

**VIRTIS PFM
 Active Check-out #4
 Observations Report**

14th March 2012

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DOCUMENT CHANGE RECORD

ISSUE	DATE	AFFECTED PAGES	CHANGE DESCRIPTION
Draft	11/12/2007		
Draft-2	09/01/2007	9	Better description of V-H b/sight determination
Issue 1	18/05/2007		Updated evaluation of boresight
Issue 2	14/03/2012	18	Chapters 5-15 added

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1. Scope

This document describes the functional performances and main results of VIRTIS during the Active Payload Check-Out#4.

2. Reference Documents

RD1	RO-EST-PL-3395_1_b_MSP_Rosetta_Active_Payload_Checkout	PC RSOC Master Science Plan
RD2	RO-EST-TN-3415_2_-_Rosetta_Timeline_Details_Active_PC4	PC timeline details
RD3	VIR-IAS-TN-009_VIRTIS_Active_Checkout_Details	Active checkout details
RD4	VR_PC4_V004_HBorCal__OBR_OBS02A.doc	OBR First VR02
RD5	VR_PC4_V005_HBorCal__OBR_OBS02A.doc	OBR Second VR02
RD6	VR_PC4_V003_ScanMir__OBR_OBS03A.doc	OBR Scan Mirror Test VR03
RD7	RO-EST-TN-3305	P/L boresight data
RD8	VIR-IAS-TN-006 issue1 09/03/2006 VIRTIS Request	PC04 VIRTIS Request

3. Activity Summary

The general activities to be carried out during the Check-outs are described in RD1, while the detailed timeline for PC#4 is given in RD2.

The specific VIRTIS activities during Active Check-out #4 were mainly centered on the determination of the V-H boresight (VR02 described in RD4 and VR05 described in RD5) and the determination of VIRTIS-M slit alignment with Y axis (VR03, described in RD6).

4. VR02 Pointing Summary

The S/C had Venus at the location of the V-H assumed boresight (see RD7) at the Offset from S/C Z axis:

- X = -22.2 arcmin
- Y = +3.9 arcmin

And the slew was performed over an area spanning 30arcmin in X axis (Pitch axis) and 54arcmin in Y axis (Yaw axis). See Figure 1.

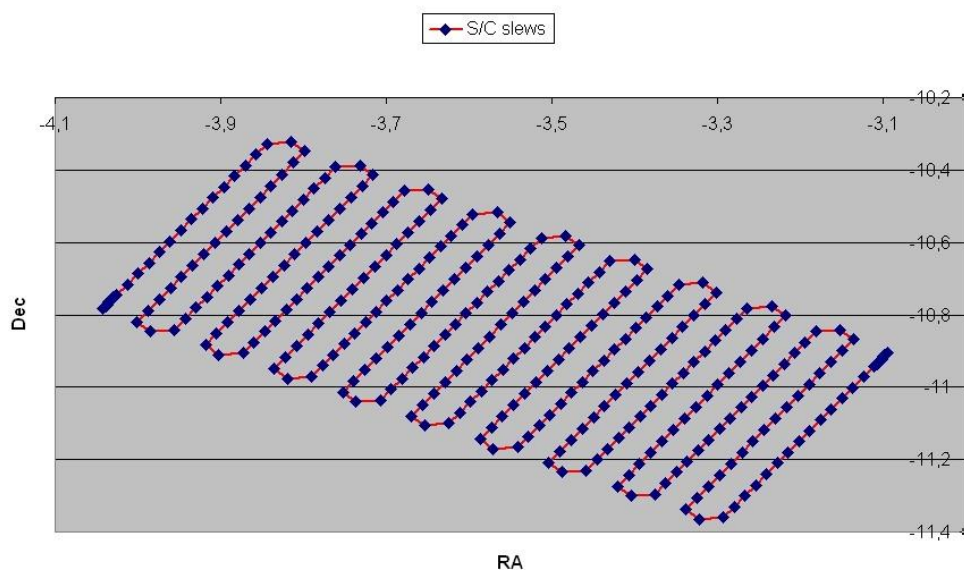


Figure 1. Plan of the Slew Scan in Right Ascension (RA) and Declination (Dec)

An evaluation of the Venus location in the S/C reference frame has been performed using the Spice routines and the following kernels:

- NAIF0008.TLS
- ROS_070312_STEP.TSC
- DE405S.BSP
- ORHR_____00052.BSP
- ATNR_P040302093352_00053.BC
- ROS_BETA_V08.TF

In figure is shown the result. The orange line represent the location of Venus during the raster scan in the S/C reference frame. In figure are reported the first and last raster points where images with V-M were taken. The X/Y offset of Venus in these two points are the following:

	X (deg)	X (arcmin)	Y (deg)	Y (arcmin)
First Point	-0.6293	-37.76	-0.3855	-23.13
Last Point	-0.121	-7.26	0.5145	30.87

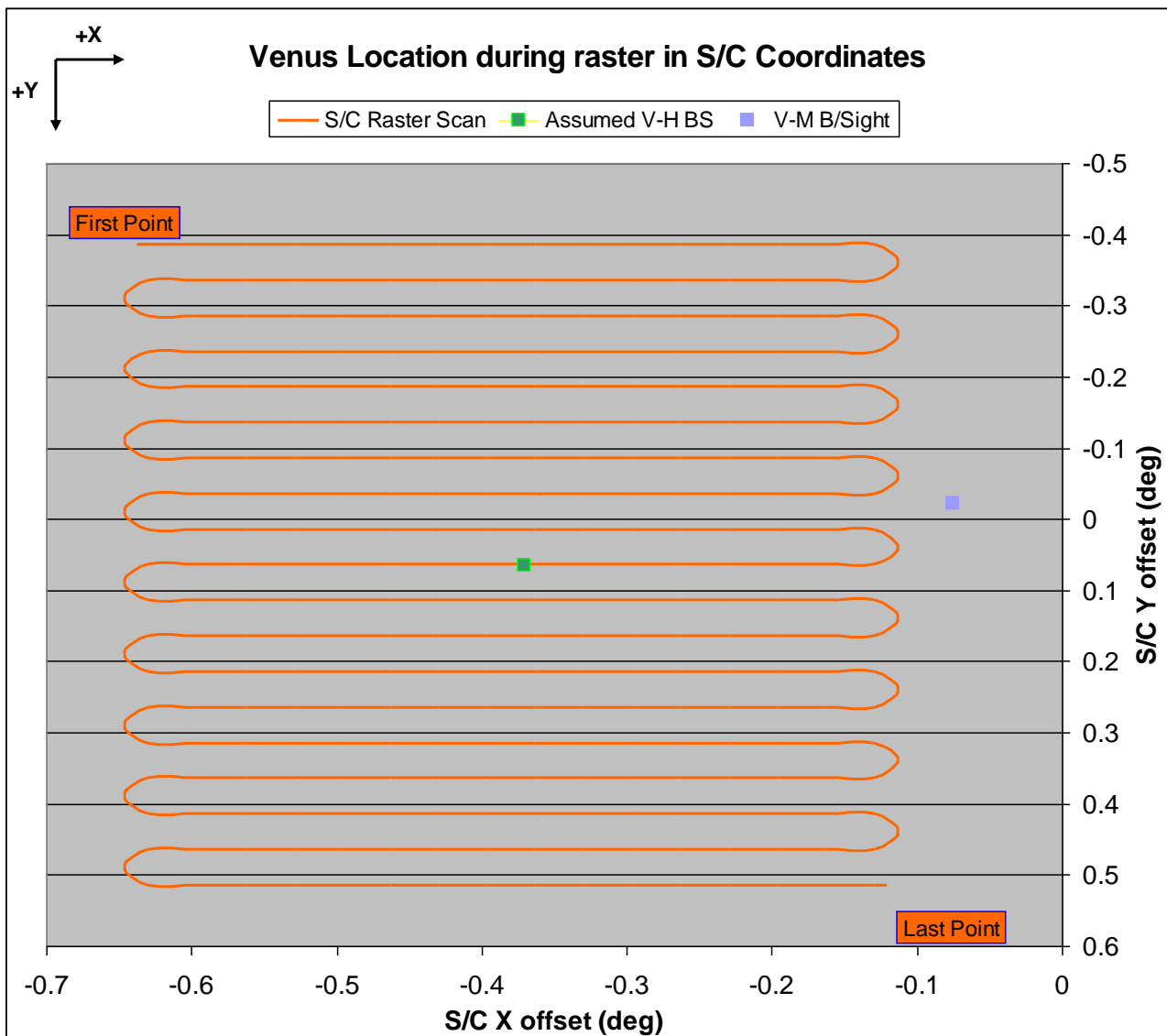


Figure 2

4.1 VIRTIS-M Analysis

Two cubes have been acquired, one at the beginning of the slew scan and one at the end. The internal V-M mirror scan was offset to be centered not on the V-M boresight but on the expected location of V-H boresight. We acquired 80 lines centered on it. In figure 3 is reported the spectrum of Venus acquired during this observation. The target was subpixel in size, and we ensured to have a considerably long integration time to guarantee detection of the planet even if saturation would occur, as it did, as our primary goal was to achieve a positive detection.

