND2_RF2_OUT_PW RMB14442	< -12.0 dbmW	AND=ZAZ7I999
		Verify TX2 Supply Voltage Telemetry XPND2_TX2_SUP_V RMB06442	>= 6.0 V <= 6.93 V	AND=ZAZ7I999
5.5		Verify XPND1 RT status on the 1553 S/C bus		□
		Verify Telemetry XPND1On_Off DEFCG160	= ON	AND=ZAZ7N999
		Verify Telemetry XPND1Dead_Alive DEFCH160	= Alive	AND=ZAZ7N999
		Verify Telemetry XPND1WellsickTC DEFCZ160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND1WellsickTM DEFCJ160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND1Val_Invalid DEFCK160	= Valid	AND=ZAZ7N999
		Verify Telemetry XPND1_Vit_NoVit DEFDP160	= NonVital	AND=ZAZ7N999
		Verify Telemetry XPND1_No_Re_RTA DEFDR160	= NOMINAL	AND=ZAZ7N999
5.6		XPND2 RT status on the 1553 S/C bus Verification		□
		Verify Telemetry XPND2On_Off DEFD1160	= OFF	AND=ZAZ7N999
		Verify Telemetry XPND2Dead_Alive DEFD2160	= Alive	AND=ZAZ7N999
		Verify Telemetry XPND2WellsickTC DEFD3160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND2WellsickTM DEFD4160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND2Val_Invalid DEFD5160	= Invalid	AND=ZAZ7N999
		Verify Telemetry XPND2_Vit_NoVit DEFDT160	= NonVital	AND=ZAZ7N999
		Verify Telemetry XPND2_No_Re_RTA DEFDU160	= NOMINAL	AND=ZAZ7N999
5.7		TWTA1 Status verification		□

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify EPC1 Status Telemetry EPC1_ONOFF_STS RMB05439	= ON	AND=ZAZ7J999
		FM1 (TWTA1) anode voltage old limits = 1077 Min,1137 Max FM1 (TWTA1) anode voltage new limits=1050 Min,1 120 Max		
		Verify EPC1 Anode Voltage Telemetry EPC1_ANODE_VOLT RMB01439	>= 1050.0 V <= 1120.0 V	AND=ZAZ7J999
		FM1 (Herschel TWTA1) helix current = 0.19 Min , 1.20 Max		
		Verify EPC1 Helix current Telemetry EPC1_HELIX_CURR RMB02439	>= 0.19 mA <= 1.20 mA	AND=ZAZ7J999
		Verify TWT1 Status Telemetry TWT1_ONOFF_STS RMB09439	= ON	AND=ZAZ7J999
5.8		Verify TWTA2 setting		<input type="checkbox"/>
		Verify EPC2 Status Telemetry EPC2_ONOFF_STS RMB07439	= OFF	AND=ZAZ7J999
		Verify TWT2 Status Telemetry TWT2_ONOFF_STS RMB10439	= OFF	AND=ZAZ7J999
5.9		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	= Nominal	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	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndTx1FailSts DEL26170	= Not_Failed	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5.10		<i>TWTA1 UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry TwtalFuncSts DEL19170	= On	AND=ZAZ7M999
		Verify Telemetry TwtalUse DEL21170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtalLogSts DEL20170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtalFailSts DEL18170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry EpclFuncSts DEG25170	= On	AND=ZAZ7M999
		Verify Telemetry EpclUse DEG27170	= In_Use	AND=ZAZ7M999
		Verify Telemetry EpclLogSts DEG26170	= Nominal	AND=ZAZ7M999
		Verify Telemetry EpclFailSts DEG24170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmplUse DEH15170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmplLogSts DEH14170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtAmplFailSts DEH12170	= Not_Failed	AND=ZAZ7M999
6		<i>S/C mode is Sun?</i>		Next Step: True 7 False 10
		Verify Telemetry CurrentMode DEL34170	= SunAcquisition	(None)
7		<i>Previous S/C mode is Launch?</i>		Next Step: True 8 False 9
		Verify Telemetry PrevMode DEL35170	= LaunchMode	(None)
8		<i>Verify telemetries in Sun Acquisition after separation mode</i>		Next Step: END
8.1		<i>Verify separation straps</i>		<input type="checkbox"/>

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Separ Strap1 ZMP13999	= Separated	(None)
		Verify Telemetry Separ Strap2 ZMP14999	= Separated	(None)
8.2		Verify Rx TC bit rate		<input type="checkbox"/>
		Verify Receiver 1 bit rate Telemetry RX1 125-4K Stat RMB17442	= 4 Kbps	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat RMB18442	= 4 Kbps	AND=ZAZ7I999
8.3		TX1 Status via 1553 S/C bus verification		<input type="checkbox"/>
