

MCU_BOOT - Switch ON the MCU
 File: H_FCP_SPI_MCUN.xls
 Author: R. Biggins



Procedure Summary

Objectives

The objective of this procedure is to switch ON the Mechanisms Steering Unit (MCU)

Summary of Constraints

n/a

Spacecraft Configuration

Start of Procedure

SPIRE is in SCU_ON mode

End of Procedure

SPIRE is in REDY mode

Reference File(s)

Input Command Sequences

Output Command Sequences

HFSMCUN

Referenced Displays

ANDs **GRDs** **SLDs**
 ZAZ91999

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
07/08/07		1	Created	R. Biggins	
15/01/08		2	Update due to initial testing against the simulator: <input type="checkbox"/> - TCs updated due to new DB	R. Biggins	
29/01/08		3	Update due to changes in input file (MCU_BOOT: version 3) <input type="checkbox"/> <input type="checkbox"/> - Time tags updated <input type="checkbox"/> - various TCs moved/removed	R. Biggins	
22/02/08		4	<input type="checkbox"/> Update due to testing against MOC Simulator: <input type="checkbox"/> - Time Tags updated <input type="checkbox"/> - BBID/OBSID TM checks added <input type="checkbox"/> - Editorial updates	R. Biggins	
03/03/08		5	Update due to comments by S. Sidher: <input type="checkbox"/> - Telemetry checks added on TM generation and MCU board voltages <input type="checkbox"/> - Editorial updates	R. Biggins	

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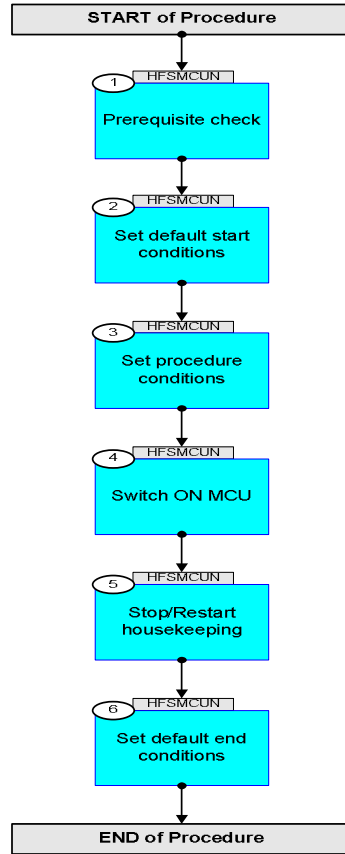


			Updates due to SVT-1 testing: <ul style="list-style-type: none"> - TM checks added to RESET_DRCU_COUNTERS TC - All DRCU commands in step 4 have been set for automatic dispatch with a 5 second frequency - Telecommands to stop/start Nominal HK packet production is moved to new step (5) - DEFINE_NEW_HK_REPORT parameter [TABLE_ID] updated (=1) - Default OBSID value updated to 0x0000 0000 - flags updated - comments added - AND updated for all TM parameters 		
19/05/08	1	6		R. Biggins	
25/03/09	2.2	6.01	Validation : Cross checks	L.Lucas-hp	