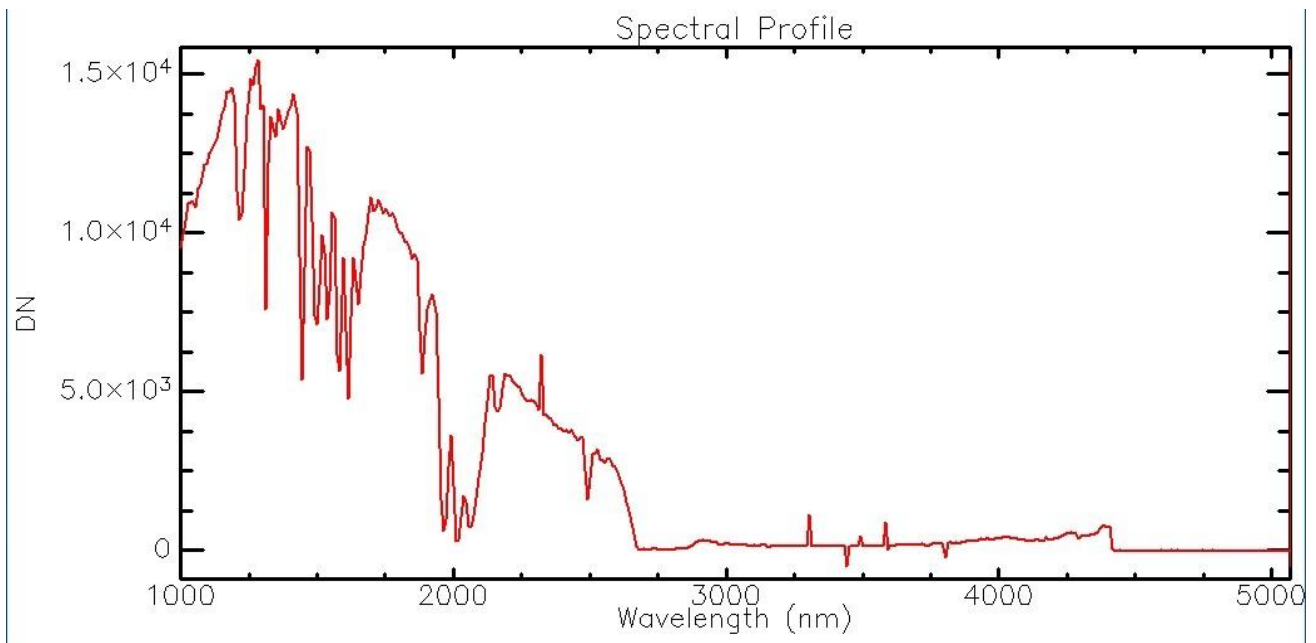


Figure 3. Spectral profile of Venus as seen by VIRTIS-M. The region above 4500nm show saturation due to the long integration time.

The first cube, code F68Q630, showed the Venus spot as reported in figure 4. The centre of the spot is located at line 60; however, we have to remove from the count 2 lines corresponding to dark acquisitions (which are counted as lines in the EGSE), thus the effective centre is located at line 58. In terms of location along the Y axis (samples direction) we have that the Venus spot is located at sample 103

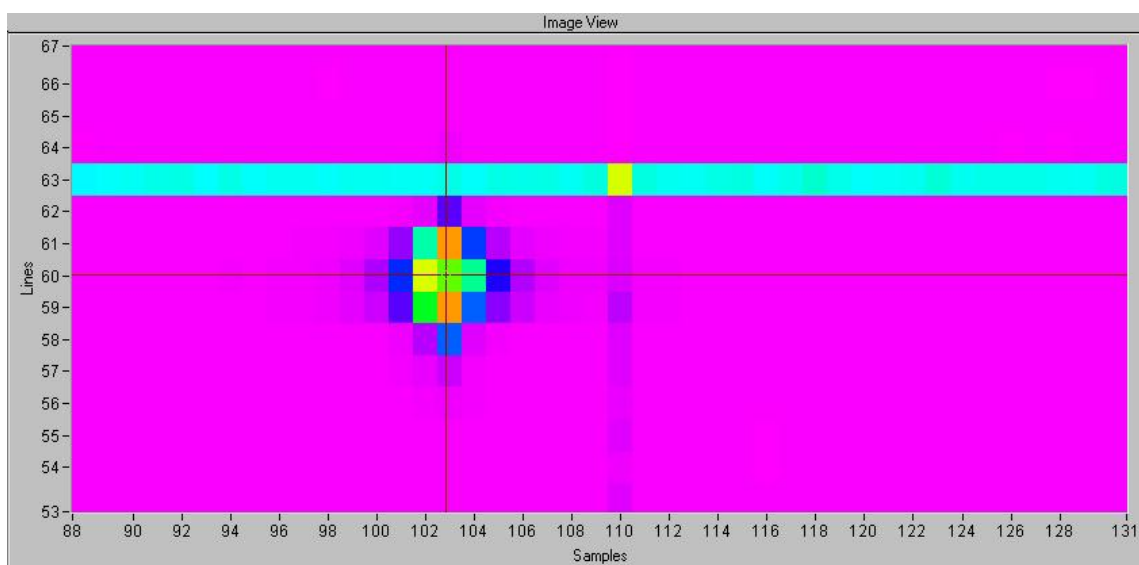


Figure 4. Venus spot on Cube F68Q630

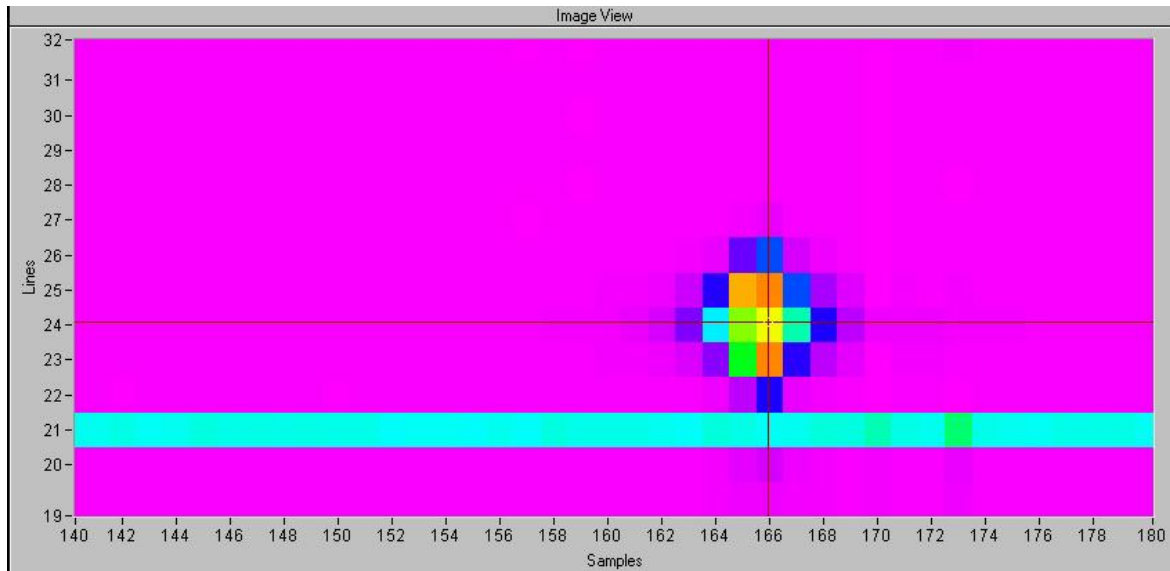


Figure 5. Venus spot on Cube F68QC25

The second cube, F68QC25, had Venus spot, shown in figure 5, centred at line 24; in this case we have to remove one single line of dark acquisition which place Venus at line 23. In terms of location along the Y axis (samples direction) we have that the Venus spot is located between samples 165 and 166

A summary of the locations in line and samples (X and Y) with the relative calculation, using the present evaluation of the V-M boresight offset in X and Y, of the delta offset between the anticipated location of Venus and the calculated one from V-M observation is reported in the next table:

	Line	X offset (arcmin)	Venus X offset (arcmin)	Δ Offset (arcmin)
F68Q630	58	-38.34	-37.76	-0.58
F68QC25	23	-8.26	-7.26	-1.00

	Sample	Y offset (arcmin)	Venus Y offset (arcmin)	Δ Offset (arcmin)
F68Q630	103	-22.785	-23.13	0.345
F68QC25	165/166	30.93	30.87	-0.06

The offset still present in the calculated data and observed data (particularly along the lines direction) correspond to less than two V-M high resolution pixels and can be explained and justified by several sources of error:

1. Inaccuracy in the determination of the V-M boresight offset wrt the S/X Z axis.
2. S/C pointing error.
3. Inaccuracy in the predicted S/C kernels.

We shall perform a rerun of the analysis of the previous commissioning data to minimize the point 1 above, in the meantime we can consider the present calculation sufficiently accurate to the present need.

4.2 VIRTIS-H analysis

After the first image taken by V-M, the S/C started its slewing motion and VIRTIS-H began its continuous acquisition. The following data have been analyzed:

- FH6BQ615.QUB : full VIRTIS-H calibration
- FS6BQ615.QUB : calibration in nominal mode
- FS6BQ71.QUB : dark spectra (28)
FT6BQ71.QUB : target spectra (3520) on Venus (raster scan)

The first two give a confirmation of the nominal behaviour of VIRTIS-H : detector OK, radiometric and spectral calibration conform to expectations. We see no obvious problem with the pixel map (otherwise the FS6BQ615.QUB would be wrong).

Concerning the targeted observations, a first test over the data (FT6BQ71.QUB) shows the following:

- integration time of 5sec
- Temperature of the prism at ~140K (raising towards the end) – upper limit of the prediction
- dark level at long wavelength at ~20000 ADU
- dark level at short wavelength at ~5000 ADU

This is conform to expectations; a larger integration time could have been chosen but at the expense of a saturation of long wavelengths, and a limitation at less than 20sec was well anticipated.

The cube of target spectra looks very noisy at first approach, and data are not obviously present, but after a little processing, a source signal can be extracted.

Data processing :

- 1) re-interpolate the dark (due to temperature variations, there are fluctuations in the dark, much larger than the signal)
- 2) make a summation in wavelengths over the best sensitive area (central parts of each order): the best choice was obtained using a summation on the following spectels of –H (with all orders together, there are 3456 spectels) , in 3 ranges:
 - a. 2275-2400
 - b. 2650-2820
 - c. 3080-3215
- 3) Then the integrated signal vs frame number (from 0 to 3519) (i.e. time) can be plotted.