		Verify XPND1 status X1 Status - XS RMB22442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442	= OFF	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442	= ON	AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442	= OFF	AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= OFF	AND=ZAZ7I999
		According to CDMU ASW V 3.10 Coherent and Ranging are set OFF after separation. However it is assumed that at the point in time when this procedure is called Coherent and Ranging are enabled by Ground for orbit determination		
		Verify Ranging Modulator status Telemetry X1 Rang MOD-RM RMB27442	= ON	AND=ZAZ7I999
		Verify Coherent Mode status Telemetry X1 Coher MOD-CM RMB26442	= ON	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

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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		Verify RX1 Lock status Telemetry X1 Rx Lock - RL RMB24442	= Locked	AND=ZAZ7I999
		Verify RX1 AGC Level Telemetry X1 AGC TMUplnk RMB20442	>= -141.0 dbmW	AND=ZAZ7I999
		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	= ON	AND=ZAZ7I999
		Verify Tx1 TC Bit Rate Telemetry X1 TcBitRateTCB RMB61442	= High	(None)
8.4		Verify TM encoder TM bit rate		<input type="checkbox"/>
		Verify Telemetry TME_BITRATE DEMRF160	= 5 Kbps	AND=ZAZ7J999
8.5		Verify RFDN setting		<input type="checkbox"/>
		Verify RFDN SW1 Position A Telemetry RFDN SW1 Pos A RMB05436	= OFF	AND=ZAZ7J999
		Verify RFDN SW1 Position B Telemetry RFDN SW1 Pos B RMB09436	= ON	AND=ZAZ7J999
		Verify RFDN SW2 Position A Telemetry RFDN SW2 Pos A RMB06436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position B Telemetry RFDN SW2 Pos B RMB10436	= ON	AND=ZAZ7J999
		Verify RFDN SW3 Position A Telemetry RFDN SW3 Pos A RMB07436	= OFF	AND=ZAZ7J999
		Verify RFDN SW3 Position B Telemetry RFDN SW3 Pos B RMB11436	= ON	AND=ZAZ7J999
		Verify RFDN SW4 Position A Telemetry RFDN SW4 Pos A RMB08436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position B Telemetry RFDN SW4 Pos B RMB12436	= ON	AND=ZAZ7J999
8.6		TWT Amp UIU Status verification		<input type="checkbox"/>
		Verify Telemetry TwtAmplFuncSts DEH13170	= On	AND=ZAZ7M999
8.7		RFDN SW position UIU table status verification		<input type="checkbox"/>

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



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		Verify Telemetry Rfdn1FuncSts DEH49170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn2FuncSts DEH53170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn3FuncSts DEH57170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn4FuncSts DEH61170	= PosB	AND=ZAZ7M999
9		Verify telemetries in SUN otherwise mode		Next Step: END
9.1		Verify Rx TC bit rate		<input type="checkbox"/>
		Verify Receiver 1 bit rate Telemetry RX1 125-4K Stat RMB17442	= 125 bps	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat RMB18442	= 125 bps	AND=ZAZ7I999
9.2		TX1 Status via 1553 S/C bus verification		<input type="checkbox"/>
		Verify XPND1 status X1 Status - XS RMB22442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442	= ON	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442	= OFF	AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442	= OFF	AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= OFF	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

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
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		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 RX1 Lock status Telemetry X1 Rx Lock - RL RMB24442	= Locked	AND=ZAZ7I999
		Verify RX1 AGC Level Telemetry X1 AGC TMUplnk RMB20442	>= -141.0 dbmW	AND=ZAZ7I999
		Verify PLL Phase Error Telemetry X1 RX PLL PhErr RMB19442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999
		Verify Squelch status Telemetry X1 SsqlchSt - SS RMB23442	= ON	AND=ZAZ7I999
		Verify Tx1 TC Bit Rate Telemetry X1 TcBitRateTCB RMB61442	= Low	(None)
