- VVV SMP review –

RID=Review Item Discrepancy, RIC=Review Item Comment, RIQ=Review Item Question
Please use a separate page per RIx.

Reviewer: ESO Survey Team	
Document No	VVV SMP
RID, RIC or RIQ ?	RIQ
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RIx text

EST – Date : 08.03.2007

The Z,Y band cannot be calibrated with 2MASS, and the survey team does not discuss a calibration plan for these filters.

The team has not investigated the impact of the 200 bad pixel region on chip#16 for their science.

How does the survey team ensure the uniformity across tiles? No mention of the illumination correction, which would affect the overlap regions used for global photometry.

EST – Date 07.12.2007

<u>Open issues related to current Review item (RIX) after VISTA PS senior review (22.10.07) and EST report (28.06.07)</u>

It is true that in a 2-color diagram such as (Y-J, J-Ks) normal stars form a tight sequence with a spread below 0.1 mag rms in low extinction regions. This is where the 2-3% photometric accuracy from VDFS comes from. But the problem is for the heavily obscured regions of the bulge/disk - which are indeed the main targets of this surveys – where these color relations (Z,Y vs. J, H, Ks 2MASS) may not be valid.

Global photometry is crucial for the legacy value and must be endorsed by the survey team for all their detected sources. This implies, for example, that the object catalogues produced for the heavily obscured regions must have a quality parameter given by the survey team, which is a valid assessment of the photometric accuracy in those regions, and not for the low extinction ones.

This is an ESO public survey, and the data products must have a legacy value for the ESO community and accurate absolute photometry, even if the survey team is mainly interested in the relative one.

Reply from Survey Team – Date 22.05.2007
Name: Phil Lucas, Valentin Ivanov, Dante Minniti

1. Tests on WFCAM calibration for Z,Y-band imply use of simple color equations can calibrate to a 2-3% in most regions providing an allowance for Galactic extinction is made. Certain Galactic plane regions will cause a problem with a field-by-field solution due to their heavy extinction along the line-of-sight. However, both nightly monitoring of zero-points and global overlap calibration can also be used to help with this issue. We can use photometric transformations based on 2MASS stars established for VISTA during its Science Verification. This would be based on early type stars for which the Z and Y transformations as function of JHKs magnitudes can be derived. This calibration can be improved over time by our own VVV survey observations.

2. We are aware of this. The multiple epochs of our fields will allow to identify and to discard spurious points from the light curves. However, the stability of the dead-pixels mask is not known. Even though VDFS will determine this nightly, it would be useful for the variability campaigns to be done all during the same season, another reason for which we prefer contiguous nights.

3. Our highest priority is the temporal uniformity. The confidence maps will deal with the fact that not all pixels will have the same depth. An illumination correction will be computed regularly by VDFS from the numerous stacked 2MASS photometry residuals that will be available from all VISTA observations. Special extra observations are not needed. The global photometry can be obtained by comparison with 2MASS (easily for JHKs, with a bit more effort for YZ). This can be easily investigated once we have some real data from the Science Verification or from the 1st year of operations. However, for the variability studies the global photometry is not as important as the relative photometry eg per tile.

In order to acquire useful photometric and astrometric calibrations for all ESO Public Surveys, we suggest that ESO images some standard fields repeatedly during the VISTA Science Verification. For this, it is ideal to observe one of Stetson's globular and open cluster standard wide fields taken from: http://cadcwww.hia.nrc.ca/standards
We suggest at least 2 images in each of the ZYJHK acquired per night during three different nights. This should not be too time consuming, but would be of enormous value for all surveys.

Reply to open issues related to current Review item (RIX) after VISTA PS senior review (22.10.07) and EST report (28.06.07)
Name: Manuela Zoccali, Marina Rejkuba, Pawel Pietrukowicz, Phil Lucas, Valentin Ivanov, Dante Minniti

We have reconsidered the absolute calibration of the ZY filters. Therefore, we have decided to devote time for absolute calibration standards of ZY during the first year. These will provide the needed absolute photometry.

We will provide the global photometry. We retrieved all the 2MASS sources in our fields, and identified the suitable standards for this following stringent criteria, which are very numerous even in the most crowded or most reddened fields. For example, we count on 15000, 4500, and 750 calibrators per field with 10.5<Ks<11.5 at Galactic coordinates (l=0, b=0), (l=0, b=+/-5), and (l=0, b=-10), respectively. We will also add quality flags for the photometry in obscured as well as crowded regions when needed. In addition, it is our intention to provide reddening maps, color-color diagrams and color-magnitude diagrams for all fields.

We understand the legacy importance of the VVV public survey, and are keen on providing accurate absolute global photometry for the regions covered.