The dominant variations are still due to the dark fluctuations, but these are slowly varying, and the signal expected from the source crossing the aperture is expected in only a few frames. There are many glitches, probably due to cosmic rays, which are easily identified, even when “clusters” affect many pixels : they are present only in one frame, the spectral

shape they show is not consistent with the instrumental response (low sensitivity at the borders of the detector due to grating MTF). An extraction of the significant portion of the curve is shown in figure 6.

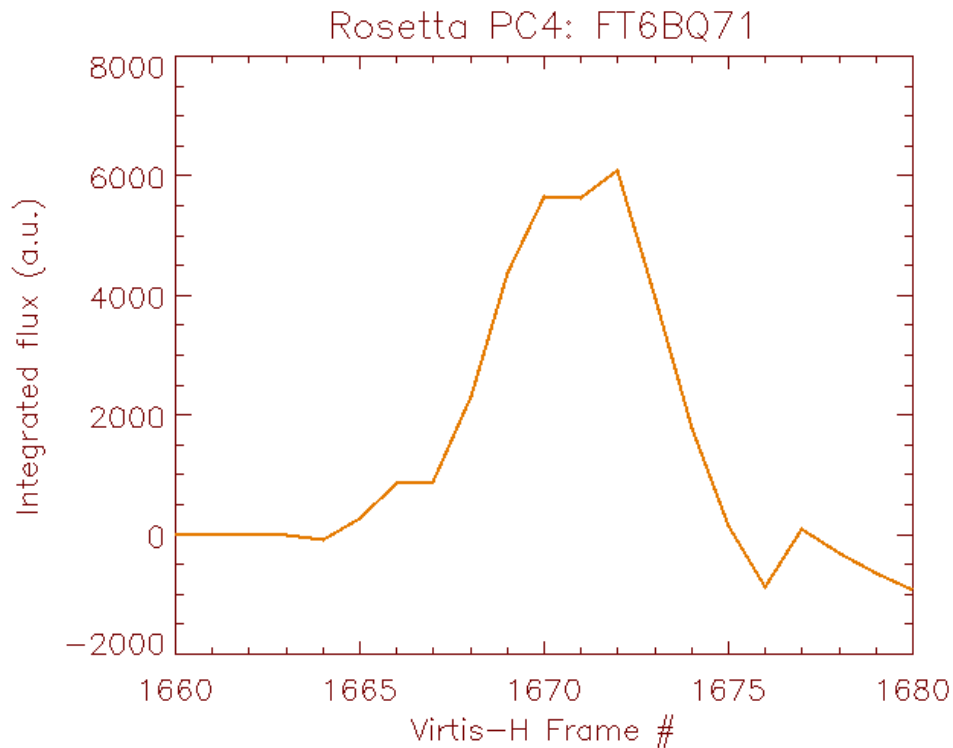


Figure 6. Integrated signal as a function of the Frame number, after processing (summation over many wavelengths to improve SNR).

The maximum of the signal is found at frame #1671. The width of the peak is of 4 frames (FWHM), from 1669 to 1673 (about 20.8 sec).

With the knowledge of the position of the source in the sequence of frame, it is possible to make a summation of the “best centred” spectra; this gives the spectrum in figure 7 (in spectel # of VIRTIS-H):

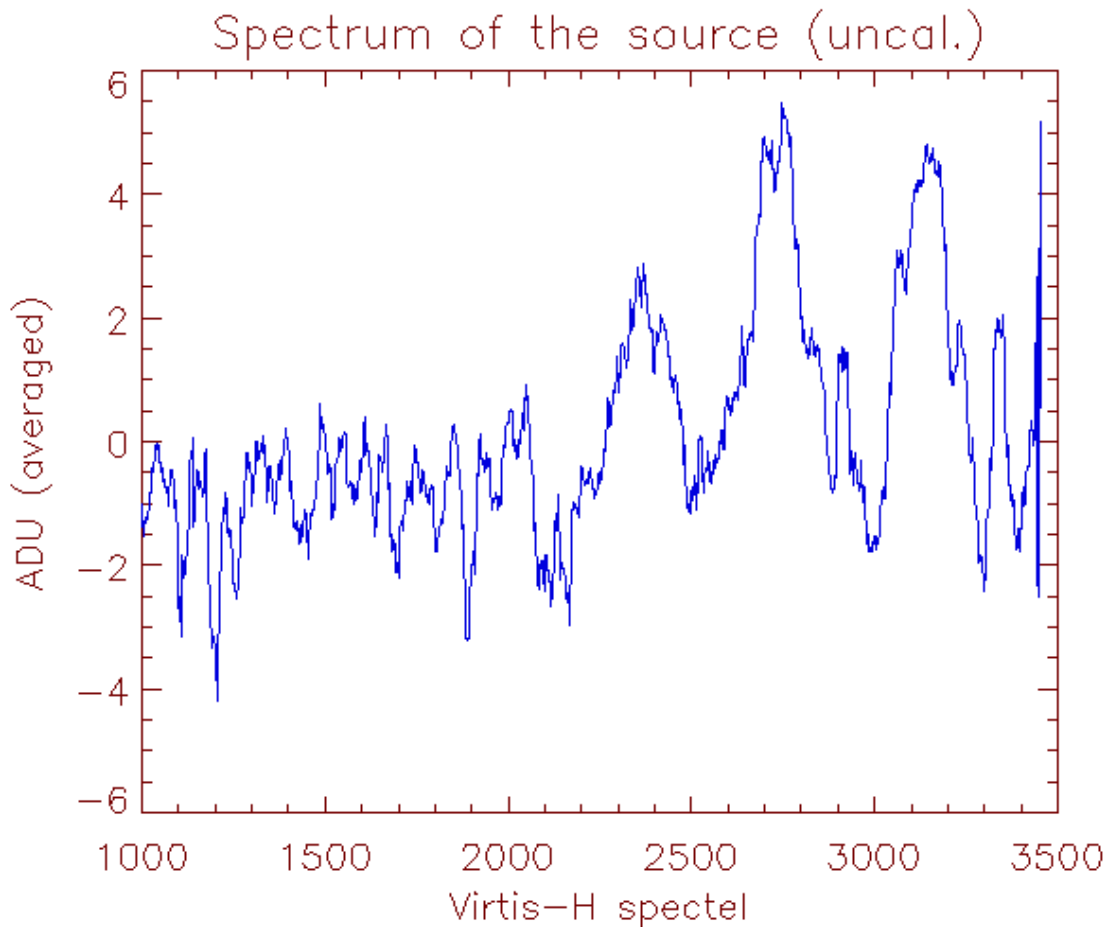


Figure 7. Venus uncalibrated spectrum observed by VIRTIS-H.

The three peaks correspond to flux in the three shortest orders of VIRTIS-H (in the range 2.1-2.5 micron). A calibration of the spectra will be tried, but obviously at this stage, no spectral feature of the source can be obtained.

As said above the FWHM of the detection is 4 frames, and the total crossing of Venus inside V-H FOV is about 10 frames, or 53sec.; from the geometry we expect an object to cross the field of view at a speed of 0.57mrad/min or 2arcsec/s, which is exactly the speed of the S/C during the raster.

According to the proposed plan (RD3) as the slit is 6arcmin long in the Y direction, while the separation between slews is 3arcmin, we would have expected to observe Venus during two consecutive slews. This is shown in figure 8 which reports the V-H slit as crossed by two subsequent slews.

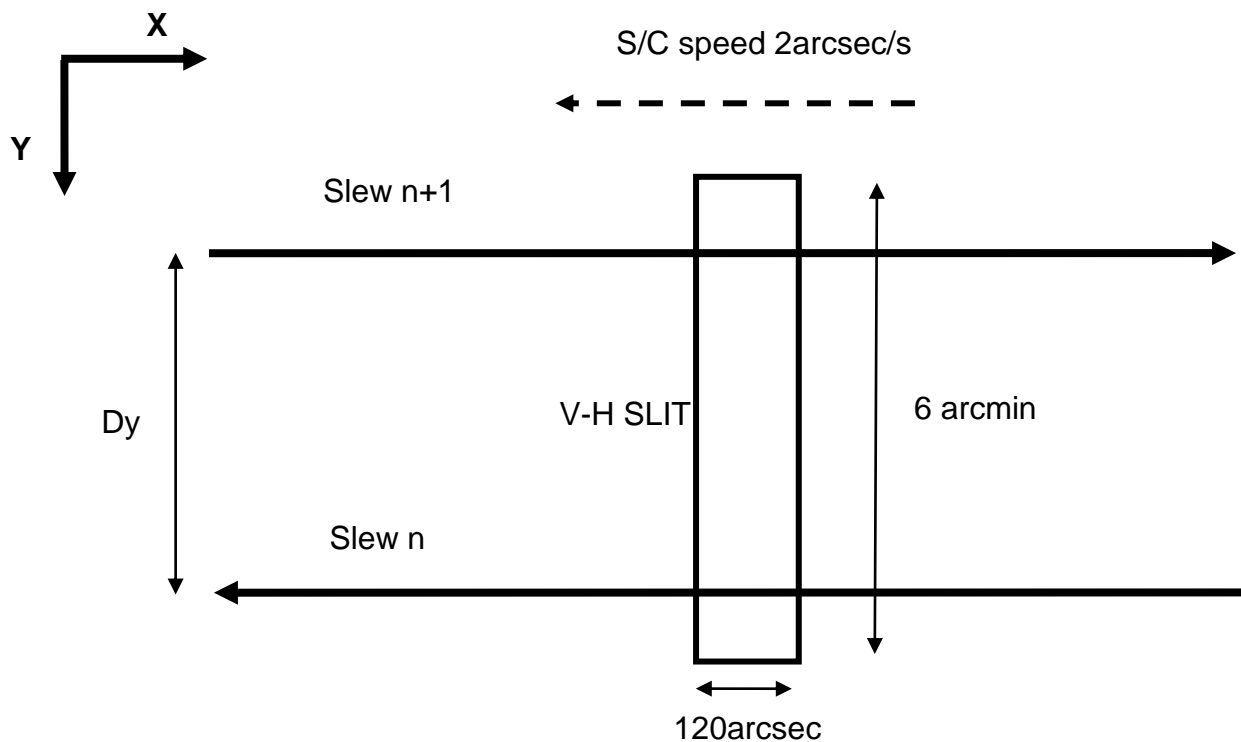


Figure 8. Diagram of the details of the V-H slit motion during the slew.