9.3		Verify TM encoder TM bit rate		□
		Verify Telemetry TME_BITRATE DEMRF160	= 500 bps	AND=ZAZ7J999
9.4		Verify RFDN setting		□
		Verify RFDN SW1 Position A Telemetry RFDN SW1 Pos A RMB05436	= OFF	AND=ZAZ7J999
		Verify RFDN SW1 Position B Telemetry RFDN SW1 Pos B RMB09436	= ON	AND=ZAZ7J999
		Verify RFDN SW2 Position A Telemetry RFDN SW2 Pos A RMB06436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position B Telemetry RFDN SW2 Pos B RMB10436	= ON	AND=ZAZ7J999
		Verify RFDN SW3 Position A Telemetry RFDN SW3 Pos A RMB07436	= ON	AND=ZAZ7J999
		Verify RFDN SW3 Position B Telemetry RFDN SW3 Pos B RMB11436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position A Telemetry RFDN SW4 Pos A RMB08436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position B Telemetry RFDN SW4 Pos B RMB12436	= ON	AND=ZAZ7J999
9.5		TWT Amp UIU Status verification		□

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry TwtAmp1FuncSts DEH13170	= On	AND=ZAZ7M999
9.6		<i>RFDN SW position UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry Rfdn1FuncSts DEH49170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn2FuncSts DEH53170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn3FuncSts DEH57170	= PosA	AND=ZAZ7M999
		Verify Telemetry Rfdn4FuncSts DEH61170	= PosB	AND=ZAZ7M999
10		<i>S/C mode is Nominal?</i>		Next Step: True 11 False 12
		Verify Telemetry CurrentMode DEL34170	= Nominal	(None)
11		<i>Verify telemetries in Nominal mode</i>		Next Step: END
11.1		<i>Verify Rx TC bit rate</i>		<input type="checkbox"/>
		Verify Receiver 1 bit rate Telemetry RX1 125-4K Stat RMB17442	= 4 Kbps	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat RMB18442	= 125 bps	AND=ZAZ7I999
11.2		<i>TX1 Status via 1553 S/C bus verification</i>		<input type="checkbox"/>
		Verify XPND1 status X1 Status - XS RMB22442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442	= OFF	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442	= OFF	AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442	= ON	AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= OFF	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Coherent Mode status Telemetry X1 Coher MOD-CM RMB26442	= ON	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 RX1 Lock status Telemetry X1 Rx Lock - RL RMB24442	= Locked	AND=ZAZ7I999
		Verify RX1 AGC Level Telemetry X1 AGC TMUplnk RMB20442	>= -141.0 dbmW	AND=ZAZ7I999
		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	= ON	AND=ZAZ7I999
		Verify Tx1 TC Bit Rate Telemetry X1 TcBitRateTCB RMB61442	= High	(None)
11.3		Verify TM encoder TM bit rate		☐
		Verify Telemetry TME_BITRATE DEMRF160	= 150 Kbps	AND=ZAZ7J999
11.4		Verify RFDN setting		☐
		Verify RFDN SW1 Position A Telemetry RFDN SW1 Pos A RMB05436	= ON	AND=ZAZ7J999
		Verify RFDN SW1 Position B Telemetry RFDN SW1 Pos B RMB09436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position A Telemetry RFDN SW2 Pos A RMB06436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position B Telemetry RFDN SW2 Pos B RMB10436	= ON	AND=ZAZ7J999
		Verify RFDN SW3 Position A Telemetry RFDN SW3 Pos A RMB07436	= ON	AND=ZAZ7J999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify RFDN SW3 Position B Telemetry RFDN SW3 Pos B RMB11436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position A Telemetry RFDN SW4 Pos A RMB08436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position B Telemetry RFDN SW4 Pos B RMB12436	= ON	AND=ZAZ7J999
11.5		TWT Amp UIU Status verification		<input type="checkbox"/>
		Verify Telemetry TwtAmplFuncSts DEH13170	= On	AND=ZAZ7M999
11.6		RFDN SW position UIU table status verification		<input type="checkbox"/>
		Verify Telemetry Rfdn1FuncSts DEH49170	= PosA	AND=ZAZ7M999
		Verify Telemetry Rfdn2FuncSts DEH53170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn3FuncSts DEH57170	= PosA	AND=ZAZ7M999
		Verify Telemetry Rfdn4FuncSts DEH61170	= PosB	AND=ZAZ7M999