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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 : HFSMCUN (Switch ON MCU)				
TimeTag Type: N Sub Schedule ID: □				
1		Prerequisite check		Next Step: 2
		Verify Telemetry MODE SM00M500	= SCU_ON	AND=ZAZ91999
2		Set default start conditions		Next Step: 3
		Note that a TM(5,1) packet [New_Step_Report] is generated after each of the following SET_OBS_STEP telecommands		
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80010001 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= ClearObs	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 1 <hex>	
	ET=+ UT=+00.00.01	SET_OBSID SET_OBSID Command Parameter(s) : OBSERVATION_ID SP00N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	SC000500 00000000 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry OBSID SM10N500	= 00000000 <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80000000 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= Null	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80020001 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= StartObs	AND=ZAZ91999
3		Set procedure conditions		Next Step: 4
	ET=+ UT=+00.00.00	RESET_DRCU_COUNTERS RESET_DRCU_COUNTERS Subsch. ID : 370 Det. descr. : RESET DRCU COUNTERS	SCD00505	
		Verify that the TRESET parameter has the same value as the THSK parameter TRESET SM01T500	same as THSK	AND=ZAZ91999
		THSK SM00T500	any	AND=ZAZ91999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Note that a TM(5,1) packet [New_Step_Report] is generated after each of the following SET_OBS_STEP telecommands		
	ET=+ UT=+00.00.00	SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SET_OBS_STEP SC003500 1 <hex>	
	ET=+ UT=+00.00.01	SET_OBSID Command Parameter(s) : OBSERVATION_ID SP00N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	SET_OBSID SC000500 OBS_ID	
		Verify Telemetry OBSID SM10N500	OBS_ID	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SET_OBS_STEP SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SET_BBID SC001500 80000000 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= Null	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SET_OBS_STEP SC003500 0 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.01	SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SET_BBID SP01N500 89000001 <hex>	SC001500
		Verify Telemetry BBFULLTYPE	SM2LN500	= MCU_Boot AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_MODE Command Parameter(s) : OBSERVING_MODE Subsch. ID : 370 Det. descr. : SET OBSERVING MODE	SET_OBS_MODE SP02N500 102 <hex>	SC002500
		Verify Telemetry MODE	SM00M500	= MCU_BOOT AND=ZAZ91999
4		Switch ON MCU		Next Step: 5
		Note that after the following TC is sent, a TM(5,1) packet [No_MCU_Response_Clear] is generated		
	ET=+ UT=+00.00.01	Send DRCU command to SetDRelOnOff Command Parameter(s) : DRCUCOMMAND OVERRIDE Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SEND_DRCU_COMMAND SPD4N505 SPD9N505 A0870004 <hex> 0 <hex> (Def)	SCD06505
		Verify Telemetry SCUDCDCSTAT	SM_2F520	= 0004 <hex> AND=ZAZ91999
	ET=+ UT=+00.00.05	Send DRCU command to set Subsystem I/F control word Command Parameter(s) : DRCUCOMMAND OVERRIDE Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SEND_DRCU_COMMAND SPD4N505 SPD9N505 90010005 <hex> 0 <hex> (Def)	SCD06505
		Verify Telemetry MCUIFCTRL	SMD2F515	= 0005 <hex> AND=ZAZ91999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.05	Send DRCU command to set Subsystem I/F control word SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 90010007 <hex> 0 <hex> (Def)	
		Verify Telemetry MCUIFCTRL SMD2F515	= 0007 <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.05	Send DRCU command to set Subsystem I/F control word SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 90010003 <hex> 0 <hex> (Def)	
		Verify Telemetry MCUIFCTRL SMD2F515	= 0003 <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.05	Send DRCU command to set Subsystem I/F control word SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 90010007 <hex> 0 <hex> (Def)	
		Verify Telemetry MCUIFCTRL SMD2F515	= 0007 <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.05	Send DRCU command SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 9021C000 <hex> 0 <hex> (Def)	