This view doesn't take into account any rotation around the Z axis of the V-H slit. As the observation was done at one of the extremes of the slews, and as we do not know the effective alignment of the slit wrt the Y axis, an even small rotation could have caused missing the target.

4.3 VIRTIS-H Boresight evaluation.

The most accurate estimate of the observation time as retrieved from the VIRTIS-H data analysis is **2006-11-26T09:33:38**. When we evaluate the position of Venus at this time, in the reference frame of the S/C, we get the result shown in figure 9, where the blue square marks the position of Venus at the time of V-H observation.

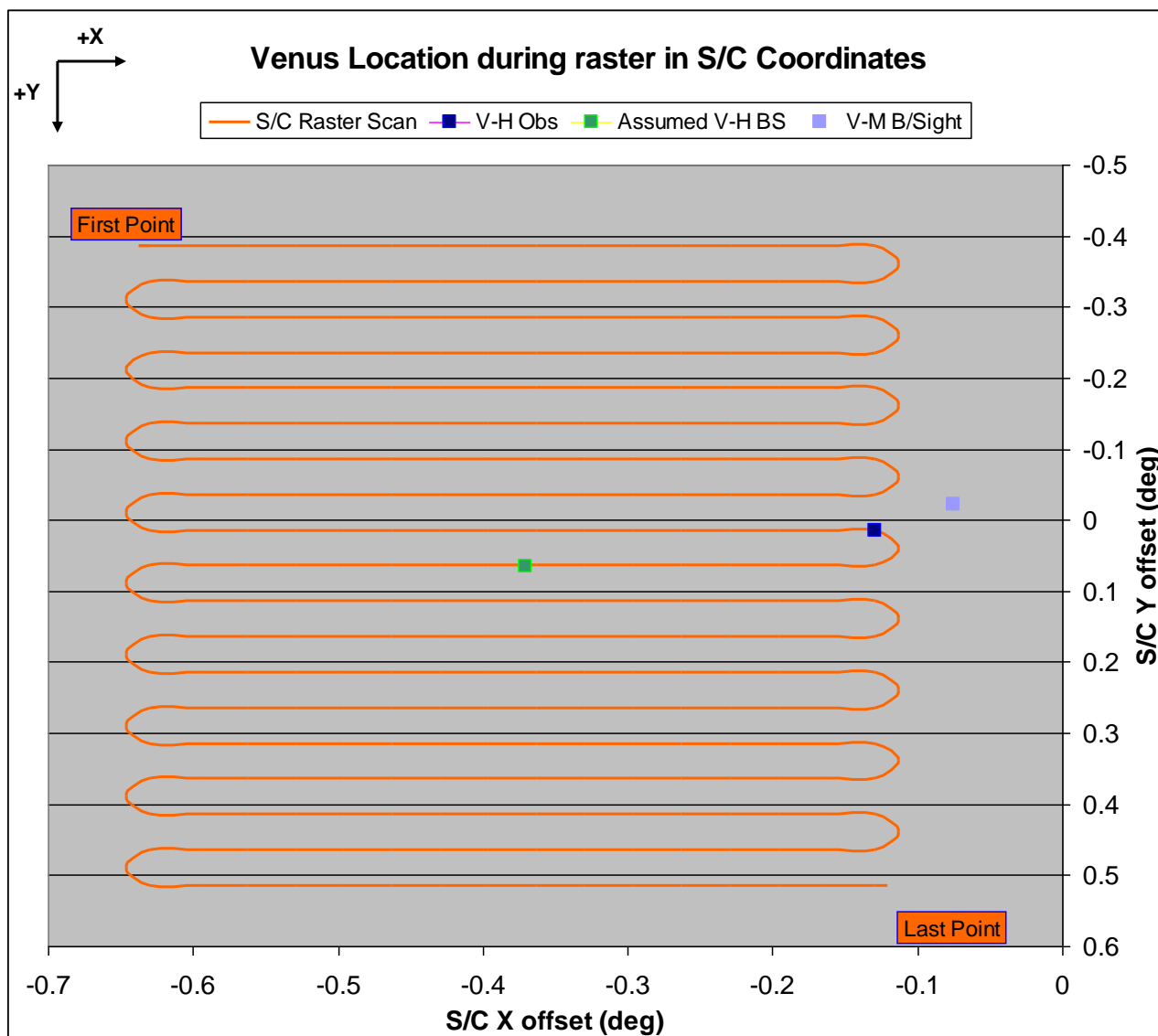


Figure 9. Venus location in the S/C frame; the figure shows also, in dark blue, the location of the Venus at the time of V-H observation.

This represent then the best possible evaluation of the V-H boresight in terms of its offset from the +Z S/C axis.

- **X = - 0.114919 degrees = - 6.9 arcmin**
- **Y = 0.02634 degrees = 1.58 arcmin**

As the target was observed only once we do not have any constraint neither on the orientation of the slit in the XY plane, nor on the error estimate in the Y direction. This imply that the error could be fairly large, of the order of 3arcmin, in the Y direction. On the other hand the error on the X direction is considerably smaller, of the order of 1arcmin (half the slit size in the X direction).

5. VR03 Results summary

This observation serves two scopes:

- 1- Verify the correctness of scan mirror read-out circuit. In fact, although the scanning is always performed correctly, due to an electronic offset, the readout circuit reaches saturation on one side of the scanning at about 4/5 of the full scan. See figure 10. It has been already verified that this is only a problem of the read-out H/K, the motor correctly moves to the assigned position with the required accuracy.
- 2- Verify alignment of VIRTIS-M slit with the S/C Y axis. It has been verified on VIRTIS-VEX that this is an important measurement which could provide information on the geometric distortion if any of the image. This verification was not performed during the ROSETTA commissioning.

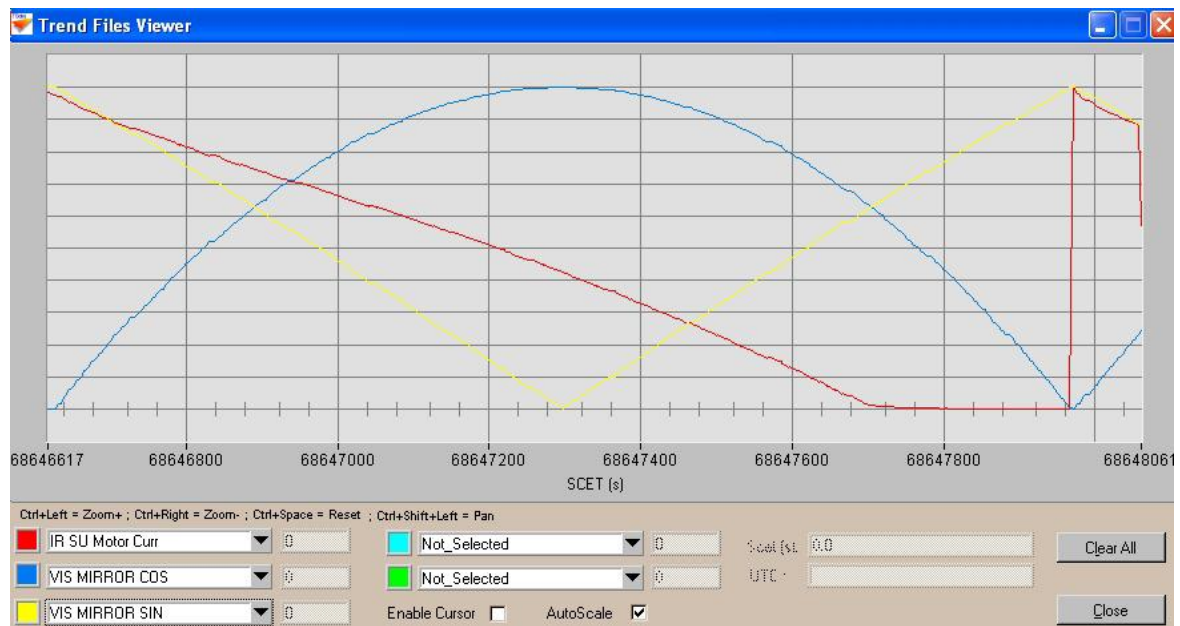


Figure 10. H/K Mirror COS (yellow), SIN (Blue) and motor current (red). It can be noticed that at about time (on the X axis) 68647700 the red curve saturates. Boresight location is at about time 68647300.

Details on the S/C motion are given in RD6 and RD8, and a sketch is reported in figure 11. The S/C pointed 6 independent location at 100arcmin (= 29mrad) in pitch (rotation around Y) and 200 arcmin (= 58mrad) in Yaw (rotation around X). At each location in pitch a constant offset has been commanded to V-M scan mirror, to acquire a 15 lines image around the point. As the S/C pointing accuracy is much smaller than the VIRTIS-M pixel size, by measuring the shift of the centroid of the

target image along the lines we can calculate the rotation of the slit respect to the Y axis. This has been done in the full FOV, the three points in pitch, to point out any geometric distortion.

