1. INTRODUCTION

The purpose of this test is to check the interaction between the CDMS and the SPIRE instrument when performing a SPIRE Peak-up operation (Note this is not the same as the satellite peak-up mode).

The On-board software provided with the SPIRE AVM does not contain the code necessary for performing the SPIRE Peak-up mode and so the operation of this will be simulated by a Command List in the DPU which will act as if the peak-up operation had occurred.

The normal sequence of events for a Peak-up mode operation is:

- Send peak-up mode command to SPIRE
- SPIRE executes a set of operations to determine the offsets to bring the source back onto the central pixel (takes approximately 3 mins)
- SPIRE issues an event packet, TM(5,1) containing the offsets in y and z (format defined in AD01)
- The CDMS acts on this event packet and sends the appropriate TC(s) to the AOCS.

The test sequence will be:

- Load the test Command List into the DPU
- Send a command to SPIRE to execute the command list (equivalent to the command to perform the peak-up mode). The command List will wait and then issue the required event packet.
- The CDMS acts on this event packet and sends the appropriate TC(s) to the AOCS.

The test Command List is specified in Appendix A

1.1 References

1.1.1 Applicable Documents

AD01	IID Part A (SCI-PT-IIDA-04624), Issue 3.1
AD02	SPIRE Data ICD (SPIRE-RAL-PRJ-001078), Issue 1.2k

1.1.2 Reference Documents

RD01	IID Part B (SCI-PT-IIDB-02124), Issue 3.11

2. TEST SPECIFICATION

2.1 Prerequisites

Before execution of this procedure it will be necessary to specify the following information (identified in AD01, Section 5.12.5.1:

- The 3 components of $Y_{focal\ plane}$ in the Satellite frame (this is to be taken from RD01)
- The 3 components of $Z_{focal\ plane}$ in the Satellite frame (this is to be taken from RD01)
- The rotation angle conversion factor, $k_Y = 4.8481368110954e^{-8}$

- The rotation angle conversion factor, $k_Z = 4.84813681109 54e^{-8}$

2.2 Test Parameters

For this test the SPIRE Peak-up Mode simulation Command List is passed the following parameters (see Appendix A)

- the time to wait before issuing the event packet (in microseconds)
- the offset value in y (Yangle) to be placed in the event packet
- the offset value in z (Zangle) to be placed in the event packet.

Offset values are specified as integers, i, where rotation angle (in radians) = k * I
For the value of k see section 2.1

This procedure will be repeated with several sets of parameters to the test Command List to verify full compliance to the interface:

Parameter Set	Delay	Yangle	Zangle	Comment
1	180	500	500	Move +5 arcsec in Y and Z
2	10	-500	-500	Move -5 arcsec in Y and Y
3	10	200	-200	Move +2 arcsec in Y -2 arcsec in Z
4	10	-200	200	Move -2 arcsec in Y +2 arcsec in Z
5	10	10100	100	Move +10.1 arcsec in Y 1 arcsec in Z Should be flagged as an error
6	10	100	10100	Move 1 arcsec in Y -10.1 arcsec in Z Should be flagged as an error

2.3 Configuration

The instrument should be in the REDY mode before the procedure starts.

It remains in the REDY mode after test execution

2.4 Procedure

Step	Description	Action(s)	Comments
1	Load Peak-up Mode Simulation Command List		
2	Execute Peak-up Mode (delay = 180s $Offset_y$ = 200 $Offset_z$ = 300)	RUN_VM (92,0,3,Delay, Yangle, Zangle)	The command used for this is not the same as that Peak-up mode command
3	Check event packet issued with correct contents		On SPIRE EGSE or SCOS
	Check CDMS issues		Post test check by AOCS

	correct commands to AOCS		experts

Appendix A – Peak-up Mode Command List

```
TABLE 92
NAME    PeakupTest
VERSION 1.0
CVSID   $ID$

; This table contains the Peakup Mode test Command List
;
; Author: Ken King
;
; Version 1.0:   2nd March 2005

      INC   ..\\Includes\\SPIRE.inc ; include SPIRE constants

; ***************************************************
; PeakupTest
;
; This function generates an event packet in the form expected from the
; DPU during a Peakup Mode operation
;
; Input State (assumed):
;     Int3 timer is set to interrupt at the minimum command intervals (TimF)
;     The Mutex is unlocked
;
; Inputs: the following registers should be set before calling the Cmd List
;     Reg 00 = Delay before issuing the event packet (microsecs)
;     Reg 01 = The value to be put in the Y rotational angle field of the
event packet
;     Reg 02 = The value to be put in the Z rotational angle field of the
event packet
;
; Uses: the following registers
;     Regs 10 to 13
;
; Outputs:
;     Event packet
;
; Output State:
;     Int3 timer is set to interrupt at the minimum command intervals (TimF)
;     The Mutex is unlocked
;
; -----------------------------------------------------
_put
        ; wait for delay time

      rtim  00
      NOP

      ; create Event packet at register 10
      rset  10, 0x0504        ; Event ID
      rset  11, 0x0002        ; Instrument ID
      rreq  12, 01                  ; Y angle
```

```
rreq  13, 02                  ; Z angle

  ; send Event packet
NOP
evnt  4, 10

end
```