12		Verify telemetries in EAM mode		Next Step: END
12.1		Verify Rx TC bit rate		<input type="checkbox"/>
		Verify Receiver 1 bit rate Telemetry RX1 125-4K Stat RMB17442	= 4 Kbps	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat RMB18442	= 4 Kbps	AND=ZAZ7I999
12.2		TX1 Status via 1553 S/C bus verification		<input type="checkbox"/>
		Verify XPND1 status X1 Status - XS RMB22442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442	= OFF	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442	= OFF	AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442	= ON	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= OFF	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 RX1 Lock status Telemetry X1 Rx Lock - RL RMB24442	= Locked	AND=ZAZ7I999
		Verify RX1 AGC Level Telemetry X1 AGC TMUplnk RMB20442	>= -141.0 dbmW	AND=ZAZ7I999
		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	= ON	AND=ZAZ7I999
		Verify Tx1 TC Bit Rate Telemetry X1 TcBitRateTCB RMB61442	= High	(None)
12.3		Verify TM encoder TM bit rate		☐
		Verify Telemetry TME_BITRATE DEMRF160	= 150 Kbps	AND=ZAZ7J999
12.4		Verify RFDN setting		☐
		Verify RFDN SW1 Position A Telemetry RFDN SW1 Pos A RMB05436	= ON	AND=ZAZ7J999
		Verify RFDN SW1 Position B Telemetry RFDN SW1 Pos B RMB09436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position A Telemetry RFDN SW2 Pos A RMB06436	= OFF	AND=ZAZ7J999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify RFDN SW2 Position B Telemetry RFDN SW2 Pos B	RMB10436 = ON	AND=ZAZ7J999
		Verify RFDN SW3 Position A Telemetry RFDN SW3 Pos A	RMB07436 = ON	AND=ZAZ7J999
		Verify RFDN SW3 Position B Telemetry RFDN SW3 Pos B	RMB11436 = OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position A Telemetry RFDN SW4 Pos A	RMB08436 = OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position B Telemetry RFDN SW4 Pos B	RMB12436 = ON	AND=ZAZ7J999
12.5		TWT Amp UIU Status verification		<input type="checkbox"/>
		Verify Telemetry TwtAmp1FuncSts	DEH13170 = On	AND=ZAZ7M999
12.6		RFDN SW position UIU table status verification		<input type="checkbox"/>
		Verify Telemetry Rfdn1FuncSts	DEH49170 = PosA	AND=ZAZ7M999
		Verify Telemetry Rfdn2FuncSts	DEH53170 = PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn3FuncSts	DEH57170 = PosA	AND=ZAZ7M999
		Verify Telemetry Rfdn4FuncSts	DEH61170 = PosB	AND=ZAZ7M999
13		Verify telemetries in Launch mode		Next Step: END
13.1		Verify Rx TC bit rate		<input type="checkbox"/>
		Verify Receiver 1 bit rate Telemetry RX1 125-4K Stat	RMB17442 = 4 Kbps	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat	RMB18442 = 4 Kbps	AND=ZAZ7I999
13.2		Verify TTC LCLs		<input type="checkbox"/>
		Verify Telemetry Xpnd1Tx_L23_S	WM12D565 = ON	(None)

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Xpnd1Tx_L23_I WM109565	>= 0.40 A <= 0.55 A	(None)
		Verify Telemetry Twta_1_L49_1S WM22E565	= ON	(None)
		Verify Telemetry Twta_1_L49_2S WM22K565	= ON	(None)
		Verify Telemetry Twta_1_L49_I WM210565	>= 0.0 A <= 0.1 A	(None)
		Verify Telemetry Xpnd2Tx_L16_S WM92C565	= OFF	(None)
		Verify Telemetry Xpnd2Tx_L16_I WM908565	>= 0.0 A <= 0.1 A	(None)
		Verify Telemetry Twta_2_L50_1S WM92E565	= OFF	(None)
		Verify Telemetry Twta_2_L50_2S WM92K565	= OFF	(None)
		Verify Telemetry Twta_2_L50_I WM910565	>= 0.0 A <= 0.1 A	(None)
13.3		Verify TX1 Analogue Telemetry		<input type="checkbox"/>
		Verify Tx1 Status Telemetry TX1 ON-OFF Stat RMB15442	= OFF	AND=ZAZ7I999
		Verify RF1 Output Power Telemetry XPD1_RF1_OUT_PW RMB13442	< -12.0 dbmW	AND=ZAZ7I999
		Verify Tx1 Supply Voltage Telemetry XPND1_TX1_SUP_V RMB05442	>= 6.0 V <= 6.93 V	AND=ZAZ7I999
13.4		TX2 Analogue Telemetry verification		<input type="checkbox"/>
		Verify TX2 Status Telemetry TX2 ON-OFF Stat RMB16442	= OFF	AND=ZAZ7I999
		Verify RF2 Output Power Telemetry XPD2_RF2_OUT_PW RMB14442	< -12.0 dbmW	AND=ZAZ7I999