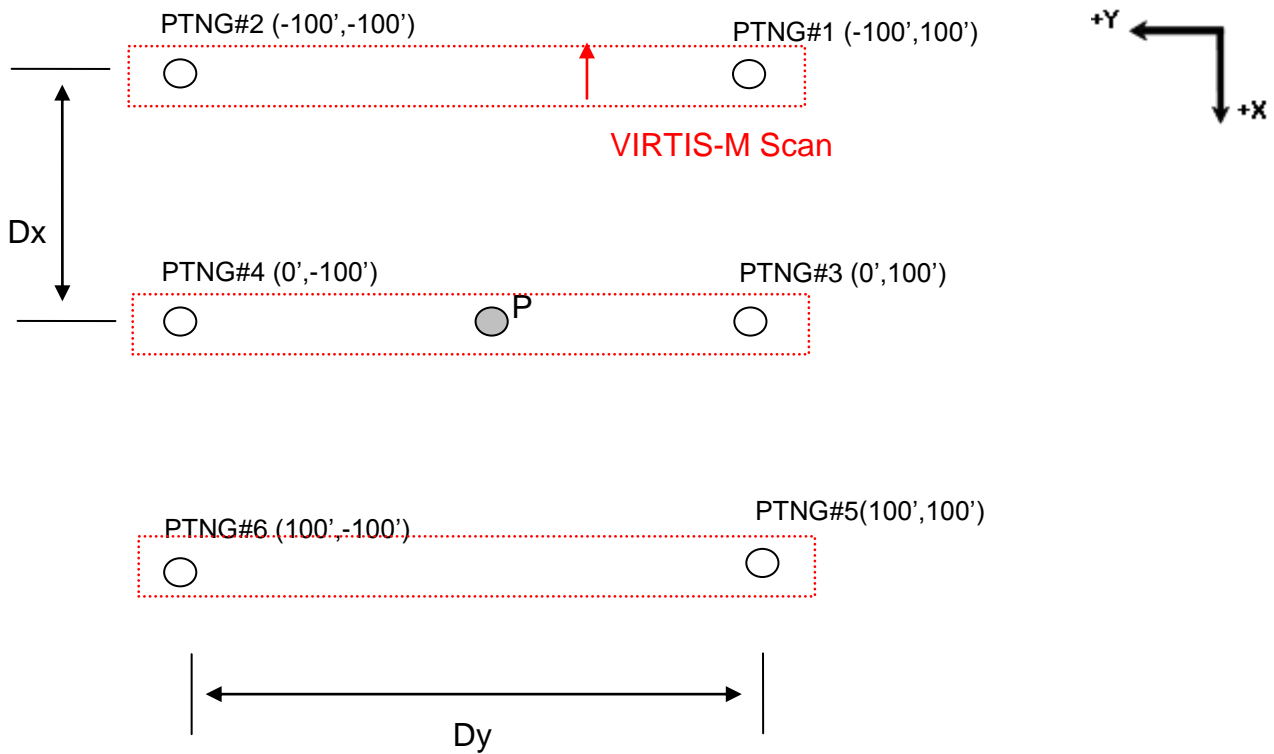


Figure 11. Diagram showing the sequence for VR03A. In red are reported the scan performed by VIRTIS-M around each location.

As for the verification of the scan mirror read-out circuit, we simply need to verify the H/K as compared to the science data content. Proper pointing by the scan mirror is verified by the presence of the target, as compared to the H/K read-out.

6. VR05 Results summary

Regarding VR05 analysis and results are the same shown for VR02.

7. Cubes Generated

7.1 VR02

The following cubes were acquired :

Cube	EGSE	PDS
M Calibration	PV6BQ549_QUB	V1_00123141067_QUB
M Calibration	PI6BQ549_QUB	I1_00123141067_QUB
M1	PV6BQ629_QUB	V1_00123143443_QUB
M2	PI6BQ629_QUB	I1_00123143440_QUB
M3	PV6BQC24_QUB	V1_00123164721_QUB
M4	PI6BQC24_QUB	I1_00123164718_QUB

Table 1 M Cubes for VR02 H Boresight Calibration

Cube	EGSE	PDS
H Calibration	PH6BQ615_QUB	H1_00115473629_QUB
H Calibration	PS6BQ615_QUB	S1_00115473870_QUB
H1	PS6BQ701_QUB	S1_00115475347_QUB
H2	PT6BQ701_QUB	T1_00115475444_QUB

Table 2 H Cubes for VR02 H Boresight Calibration

7.2 VR03

Cube	EGSE	PDS
M1	PV6BQG29_QUB	V1_00123179421_QUB
M2	PI6BQG29_QUB	I1_00123141067_QUB
M3	PV6BQG36_QUB	V1_00123179841_QUB
M4	PI6BQG36_QUB	I1_00123179838_QUB
M5	PV6BQG43_QUB	V1_00123180261_QUB
M6	PI6BQG43_QUB	I1_00123180258_QUB
M7	PV6BQG50_QUB	V1_00123180681_QUB
M8	PI6BQG50_QUB	I1_00123180678_QUB
M9	PV6BQG57_QUB	V1_00123181101_QUB
M10	PI6BQG57_QUB	I1_00123181098_QUB
M11	PV6BQH04_QUB	V1_00123181521_QUB
M12	PI6BQH04_QUB	I1_00123181518_QUB

Table 3 M Cubes for VR03 M scan mirror and slit orientation verification

7.3 VR05

Cube	EGSE	PDS
M Calibration	PV6CA544_QUB	V1_00124350368_QUB
M Calibration	PI6CA544_QUB	I1_00124350368_QUB
M1	PV6CA624_QUB	V1_00124352743_QUB
M2	PI6CA624_QUB	I1_00124352740_QUB
M3	PV6CAC19_QUB	V1_00124374021_QUB
M4	PI6CAC19_QUB	I1_00124374018_QUB

Table 4 M Cubes for VR05 H Boresight Calibration

Cube	EGSE	PDS
H Calibration	PH6CA610_QUB	H1_00124351829_QUB
H Calibration	PS6CA610_QUB	S1_00124352071_QUB
H1	PS6CA656_QUB	S1_00124354635_QUB
H2	PT6CA656_QUB	T1_00124354979_QUB

Table 5 H Cubes for VR05 H Boresight Calibration

8. PC04 Command History

PC04 Command history printout from time: 2006.330.03.20.00 to time: 2006.344.16.25.00					
OIOR	TC	Mnemonic	Sequense	Execution Time	
VR ON	ZDMX0047	Define Nom/Red branch for VIRTIS	AVRF001A	2006.330.03.20.00.000	
	ZSKA8121	START VIRTIS Power On OBCP	AVRF001A	2006.330.03.20.10.000	
	ZVR00113	Coolers ON in Closed Loop	AVRS003A	2006.330.03.30.00.000	
	ZVR00110	Switch PEMs ON	AVRS003A	2006.330.03.30.10.000	
H Boresight Calibration					
VR02	ZVR00061	MTC_DefaultConf	AVRF005A	2006.330.05.50.00.000	M Calibration
	ZVR00143	M Set Calibration DP in RAM	AVRF005A	2006.330.05.50.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF005A	2006.330.05.50.02.000	
	ZVR00018	MTC_ChangeCal_R	AVRF005A	2006.330.05.50.03.000	
	ZVR00104	Enable M Science on SSMM	AVRF005A	2006.330.05.50.04.000	
	ZVR00106	Disable M Science on SSMM	AVRF005A	2006.330.06.10.04.000	
	ZVR00135	H Cover Close	AVRS004A	2006.330.06.15.00.000	
	ZVR00042	HTC_DefaultConf	AVRS004A	2006.330.06.15.30.000	H Calibration
	ZVR00149	H Set Calibration DP in RAM	AVRS004A	2006.330.06.15.31.000	
	ZVR00047	HTC_ChangeOpe_R	AVRS004A	2006.330.06.15.32.000	
	ZVR00045	HTC_ChangeFun_R	AVRS004A	2006.330.06.15.33.000	
	ZVR00053	HTC_ChangePix_R	AVRS004A	2006.330.06.15.34.000	
	ZVR00105	Enable H Science on SSMM	AVRS004A	2006.330.06.15.35.000	
	ZVR00107	Disable H Science on SSMM	AVRS004A	2006.330.06.25.35.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.06.30.00.000	M Cube M1

	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.06.30.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.06.30.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.06.30.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.06.30.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.06.30.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.07.00.00.000	
	ZVR00042	HTC_DefaultConf	AVRS005A	2006.330.07.01.00.000	H Cube H1
	ZVR00134	H Cover Open	AVRS005A	2006.330.07.01.01.000	
	ZVR00148	H Set Nom Observation DP in RAM	AVRS005A	2006.330.07.01.31.000	
	ZVR00045	HTC_ChangeFun_R	AVRS005A	2006.330.07.01.32.000	
	ZVR00047	HTC_ChangeOpe_R	AVRS005A	2006.330.07.01.33.000	
	ZVR00053	HTC_ChangePix_R	AVRS005A	2006.330.07.01.34.000	
	ZVR00105	Enable H Science on SSMM	AVRS005A	2006.330.07.01.35.000	
	ZVR00107	Disable H Science on SSMM	AVRF009B	2006.330.12.23.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.12.25.00.000	M Cube M2
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.12.25.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.12.25.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.12.25.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.12.25.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.12.25.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.12.55.00.000	
M scan mirror and slit orientation verification					
VR03	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.16.30.00.000	M Cube M1
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.16.30.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.16.30.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.16.30.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.16.30.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.16.30.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.16.35.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.16.37.00.000	M Cube M2
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.16.37.01.000	

	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.16.37.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.16.37.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.16.37.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.16.37.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.16.42.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.16.44.00.000	M Cube M3
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.16.44.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.16.44.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.16.44.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.16.44.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.16.44.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.16.49.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.16.51.00.000	M Cube M4
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.16.51.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.16.51.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.16.51.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.16.51.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.16.51.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.16.56.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.16.58.00.000	M Cube M5
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.16.58.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.16.58.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.16.58.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.16.58.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.16.58.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.17.03.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.330.17.05.00.000	M Cube M6
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.330.17.05.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.330.17.05.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.330.17.05.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.330.17.05.04.000	