	ET=+ UT=+00.00.05	Send DRCU command SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 90240001 <hex> 0 <hex> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.05	Send DRCU command to SetPack10Param3 SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 91C90067 <hex> 0 <hex> (Def)	
		Verify Telemetry MCUPCKT10PARM03 SMM2N515	= 0067 <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.05	Sent DCRU command to SetPack10Param4 SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 91CA0070 <hex> 0 <hex> (Def)	
		Verify Telemetry MCUPCKT10PARM04 SMM3N515	= 0070 <hex>	AND=ZAZ91999
		Note that after the following TC is sent, a TM(5,1) packet [No_TIMESYNC_ID] is generated		
	ET=+ UT=+00.00.05	Send DRCU command to SetPack14Param4 SEND_DRCU_COMMAND Command Parameter(s) : DRCUCOMMAND SPD4N505 OVERRIDE SPD9N505 Subsch. ID : 370 Det. descr. : SEND A SINGLE COMMAND TO THE DRCU	SCD06505 91D4006B <hex> 0 <hex> (Def)	
		Verify Telemetry MCUPCKT14PARM04 SMMDN515	= 006B <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_MODE SET_OBS_MODE Command Parameter(s) : OBSERVING_MODE SP02N500 Subsch. ID : 370 Det. descr. : SET OBSERVING MODE	SC002500 200 <hex>	
		Verify Telemetry MODE SM00M500	= REDY	AND=ZAZ91999
		Verify Telemetry MCUP5V SM_4V515	= 5.0 V	AND=ZAZ91999
		Verify Telemetry MCUP15V SM_0V515	= 15.5 V	AND=ZAZ91999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry <div style="text-align: right;">MCUP14V SM_2V515</div>	= 14.1 V	AND=ZAZ91999
		Verify Telemetry <div style="text-align: right;">MCUM14V SM_3V515</div>	= -14.5 V	AND=ZAZ91999
		Verify Telemetry <div style="text-align: right;">MCUM15V SM_1V515</div>	= -15.6 V	AND=ZAZ91999
5		<i>Stop/Restart housekeeping</i>		Next Step: 6
	ET=+ UT=+00.00.00	Execute Telecommand <div style="text-align: right;">CLEAR_HK_REPORT</div> Command Parameter(s) : <div style="text-align: right;">PKCTID_CLEARHK SPR6N500</div> Subsch. ID : 370 Det. descr. : CLEAR HOUSEKEEPING PARAMETER REPORT DEFINITION	SCR01500 301 <hex>	
		Verify: Packet has stopped being produced <div style="text-align: right;">Nominal_HK_Parameter_Report</div> Packet Details: <div style="text-align: right;">APID: 1282 Type: 3 Subtype: 25 PI1: 769 PI2:</div>		
	ET=+ UT=+00.00.10	Execute Telecommand <div style="text-align: right;">DEFINE_NEW_HK_REPORT</div> Command Parameter(s) : <div style="text-align: right;">HKPKCTID_DEFINENEWHK SPR0N500 301 <hex> HKSID_DEFINENEWHK SPR1N500 301 <hex> HKINTERVAL_DEFINENEWHK SPR2N500 FA0 <hex> HKREPEAT_DEFINENEWHK SPR3N500 1 <hex> TABLEID_DEFINENEWHK SPR4N500 1 <hex></div> Subsch. ID : 370 Det. descr. : DEFINE NEW HOUSEKEEPING PARAMETER REPORT	SCR00500	
		Verify: Packet is being produced <div style="text-align: right;">Nominal_HK_Parameter_Report</div> Packet Details: <div style="text-align: right;">APID: 1282 Type: 3 Subtype: 25 PI1: 769 PI2:</div>		
6		<i>Set default end conditions</i>		Next Step: END
		Note that a TM(5,1) packet [New_Step_Report] is generated after each of the following SET_OBS_STEP telecommands		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80000000 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= Null	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID SET_BBID Command Parameter(s) : BUILDING_BLOCK_ID SP01N500 Subsch. ID : 370 Det. descr. : SET BUILDING BLOCK IDENTIFIER	SC001500 80030001 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= EndObs	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP SET_OBS_STEP Command Parameter(s) : OBSERVATION_STEP SP03N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION STEP	SC003500 1 <hex>	
	ET=+ UT=+00.00.01	SET_OBSID SET_OBSID Command Parameter(s) : OBSERVATION_ID SP00N500 Subsch. ID : 370 Det. descr. : SET OBSERVATION IDENTIFIER	SC000500 00000000 <hex>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry OBSID SM10N500	= 00000000 <hex>	AND=ZAZ91999
	ET=+ UT=+00.00.00	SET_OBS_STEP <i>Command Parameter(s) :</i> OBSERVATION_STEP SP03N500 <i>Subsch. ID : 370</i> <i>Det. descr. : SET OBSERVATION STEP</i>	SC003500 0 <hex>	
	ET=+ UT=+00.00.01	SET_BBID <i>Command Parameter(s) :</i> BUILDING_BLOCK_ID SP01N500 <i>Subsch. ID : 370</i> <i>Det. descr. : SET BUILDING BLOCK IDENTIFIER</i>	SC001500 80000000 <hex>	
		Verify Telemetry BBFULLTYPE SM2LN500	= Null	AND=ZAZ91999

End of Procedure