		Verify TX2 Supply Voltage Telemetry XPND2_TX2_SUP_V RMB06442	>= 0.0 V <= 0.11 V	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
13.5		Verify XPND1 RT status on the 1553 S/C bus		<input type="checkbox"/>
		Verify Telemetry XPND1On_Off DEFCG160	= ON	AND=ZAZ7N999
		Verify Telemetry XPND1Dead_Alive DEFCH160	= Alive	AND=ZAZ7N999
		Verify Telemetry XPND1WellsickTC DEF CZ160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND1WellsickTM DEF C J160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND1Val_Inval DEF CK160	= Valid	AND=ZAZ7N999
		Verify Telemetry XPND1_Vit_NoVit DEF DP160	= NonVital	AND=ZAZ7N999
		Verify Telemetry XPND1_No_Re_RTA DEF DR160	= NOMINAL	AND=ZAZ7N999
13.6		XPND2 RT status on the 1553 S/C bus Verification		<input type="checkbox"/>
		Verify Telemetry XPND2On_Off DEF D1160	= OFF	AND=ZAZ7N999
		Verify Telemetry XPND2Dead_Alive DEF D2160	= Alive	AND=ZAZ7N999
		Verify Telemetry XPND2WellsickTC DEF D3160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND2WellsickTM DEF D4160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND2Val_Inval DEF D5160	= Invalid	AND=ZAZ7N999
		Verify Telemetry XPND2_Vit_NoVit DEF DT160	= NonVital	AND=ZAZ7N999
		Verify Telemetry XPND2_No_Re_RTA DEF DU160	= NOMINAL	AND=ZAZ7N999
13.7		TX1 Status via 1553 S/C bus verification		<input type="checkbox"/>
		Verify XPND1 status X1 Status - XS RMB22442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X1 LowRate-1 MD RMB30442	= OFF	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X1 LowRate-2 MD RMB31442	= ON	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Medium Rate Modulator status Telemetry X1 MedRate-MRM RMB29442	= OFF	AND=ZAZ7I999
		Verify High Rate status Telemetry X1 HIRateMD-HRM RMB28442	= OFF	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 RX1 Lock status Telemetry X1 Rx Lock - RL RMB24442	= No locked	AND=ZAZ7I999
		Verify RX1 AGC Level Telemetry X1 AGC TMUpInk RMB20442	< -141.0 dbmW	AND=ZAZ7I999
		Verify Squelch status Telemetry X1 SqlchSt - SS RMB23442	= OFF	AND=ZAZ7I999
		Verify Tx1 TC Bit Rate Telemetry X1 TcBitRateTCB RMB61442	= High	(None)
		As all links will be made through the umbilical, the transmitter 1 rate will remain at 5 kbps throughout the launch pad operations		
13.8		Verify TM encoder TM bit rate		□
		Verify Telemetry TME_BITRATE DEMRF160	= 150 Kbps	AND=ZAZ7J999
		TM rate is 150 kbps until H0 – 30 min then is commanded to 5 kbps		
13.9		TWTA1 Status verification		□
		Verify EPC1 Status Telemetry EPC1_ONOFF_STS RMB05439	= OFF	AND=ZAZ7J999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify TWT1 Status Telemetry TWT1_ONOFF_STS RMB09439	= OFF	AND=ZAZ7J999
13.10		Verify TWTA2 setting		<input type="checkbox"/>
		Verify EPC2 Status Telemetry EPC2_ONOFF_STS RMB07439	= OFF	AND=ZAZ7J999
		Verify TWT2 Status Telemetry TWT2_ONOFF_STS RMB10439	= OFF	AND=ZAZ7J999
13.11		Verify RFDN setting		<input type="checkbox"/>
		Verify RFDN SW1 Position A Telemetry RFDN SW1 Pos A RMB05436	= OFF	AND=ZAZ7J999
		Verify RFDN SW1 Position B Telemetry RFDN SW1 Pos B RMB09436	= ON	AND=ZAZ7J999
		Verify RFDN SW2 Position A Telemetry RFDN SW2 Pos A RMB06436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position B Telemetry RFDN SW2 Pos B RMB10436	= ON	AND=ZAZ7J999
		Verify RFDN SW3 Position A Telemetry RFDN SW3 Pos A RMB07436	= OFF	AND=ZAZ7J999
		Verify RFDN SW3 Position B Telemetry RFDN SW3 Pos B RMB11436	= ON	AND=ZAZ7J999
		Verify RFDN SW4 Position A Telemetry RFDN SW4 Pos A RMB08436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position B Telemetry RFDN SW4 Pos B RMB12436	= ON	AND=ZAZ7J999
13.12		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	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndRx1FailSts DEL59170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx1FuncSts DEL27170	= Off	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry XpndTx1Use DEL29170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx1LogSts DEL28170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndTx1FailSts DEL26170	= Not_Failed	AND=ZAZ7M999