	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.330.17.05.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.330.17.10.00.000	
	ZDM10144	SSMM-Stop Write Operation from User	AVRF016A	2006.330.17.30.00.000	
VR OFF					
	ZVR00124	M Cover Close	AVRF004C	2006.330.17.32.00.000	
	ZVR00135	H Cover Close	AVRF004C	2006.330.17.34.00.000	
	ZVR00111	Switch PEMs OFF	AVRF004C	2006.330.17.36.00.000	
	ZVR00115	Coolers OFF	AVRF004C	2006.330.17.37.30.000	
	ZDMX0224	Stop Time Update to VIRTIS 51	AVRF004D	2006.330.17.37.30.000	
	ZVR00037	VTC_EnterSafe	AVRF004D	2006.330.17.37.40.000	
	ZDMX0213	Send Time to VIRTIS 51	AVRF004D	2006.330.17.38.10.000	
	ZSKA8122	START VIRTIS Power Off OBCP	AVRF006A	2006.330.17.40.00.000	
VR ON	ZDMX0047	Define Nom/Red branch for VIRTIS	AVRF001A	2006.344.02.35.00.000	
	ZSKA8121	START VIRTIS Power On OBCP	AVRF001A	2006.344.02.35.10.000	
	ZVR00113	Coolers ON in Closed Loop	AVRS003A	2006.344.02.45.00.000	
	ZVR00110	Switch PEMs ON	AVRS003A	2006.344.02.45.10.000	
H Boresight Calibration					
VR05	ZVR00061	MTC_DefaultConf	AVRF005A	2006.344.05.45.00.000	M Calibration
	ZVR00143	M Set Calibration DP in RAM	AVRF005A	2006.344.05.45.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF005A	2006.344.05.45.02.000	
	ZVR00018	MTC_ChangeCal_R	AVRF005A	2006.344.05.45.03.000	
	ZVR00104	Enable M Science on SSMM	AVRF005A	2006.344.05.45.04.000	
	ZVR00106	Disable M Science on SSMM	AVRF005A	2006.344.06.05.04.000	
	ZVR00135	H Cover Close	AVRS004A	2006.344.06.10.00.000	
	ZVR00042	HTC_DefaultConf	AVRS004A	2006.344.06.10.30.000	H Calibration
	ZVR00149	H Set Calibration DP in RAM	AVRS004A	2006.344.06.10.31.000	
	ZVR00047	HTC_ChangeOpe_R	AVRS004A	2006.344.06.10.32.000	
	ZVR00045	HTC_ChangeFun_R	AVRS004A	2006.344.06.10.33.000	
	ZVR00053	HTC_ChangePix_R	AVRS004A	2006.344.06.10.34.000	
	ZVR00105	Enable H Science on SSMM	AVRS004A	2006.344.06.10.35.000	

	ZVR00107	Disable H Science on SSMM	AVRS004A	2006.344.06.20.35.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.344.06.25.00.000	M Cube M1
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.344.06.25.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.344.06.25.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.344.06.25.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.344.06.25.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.344.06.25.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.344.06.55.00.000	
	ZVR00042	HTC_DefaultConf	AVRS005A	2006.344.06.56.00.000	H Cube H1
	ZVR00134	H Cover Open	AVRS005A	2006.344.06.56.01.000	
	ZVR00148	H Set Nom Observation DP in RAM	AVRS005A	2006.344.06.56.31.000	
	ZVR00045	HTC_ChangeFun_R	AVRS005A	2006.344.06.56.32.000	
	ZVR00047	HTC_ChangeOpe_R	AVRS005A	2006.344.06.56.33.000	
	ZVR00053	HTC_ChangePix_R	AVRS005A	2006.344.06.56.34.000	
	ZVR00105	Enable H Science on SSMM	AVRS005A	2006.344.06.56.35.000	
	ZVR00107	Disable H Science on SSMM	AVRF009B	2006.344.12.18.00.000	
	ZVR00061	MTC_DefaultConf	AVRF010A	2006.344.12.20.00.000	M Cube M2
	ZVR00142	M Set Science DP in RAM	AVRF010A	2006.344.12.20.01.000	
	ZVR00016	MTC_ChangeOpe_R	AVRF010A	2006.344.12.20.02.000	
	ZVR00014	MTC_ChangeFun_R	AVRF010A	2006.344.12.20.03.000	
	ZVR00020	MTC_ChangeAlt_R	AVRF010A	2006.344.12.20.04.000	
	ZVR00104	Enable M Science on SSMM	AVRF010A	2006.344.12.20.05.000	
	ZVR00106	Disable M Science on SSMM	AVRF009A	2006.344.12.50.00.000	
	ZDM10144	SSMM-Stop Write Operation from User	AVRF016A	2006.344.16.15.00.000	
VR OFF					
	ZVR00124	M Cover Close	AVRF004C	2006.344.16.17.00.000	
	ZVR00135	H Cover Close	AVRF004C	2006.344.16.19.00.000	
	ZVR00111	Switch PEMs OFF	AVRF004C	2006.344.16.21.00.000	
	ZVR00115	Coolers OFF	AVRF004C	2006.344.16.22.30.000	
	ZDMX0224	Stop Time Update to VIRTIS 51	AVRF004D	2006.344.16.22.30.000	
	ZVR00037	VTC_EnterSafe	AVRF004D	2006.344.16.22.40.000	

	ZDMX0213	Send Time to VIRTIS 51	AVRF004D	2006.344.16.23.10.000	
	ZSKA8122	START VIRTIS Power Off OBCP	AVRF006A	2006.344.16.25.00.000	

Table 6 VIRTIS Active Payload 04 Observation Sequence

9. VR02 Parameter List

VR02 H Boresight Calibration					
Parameter List		M1		M2	
M_ERT	Repetition Time	1	20 sec	1	20 sec
M_ACQ_MODE	Acquisition Mode	5	All pix full window	5	All pix full window
M_COMP_MODE	Compression	1	Lossless compression	1	Lossless compression
M_IR_EXPO	IR Exposure	100	10 sec	100	10 sec
M_CCD_EXPO	CCD Exposure	130	13 sec	130	13 sec
M_IR_WIN_Y1	Start Spatial Pixel	7		7	
M_IR_WIN_Y2	Stop Spatial Pixel	262		262	
M_CCD_WIN_Y1	Start Spatial Pixel	0		0	
M_CCD_WIN_Y2	Stop Spatial Pixel	255		255	
M_SU_MODE	Mirror Mode	1	scan	1	scan
M_Alpha_first	Start Angle	28447	80 slices around	28447	80 slices around
M_Alpha_last	Stop Angle	46307	H Boresight	46307	H Boresight
M_D_BCK_RATE	Dark Rate	-----		-----	
Expected duration (sec)			1800		
Expected Number of Science Lines			85		
Expected Number of Dark			5		
Expected Data Volume (kbit)			150000		
				1800	
				85	
				5	
				150000	

Table 7.1 M Cube Parameters for VR02 H Boresight Calibration

VR02 H Boresight Calibration			
Parameter List		H1	
H_DPT	Data Production Mode	0	Nominal
H_int_Science	Integration Time	550	5 sec
H_Sum	Frame Summing	0	NO
H_NR_Frame	Number of Frames	1	
H_DARK_RATE	Dark Rate	128	
H_Comp	Compression	1	Lossless
Expected duration (sec)		19320	
Expected Number of Image Slices		0	
Expected Number of Spectral Slices		56	
Expected Number of Dark		28	
Expected Data Volume (kbit)		100000	

Table 7.2 H Cube Parameters for VR02 H Boresight Calibration

10. VR03 Parameter List

VR03 M scan mirror and slit orientation verification							
Parameter List		M1		M2		M3	
M_ERT	Repetition Time	1	20 sec	1	20 sec	1	20 sec
M_ACQ_MODE	Acquisition Mode	5	All pix full window	5	All pix full window	5	All pix full window
M_COMP_MODE	Compression	1	Lossless compression	1	Lossless compression	1	Lossless compression
M_IR_EXPO	IR Exposure	100	10 sec	100	10 sec	100	10 sec
M_CCD_EXPO	CCD Exposure	130	13 sec	130	13 sec	130	13 sec
M_IR_WIN_Y1	Start Spatial Pixel	7		7		7	
M_IR_WIN_Y2	Stop Spatial Pixel	262		262		262	
M_CCD_WIN_Y1	Start Spatial Pixel	0		0		0	
M_CCD_WIN_Y2	Stop Spatial Pixel	255		255		255	
M_SU_MODE	Mirror Mode	1	scan	1	scan	1	scan
M_Alpha_first	Start Angle	2687	15 slices around ????	2687	15 slices around ????	29712	15 slices around Z Axis
M_Alpha_last	Stop Angle	5977		5977		33002	
M_D_BCK_RATE	Dark Rate	-----		-----		-----	
Expected duration (sec)			300		300		300
Expected Number of Science Lines			14		14		14
Expected Number of Dark			1		1		1
Expected Data Volume (kbit)			25000		25000		25000

Table 8.1 M Cube Parameters for VR03 M scan mirror and slit orientation verification

VR03 M scan mirror and slit orientation verification							
Parameter List		M4		M5		M6	
M_ERT	Repetition Time	1	20 sec	1	20 sec	1	20 sec
M_ACQ_MODE	Acquisition Mode	5	All pix full window	5	All pix full window	5	All pix full window
M_COMP_MODE	Compression	1	Lossless compression	1	Lossless compression	1	Lossless compression
M_IR_EXPO	IR Exposure	100	10 sec	100	10 sec	100	10 sec
M_CCD_EXPO	CCD Exposure	130	13 sec	130	13 sec	130	13 sec
M_IR_WIN_Y1	Start Spatial Pixel	7		7		7	
M_IR_WIN_Y2	Stop Spatial Pixel	262		262		262	
M_CCD_WIN_Y1	Start Spatial Pixel	0		0		0	
M_CCD_WIN_Y2	Stop Spatial Pixel	255		255		255	
M_SU_MODE	Mirror Mode	1	scan	1	scan	1	scan
M_Alpha_first	Start Angle	29712	15 slices around Z Axis	57207	15 slices around ????	57207	15 slices around ????
M_Alpha_last	Stop Angle	33002		60497		60497	
M_D_BCK_RATE	Dark Rate	-----		-----		-----	
Expected duration (sec)			300		300		300
Expected Number of Science Lines			14		14		14
Expected Number of Dark			1		1		1
Expected Data Volume (kbit)			25000		25000		25000

Table 8.2 M Cube Parameters for VR03 M scan mirror and slit orientation verification

11. VR05 Parameter List

VR05 H Boresight Calibration					
Parameter List		M1		M2	
M_ERT	Repetition Time	1	20 sec	1	20 sec
M_ACQ_MODE	Acquisition Mode	5	All pix full window	5	All pix full window
M_COMP_MODE	Compression	1	Lossless compression	1	Lossless compression
M_IR_EXPO	IR Exposure	100	10 sec	100	10 sec
M_CCD_EXPO	CCD Exposure	130	13 sec	130	13 sec
M_IR_WIN_Y1	Start Spatial Pixel	7		7	
M_IR_WIN_Y2	Stop Spatial Pixel	262		262	
M_CCD_WIN_Y1	Start Spatial Pixel	0		0	
M_CCD_WIN_Y2	Stop Spatial Pixel	255		255	
M_SU_MODE	Mirror Mode	1	scan	1	scan
M_Alpha_first	Start Angle	28447	80 slices around	28447	80 slices around
M_Alpha_last	Stop Angle	46307	H Boresight	46307	H Boresight
M_D_BCK_RATE	Dark Rate	-----		-----	
Expected duration (sec)			1800	1800	
Expected Number of Science Lines			85	85	
Expected Number of Dark			5	5	
Expected Data Volume (kbit)			150000	150000	

Table 9.1 M Cube Parameters for VR05 H Boresight Calibration

VR05 H Boresight Calibration			
Parameter List		H1	
H_DPT	Data Production Mode	0	Nominal
H_int_Science	Integration Time	550	5 sec
H_Sum	Frame Summing	0	NO
H_NR_Frame	Number of Frames	1	
H_DARK_RATE	Dark Rate	128	
H_Comp	Compression	1	Lossless
Expected duration (sec)		19320	
Expected Number of Image Slices		0	
Expected Number of Spectral Slices		56	
Expected Number of Dark		28	
Expected Data Volume (kbit)		100000	

Table 9.2 H Cube Parameters for VR05 H Boresight Calibration

12. VIRTIS OIOR VR02

```

# $Log: OIOR_PIIRSO_D_0006_VR_02____.ITL,v $
# Revision 1.5 2006/10/16 05:56:59 vdhiri
# Mode corrections from VR.
#
# Revision 1.4 2006/10/11 12:38:15 vdhiri
# Updates to timing and parameters by VR team.
#
# Revision 1.3 2006/09/26 15:11:45 vdhiri
# RSOC: Changed Ref Date only for allow some checks. Date can be arbitrary.
#
# Revision 1.2 2006/08/28 08:12:39 vdhiri
# RSOC Corrections
#
# Revision 1.1 2006/08/25 10:56:34 vdhiri
# Initial inputs from VR. Filename updated for consistency.
#
#=====
# Filename:      OIOR_PIIRSO_D_0006_VR_02_ROS
# Type:         Input Timeline file
#
# Description:   VIRTIS VR02 H Boresight Calibration
#
#               name:   RSOC - Viney Dhiri
#               email:  rsoc@rssd.esa.int
#
#               name: Virtis team - Fabrizio Capaccioni
#               email:  fabrizio.capaccioni@iasf-roma.inaf.it
#
# Date:         25 July 2006
#
#=====
Version: 00002

#Init_mode: VIRTIS IDLE

Ref_date: 25-aug-2006

Start_time: -000_00:40:00
End_time:   000_06:25:00
#=====
Description: "VR02 H Boresight Calibration"
#=====

-000_00:40:00  VIRTIS      IDLE    AVRF005A      # VIRTIS-M Calibration
-000_00:15:00  VIRTIS      IDLE    AVRS004A(\    # VIRTIS-H Calibration
                                VVRG0093 = 929 \ # Telescope Cal Int. time=1s
                                VVRG0094 = 1 \ #
                                VVRG0097 = 929 \ # Radiometric Cal Int. time=1s
                                VVRG0098 = 1 \
                                VVRG0179 = 0x421E87E2 \ # H_Pix_Map_C11
                                VVRG0180 = 0x3E00FA15 \ # H_Pix_Map_C12
                                VVRG0181 = 0x38BC3DCC \ # H_Pix_Map_C13
                                VVRG0182 = 0x42B9C019 \ # H_Pix_Map_C21
                                VVRG0183 = 0x3DC985C7 \ # H_Pix_Map_C22
                                VVRG0184 = 0x387DD8E4 \ # H_Pix_Map_C23
                                VVRG0185 = 0x43010418 \ # H_Pix_Map_C31
                                VVRG0186 = 0x3D9EA323 \ # H_Pix_Map_C32

```

```

VVRG0187 = 0x38290589 \ # H_Pix_Map_C33
VVRG0188 = 0x43194CCC \ # H_Pix_Map_C41
VVRG0189 = 0x3D9329F8 \ # H_Pix_Map_C42
VVRG0190 = 0x3773EE3E \ # H_Pix_Map_C43
VVRG0191 = 0x432BE624 \ # H_Pix_Map_C51
VVRG0192 = 0x3D73B695 \ # H_Pix_Map_C52
VVRG0193 = 0x3716EDFF \ # H_Pix_Map_C53
VVRG0194 = 0x4339DA1C \ # H_Pix_Map_C61
VVRG0195 = 0x3D49E251 \ # H_Pix_Map_C62
VVRG0196 = 0x371AA135 \ # H_Pix_Map_C63
VVRG0197 = 0x43459EB7 \ # H_Pix_Map_C71
VVRG0198 = 0x3D104A64 \ # H_Pix_Map_C72
VVRG0199 = 0x37AD1197 \ # H_Pix_Map_C73
VVRG0200 = 0x434DEF9D \ # H_Pix_Map_C81
VVRG0201 = 0x3CF4F9DC \ # H_Pix_Map_C82
VVRG0202 = 0x37B67469 ) # H_Pix_Map_C83
    
```

```

#
# Data Volume of the above 145 Mbits = 18.125 MBytes
#
    
```

```

000_00:00:00    VIRTIS    IDLE    AVRF010A( \ # VIRTIS Start-M Nominal Science
VVRG0051 = 1 \ # M_ERT (repetition time 20s)
VVRG0053 = 5 \ # M_ACQ_MODE (All pix full window)
VVRG0054 = 1 \ # lossless compression
VVRG0029 = 100 \ # M_IR_EXPO (10s integration time)
VVRG0035 = 130 \ # M_CCD_EXPO (13s integration time)
VVRG0037 = 28447 \ # M_ALPHA_FIRST (80 slices around H boresight)
VVRG0038 = 46307 ) # M_ALPHA_LAST
    
```

```

000_00:30:00    VIRTIS    SCIENCE    AVRF009A    # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 165 Mbits = 20.60 MBytes
#
    
```

```

000_00:31:00    VIRTIS    IDLE    AVRS005A( \ # VIRTIS Start-H Nominal acquisition Science
VVRG0117 = 550 \ # Integration time = 5s
VVRG0118 = 9 \
VVRG0121 = 1 \ # H_NR_Frame = 1
VVRG0123 = 128 \ # H_DARK_RATE
VVRG0124 = 1 \ # lossless compression
VVRG0179 = 0x421E87E2 \ # H_Pix_Map_C11
VVRG0180 = 0x3E00FA15 \ # H_Pix_Map_C12
VVRG0181 = 0x38BC3DCC \ # H_Pix_Map_C13
VVRG0182 = 0x42B9C019 \ # H_Pix_Map_C21
VVRG0183 = 0x3DC985C7 \ # H_Pix_Map_C22
VVRG0184 = 0x387DD8E4 \ # H_Pix_Map_C23
VVRG0185 = 0x43010418 \ # H_Pix_Map_C31
VVRG0186 = 0x3D9EA323 \ # H_Pix_Map_C32
VVRG0187 = 0x38290589 \ # H_Pix_Map_C33
VVRG0188 = 0x43194CCC \ # H_Pix_Map_C41
VVRG0189 = 0x3D9329F8 \ # H_Pix_Map_C42
VVRG0190 = 0x3773EE3E \ # H_Pix_Map_C43
VVRG0191 = 0x432BE624 \ # H_Pix_Map_C51
VVRG0192 = 0x3D73B695 \ # H_Pix_Map_C52
VVRG0193 = 0x3716EDFF \ # H_Pix_Map_C53
VVRG0194 = 0x4339DA1C \ # H_Pix_Map_C61
VVRG0195 = 0x3D49E251 \ # H_Pix_Map_C62
VVRG0196 = 0x371AA135 \ # H_Pix_Map_C63
VVRG0197 = 0x43459EB7 \ # H_Pix_Map_C71
VVRG0198 = 0x3D104A64 \ # H_Pix_Map_C72
VVRG0199 = 0x37AD1197 \ # H_Pix_Map_C73
VVRG0200 = 0x434DEF9D \ # H_Pix_Map_C81
VVRG0201 = 0x3CF4F9DC \ # H_Pix_Map_C82
VVRG0202 = 0x37B67469 ) # H_Pix_Map_C83
    
```

```

000_05:53:00    VIRTIS    SCIENCE    AVRF009B    # VIRTIS-H Stop acquisition SSMM
#
# Data Volume of the above 100 Mbits = 12.5 MBytes
#
    
```

```

000_05:55:00    VIRTIS    IDLE    AVRF010A( \ # VIRTIS Start-M Nominal Science
VVRG0051 = 1 \ # M_ERT (repetition time 20s)
VVRG0053 = 5 \ # M_ACQ_MODE (All pix full window)
VVRG0054 = 1 \ # lossless compression
    
```