13.13		<i>TWTA1 UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry TwtalFuncSts DEL19170	= On	AND=ZAZ7M999
		Verify Telemetry TwtalUse DEL21170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtalLogSts DEL20170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtalFailSts DEL18170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc1FuncSts DEG25170	= Off	AND=ZAZ7M999
		Verify Telemetry Epc1Use DEG27170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Epc1LogSts DEG26170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Epc1FailSts DEG24170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmp1FuncSts DEH13170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtAmp1Use DEH15170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmp1LogSts DEH14170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtAmp1FailSts DEH12170	= Not_Failed	AND=ZAZ7M999
13.14		<i>RFDN SW position UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry Rfdn1FuncSts DEH49170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn2FuncSts DEH53170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn3FuncSts DEH57170	= PosB	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Rfdn4FuncSts DEH61170	= PosB	AND=ZAZ7M999
14		Verify telemetries in Survival mode		Next Step: END
14.1		Verify RX2 AGC and PLL Telemetry		<input type="checkbox"/>
		Verify RX2 AGC Level Telemetry XPD2_RX2_AGC_LV RMB10442	>= -141.0 dbmW	AND=ZAZ7I999
		Verify RX2 PLL SPE Telemetry XPD2_RX2_PLL_SP RMB12442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999
14.2		Verify Rx TC bit rate		<input type="checkbox"/>
		Verify Receiver 1 bit rate Telemetry RX1 125-4K Stat RMB17442	= 125 bps	AND=ZAZ7I999
		Verify Receiver 2 bit rate Telemetry RX2 125-4K Stat RMB18442	= 125 bps	AND=ZAZ7I999
14.3		Verify TTC LCLs		<input type="checkbox"/>
		Verify Telemetry Xpnd1Tx_L23_S WM12D565	= ON	(None)
		Verify Telemetry Xpnd1Tx_L23_I WM109565	>= 0.3 A <= 0.4 A	(None)
		Verify Telemetry Twta_1_L49_1S WM22E565	= OFF	(None)
		Verify Telemetry Twta_1_L49_2S WM22K565	= OFF	(None)
		Verify Telemetry Twta_1_L49_I WM210565	>= 0.0 A <= 0.1 A	(None)
		Verify Telemetry Xpnd2Tx_L16_S WM92C565	= ON	(None)
		Verify Telemetry Xpnd2Tx_L16_I WM908565	>= 0.41 A <= 0.51 A	(None)
		Verify Telemetry Twta_2_L50_1S WM92E565	= ON	(None)
		Verify Telemetry Twta_2_L50_2S WM92K565	= ON	(None)

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Twta_2_L50_I WM910565	>= 2.24 A <= 2.80 A	(None)
14.4		Verify TX1 Analogue Telemetry		□
		Verify Tx1 Status Telemetry TX1 ON-OFF Stat RMB15442	= OFF	AND=ZAZ7I999
		Verify RF1 Output Power Telemetry XPD1_RF1_OUT_PW RMB13442	< -12.0 dbmW	AND=ZAZ7I999
		Verify Tx1 Supply Voltage Telemetry XPND1_TX1_SUP_V RMB05442	>= 6.0 V <= 6.93 V	AND=ZAZ7I999
14.5		TX2 Analogue Telemetry verification		□
		Verify TX2 Status Telemetry TX2 ON-OFF Stat RMB16442	= ON	AND=ZAZ7I999
		FM5 (Herschel XPND2) output power -4.44 dBm		
		Verify RF2 Output Power Telemetry XPD2_RF2_OUT_PW RMB14442	<= -4.00 dbmW >= -4.88 dbmW	AND=ZAZ7I999
		Verify TX2 Supply Voltage Telemetry XPND2_TX2_SUP_V RMB06442	>= 6.0 V <= 6.93 V	AND=ZAZ7I999
14.6		Verify XPND1 RT status on the 1553 S/C bus		□
		Verify Telemetry XPND1On_Off DEFCG160	= OFF	AND=ZAZ7N999
		Verify Telemetry XPND1Dead_Alive DEFCH160	= Alive	AND=ZAZ7N999
		Verify Telemetry XPND1WellSickTC DEFCZ160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND1WellSickTM DEFCJ160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND1Val_Inval DEFCK160	= Invalid	AND=ZAZ7N999
		Verify Telemetry XPND1_Vit_NoVit DEFDP160	= NonVital	AND=ZAZ7N999
		Verify Telemetry XPND1_No_Re_RT DEFDR160	= NOMINAL	AND=ZAZ7N999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
14.7		XPND2 RT status on the 1553 S/C bus Verification		<input type="checkbox"/>