VVRG0029 = 100 \ # M_IR_EXPO (10s integration time)
 VVRG0035 = 130 \ # M_CCD_EXPO (13s integration time)
 VVRG0037 = 28447 \ # M_ALPHA_FIRST (80 slices around H boresight)
 VVRG0038 = 46307) # M_ALPHA_LAST

```
000_06:25:00 VIRTIS SCIENCE AVRF009A # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 165 Mbits = 20.60 MBytes
#
# Total Data Volume 18.125+18.75+12.5+18.75 = 68.125 MBytes
#
# VIRTIS is left in IDLE mode
#
```

13. VIRTIS OIOR VR03

```
# $Log: OIOR_PIIRSO_D_0006_VR_03____.ITL,v $
# Revision 1.6 2006/10/16 05:56:59 vdhiri
# Mode corrections from VR.
#
# Revision 1.5 2006/10/11 13:32:58 vdhiri
# Corrected to remove blank line in line 68
#
# Revision 1.4 2006/10/11 12:43:29 vdhiri
# Updates to timing and parameters by VR team. And commentry and ref data updated by RSOC.
#
# Revision 1.3 2006/09/26 15:11:45 vdhiri
# RSOC: Changed Ref Date only for allow some checks. Date can be arbitrary.
#
# Revision 1.2 2006/08/28 08:12:39 vdhiri
# RSOC Corrections
#
# Revision 1.1 2006/08/25 10:56:34 vdhiri
# Initial inputs from VR. Filename updated for consistency.
#
#
#
#=====
# Filename: OIOR_PIIRSO_D_0001_VR_03_xxxxx.ROS
# Type: Input Timeline file
#
# Description: VIRTIS VR03 Scan Mirror and V-M Slit alignment
#
# name: RSOC - Viney Dhiri
# email: rsoc@rssd.esa.int
#
# name: Virtis team - Fabrizio Capaccioni
# email: fabrizio.capaccioni@iasf-roma.inaf.it
#
# Date: 25 July 2006
#
#=====
```

Version: 00002

Ref_date: 25-aug-2006

Start_time: 000_00:00:00
 End_time: 000_00:40:00



VIRTIS

doc : VIR-IAS-TR-010
issue: 2
date: 14/03/2012
page: 29 of 31

#Init_mode: VIRTIS IDLE

Description: "VR03 M scan mirror and slit orientation verification"
#####

```
#
# S/C moves to PTR#1 X=-100' Y= - 100'
#
000_00:00:00    VIRTIS        IDLE    AVRF010A(\          # VIRTIS Start-M Nominal Science
                VVRG0051 = 1 \ # M_ERT          (repetition time 20s)
                VVRG0053 = 5 \ # M_ACQ_MODE    (All pix full window)
                VVRG0054 = 1 \ # lossless compression
                VVRG0029 = 100 \ # M_IR_EXPO    (10s integration time)
                VVRG0035 = 130 \ # M_CCD_EXPO  (13s integration time)
                VVRG0037 = 2687 \ # M_ALPHA_FIRST (15 slices around ?????)
                VVRG0038 = 5977 ) # M_ALPHA_LAST

000_00:05:00    VIRTIS        SCIENCE   AVRF009A           # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 27.5 Mbits = 3.5 MBytes
#
# S/C moves to PTR#1 X=-100' Y= + 100'
#
000_00:07:00    VIRTIS        IDLE    AVRF010A(\          # VIRTIS Start-M Nominal Science
                VVRG0051 = 1 \ # M_ERT          (repetition time 20s)
                VVRG0053 = 5 \ # M_ACQ_MODE    (All pix full window)
                VVRG0054 = 1 \ # lossless compression
                VVRG0029 = 100 \ # M_IR_EXPO    (10s integration time)
                VVRG0035 = 130 \ # M_CCD_EXPO  (13s integration time)
                VVRG0037 = 2687 \ # M_ALPHA_FIRST (15 slices around ?????)
                VVRG0038 = 2687 ) # M_ALPHA_LAST

000_00:12:00    VIRTIS        SCIENCE   AVRF009A           # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 27.5 Mbits = 3.5 MBytes
#
# S/C moves to PTR#1 X= 0' Y= - 100'
#
000_00:14:00    VIRTIS        IDLE    AVRF010A(\          # VIRTIS Start-M Nominal Science
                VVRG0051 = 1 \ # M_ERT          (repetition time 20s)
                VVRG0053 = 5 \ # M_ACQ_MODE    (All pix full window)
                VVRG0054 = 1 \ # lossless compression
                VVRG0029 = 100 \ # M_IR_EXPO    (10s integration time)
                VVRG0035 = 130 \ # M_CCD_EXPO  (13s integration time)
                VVRG0037 = 29712 \ # M_ALPHA_FIRST (15 slices around Z Axis)
                VVRG0038 = 33002) # M_ALPHA_LAST

000_00:19:00    VIRTIS        SCIENCE   AVRF009A           # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 27.5 Mbits = 3.5 MBytes
#
# S/C moves to PTR#1 X= 0' Y= + 100'
#
000_00:21:00    VIRTIS        IDLE    AVRF010A(\          # VIRTIS Start-M Nominal Science
                VVRG0051 = 1 \ # M_ERT          (repetition time 20s)
                VVRG0053 = 5 \ # M_ACQ_MODE    (All pix full window)
                VVRG0054 = 1 \ # lossless compression
                VVRG0029 = 100 \ # M_IR_EXPO    (10s integration time)
                VVRG0035 = 130 \ # M_CCD_EXPO  (13s integration time)
                VVRG0037 = 29712 \ # M_ALPHA_FIRST (15 slices around Z axis)
                VVRG0038 = 33002) # M_ALPHA_LAST

000_00:26:00    VIRTIS        SCIENCE   AVRF009A           # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 27.5 Mbits = 3.5 MBytes
#
# S/C moves to PTR#1 X= + 100' Y= - 100'
```



VIRTIS

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```
#
000_00:28:00  VIRTIS      IDLE   AVRF010A(\          # VIRTIS Start-M Nominal Science
                VVRG0051 = 1 \ # M_ERT      (repetition time 20s)
                VVRG0053 = 5 \ # M_ACQ_MODE (All pix full window)
                VVRG0054 = 1 \ # lossless compression
                VVRG0029 = 100 \ # M_IR_EXPO  (10s integration time)
                VVRG0035 = 130 \ # M_CCD_EXPO (13s integration time)
                VVRG0037 = 57207\ # M_ALPHA_FIRST (15 slices around ?????)
                VVRG0038 = 60497) # M_ALPHA_LAST

000_00:33:00  VIRTIS      SCIENCE AVRF009A          # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 27.5 Mbits = 3.5 MBytes
#
#
# S/C moves to PTR#1 X= + 100' Y= + 100'
#
000_00:35:00  VIRTIS      IDLE   AVRF010A(\          # VIRTIS Start-M Nominal Science
                VVRG0051 = 1 \ # M_ERT      (repetition time 20s)
                VVRG0053 = 5 \ # M_ACQ_MODE (All pix full window)
                VVRG0054 = 1 \ # lossless compression
                VVRG0029 = 100 \ # M_IR_EXPO  (10s integration time)
                VVRG0035 = 130 \ # M_CCD_EXPO  (13s integration time)
                VVRG0037 = 57207\ # M_ALPHA_FIRST (15 slices around ?????)
                VVRG0038 = 60497) # M_ALPHA_LAST

000_00:40:00  VIRTIS      SCIENCE AVRF009A          # VIRTIS-M Stop acquisition SSMM
#
# Data Volume of the above 27.5 Mbits = 3.5 MBytes
#
#
# Total Data Volume 3.5 * 6 = 21.0 MBytes
#
# VIRTIS is left in IDLE Mode
```

14. VIRTIS OIOR SWON

```
#$Log: OIOR_PIIRSO_D_0000_VR_SWON_.ITL,v $
# Revision 1.2 2006/09/26 14:29:19 vdhiri
# RSOC added 40 mins margin to allow for main ops specific initial set-up
#
# Revision 1.1 2006/09/01 15:53:09 vdhiri
# Generic files.
#
#
#=====#
# Description:      Switch-on VR. Initial State OFF, Final State Idle, duration 2h30m
#
# Author: V.Dhiri / RSOC
#=====#

Version: 00002

Init_mode: VIRTIS OFF

Ref_date: 31-Dec-2006

Start_time: -001_00:00:00
End_time: 000_00:00:00

#-----#
Description: 1 "Switch on VIRTIS"
```

```
#-----#
-000_03:10:00  VIRTIS      OFF   AVRF001A      # VIRTIS POWER-ON OBCP
-000_03:00:00  VIRTIS      IDLE  AVRS003A      # VIRTIS-M and VIRTIS-H Initialisation

# 40 minute margin given to allow for main observation specific set up.
```

15. VIRTIS OIOR SWOFF

```
# $Log: OIOR_PIIISO_D_0000_VR_SWOFF_.ITL,v $
# Revision 1.1 2006/09/01 15:53:09 vdhiri
# Generic files.
#
#
#=====#
# Description:      Switch-off VR. Initial State IDLE, Final State OFF, duration 10m plus OBCP time.
#
# Author: V.Dhiri / RSOC
#=====#

Version: 00002

Ref_date: 31-Dec-2006

Start_time: 000_00:00:00
End_time: 001_00:00:00

#-----#
Description: 1 "Switch off VIRTIS"
#-----#

000_00:00:00  VIRTIS      IDLE  AVRF016A      # VIRTIS Stop Link to SSMM
000_00:02:00  VIRTIS      IDLE  AVRF004C      # VIRTIS PEM-M and PEM-H OFF
000_00:07:30  VIRTIS      IDLE  AVRF004D      # VIRTIS trans Idle to Safe
000_00:10:00  VIRTIS      SAFE  AVRF006A      # VIRTIS power OFF OBCP
```