		Verify Telemetry XPND2On_Off DEF1160	= ON	AND=ZAZ7N999
		Verify Telemetry XPND2Dead_Alive DEF2160	= Alive	AND=ZAZ7N999
		Verify Telemetry XPND2WellSickTC DEF3160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND2WellSickTM DEF4160	= Well	AND=ZAZ7N999
		Verify Telemetry XPND2Val_Inval DEF5160	= Valid	AND=ZAZ7N999
		Verify Telemetry XPND2_Vit_NoVit DEFDT160	= NonVital	AND=ZAZ7N999
		Verify Telemetry XPND2_No_Re_RTA DEFDU160	= NOMINAL	AND=ZAZ7N999
14.8		XPND2 1553 S/C bus TM verification		<input type="checkbox"/>
		Verify XPND2 status Telemetry X2 Status - XS RMB43442	= TM mode active	AND=ZAZ7I999
		Verify Low Rate-1 status Telemetry X2 LowRate-1 MD RMB51442	= ON	AND=ZAZ7I999
		Verify Low Rate-2 status Telemetry X2 LowRate-2 MD RMB52442	= OFF	AND=ZAZ7I999
		Verify Medium Rate Modulator status Telemetry X2 MedRate-MRM RMB50442	= OFF	AND=ZAZ7I999
		Verify High Rate status Telemetry X2 HIRateMD-HRM RMB49442	= OFF	AND=ZAZ7I999
		Verify Ranging Modulator status Telemetry X2 Rang MD - RM RMB48442	= OFF	AND=ZAZ7I999
		Verify Coherent Mode status Telemetry X2 Coher MOD-CM RMB47442	= OFF	AND=ZAZ7I999
		Verify Telemetry X2 RNGMD ID-RMI RMB53442	= 0.6 rad	AND=ZAZ7I999
		Verify Telemetry X2 TM MD ID-TMI RMB54442	= 1.2 rad	AND=ZAZ7I999
		Verify Telemetry X2 OutPowLevSet RMB56442	= -4 dbmW	AND=ZAZ7I999
		Verify Telemetry X2 IntBitPatGen RMB55442	= OFF	AND=ZAZ7I999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry X2 Ext Ref - ER RMB46442	= OFF	AND=ZAZ7I999
		Verify Receiver lock status Telemetry X2 Rx Lock - RL RMB45442	= Locked	AND=ZAZ7I999
		Verify RX AGC Level Telemetry X2 AGC TMUpInk RMB41442	>= -141.0 dbmW	AND=ZAZ7I999
		Verify PLL Phase Error Telemetry X2 RX PLL PhErr RMB40442	<= 130.0 kHz >= -130.0 kHz	AND=ZAZ7I999
		Verify Squelch Status Telemetry X2 SqlchSts-SS RMB44442	= ON	AND=ZAZ7I999
		Verify Telemetry X2 TcBitRateTCB RMB62442	= Low	(None)
14.9		Verify TM encoder TM bit rate		☐
		Verify Telemetry TME_BITRATE DEMRF160	= 500 bps	AND=ZAZ7J999
14.10		TWTA1 Status verification		☐
		Verify EPC1 Status Telemetry EPC1_ONOFF_STS RMB05439	= OFF	AND=ZAZ7J999
		Verify TWT1 Status Telemetry TWT1_ONOFF_STS RMB09439	= OFF	AND=ZAZ7J999
14.11		Verify TWTA2 setting		☐
		Verify EPC2 Status Telemetry EPC2_ONOFF_STS RMB07439	= ON	AND=ZAZ7J999
		Verify EPC2 Anode Voltage Telemetry EPC2_ANODE_VOLT RMB03439	<= 1180.0 V >= 1100.0 V	AND=ZAZ7J999
		Verify EPC2 Helix current Telemetry EPC2_HELIX_CURR RMB04439	>= 0.46 mA <= 1.59 mA	AND=ZAZ7J999
		Verify TWT2 Status Telemetry TWT2_ONOFF_STS RMB10439	= ON	AND=ZAZ7J999
		FM3 (TWTA2) Anode voltage old limits = 998 min, 1058 max FM3 (TWTA2) Anode voltage new limits=1100 min, 1180 max		

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
14.12		Verify RFDN setting		<input type="checkbox"/>
		Verify RFDN SW1 Position A Telemetry RFDN SW1 Pos A RMB05436	= ON	AND=ZAZ7J999
		Verify RFDN SW1 Position B Telemetry RFDN SW1 Pos B RMB09436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position A Telemetry RFDN SW2 Pos A RMB06436	= OFF	AND=ZAZ7J999
		Verify RFDN SW2 Position B Telemetry RFDN SW2 Pos B RMB10436	= ON	AND=ZAZ7J999
		Verify RFDN SW3 Position A Telemetry RFDN SW3 Pos A RMB07436	= OFF	AND=ZAZ7J999
		Verify RFDN SW3 Position B Telemetry RFDN SW3 Pos B RMB11436	= ON	AND=ZAZ7J999
		Verify RFDN SW4 Position A Telemetry RFDN SW4 Pos A RMB08436	= OFF	AND=ZAZ7J999
		Verify RFDN SW4 Position B Telemetry RFDN SW4 Pos B RMB12436	= ON	AND=ZAZ7J999
14.13		XPND1 UIU table status verification		<input type="checkbox"/>
		Verify Telemetry XpndRx1FuncSts DEL58170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx1Use DEL56170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx1LogSts DEL57170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndRx1FailSts DEL59170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx1FuncSts DEL27170	= Off	AND=ZAZ7M999
		Verify Telemetry XpndTx1Use DEL29170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx1LogSts DEL28170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndTx1FailSts DEL26170	= Not_Failed	AND=ZAZ7M999
14.14		TWTAl UIU table status verification		<input type="checkbox"/>
		Verify Telemetry TwtalFuncSts DEL19170	= Off	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry TwtalUse DEL21170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtalLogSts DEL20170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtalFailSts DEL18170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc1FuncSts DEG25170	= Off	AND=ZAZ7M999
		Verify Telemetry Epc1Use DEG27170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Epc1LogSts DEG26170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Epc1FailSts DEG24170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmp1FuncSts DEH13170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtAmp1Use DEH15170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmp1LogSts DEH14170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtAmp1FailSts DEH12170	= Not_Failed	AND=ZAZ7M999
14.15		<i>XPND2 UIU table status verification</i>		□
		Verify Telemetry XpndRx2FuncSts DEL62170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx2Use DEL60170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx2LogSts DEL61170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndRx2FailSts DEL63170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx2FuncSts DEL31170	= On	AND=ZAZ7M999
		Verify Telemetry XpndTx2Use DEL33170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx2LogSts DEL32170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndTx2FailSts DEL30170	= Not_Failed	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
14.16		<i>TWTA2 UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry Twta2FuncSts DEL23170	= On	AND=ZAZ7M999
		Verify Telemetry Twta2Use DEL25170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Twta2LogSts DEL24170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Twta2FailSts DEL22170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc2FuncSts DEG29170	= On	AND=ZAZ7M999
		Verify Telemetry Epc2Use DEG31170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Epc2LogSts DEG30170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Epc2FailSts DEG28170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FuncSts DEH17170	= On	AND=ZAZ7M999
		Verify Telemetry TwtAmp2Use DEH19170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmp2LogSts DEH18170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FailSts DEH16170	= Not_Failed	AND=ZAZ7M999
14.17		<i>RFDN UIU table status verification</i>		<input type="checkbox"/>
		Verify Telemetry Rfdn1FuncSts DEH49170	= PosA	AND=ZAZ7M999
		Verify Telemetry Rfdn1Use DEH51170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn1LogSts DEH50170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Rfdn1FailSts DEH48170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Rfdn3FuncSts DEH57170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn3Use DEH59170	= In_Use	AND=ZAZ7M999

TTC Tope TM checks
 File: H_FCP_TTC_TCHK.xls
 Author: E. Picallo



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Rfdn3LogSts DEH58170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Rfdn3FailSts DEH56170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Rfdn2FuncSts DEH53170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn2Use DEH55170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn2LogSts DEH54170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Rfdn2FailSts DEH52170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Rfdn4FuncSts DEH61170	= PosB	AND=ZAZ7M999
		Verify Telemetry Rfdn4Use DEH63170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Rfdn4LogSts DEH62170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Rfdn4FailSts DEH60170	= Not_Failed	AND=ZAZ7M999
End of Procedure				