

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-11-105 Issue Date: 22/06/2011	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__1P generated with IPF 5.06	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 5.06 products Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Same specification as IPF 5.05</li> </ul>	SPPA Engineer
	<p><b>IPF 5.06 Level 1 products overview</b></p> <p>The MIPAS/ENVISAT operational processor (IPF) Version 5.06 was successfully activated in Near Real Time and Off-line processing centers on 3 May 2011.</p> <p><b>Processor upgrades</b></p> <p>The IPF 5.06 is fully in line with previous version (5.05) in terms of processor specification and products format. In addition, several bugs were corrected, mainly for the Level 2 processor. Concerning the Level 1 processing, one bug was corrected with IPF 5.06:</p> <ul style="list-style-type: none"> <li>• <i>Anomaly in num_sweeps for special modes:</i> the original problem, corrected with IPF 5.06, was that the NUM_SWEEPS field in SCAN_INFO ADS was wrongly filled in case of special mode measurements, such as the Aircraft Emission mode.</li> </ul> <p><b>IPF 5.06 Level 1 products quality issues</b></p> <p>One issue was detected when using the beat tool for the products generated with IPF 5.06, this issue was already corrected and a patch is available to overcome this problem, see</p> <p><b>Format issue</b></p> <p><i>Beat 6.3.0 definition file update</i></p> <p>The reference to the Product Specification was slightly changed in the products generated with IPF 5.06. Owing to this, the beat definition file needs to be updated in order to read these products, further details are available at:  <a href="http://www.stcorp.nl/beat/issues/">http://www.stcorp.nl/beat/issues/</a></p>	
Input	Fabrizio Niro	IDEAS Engineer
Originator	Thorsten Fehr, Rolf von Kuhlmann	SPPA Engineer
Approver	Henri Laur	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-11-0104 Issue Date: 17/02/2011	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__1P generated with IPF 5.05	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 5.05 and CFI 5.8.1 Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Same specification as IPF 5.02</li> <li>• ENVISAT CFI 5.8.1</li> </ul>	SPPA Engineer
Description	<p><b>IPF 5.05 Level 1 products overview</b></p> <p>The MIPAS Level 1b operational processor IPF 5.05 was activated in the ESA NRT processing centers (Kiruna and ESRIN) on 10 June 2010. The IPF 5.05 was switched in the off-line processing center (D-PAC) about one week later. This processor was used to perform a full mission re-processing, but only for Level 2 products.</p> <p><b>Processor upgrades</b></p> <p>The IPF 5.05 is fully in line with previous version (5.02) in terms of processor specification and products format. The only upgrade was the inclusion of the new set of CFI 5.8.1 aligned to the new ENVISAT orbit scenario (mission Phase 3) started on 28 October 2010.</p> <p><b>IPF 5.05 Level 1 products quality issues</b></p> <p>The issues already detected for IPF 5.02 are still applicable to this processor version. In fact, this version was developed to allow processing the data corresponding to the new ENVISAT orbit scenario.</p>	SPPA Engineer
Input	Fabrizio Niro	IDEAS Engineer
Originator	Thorsten Fehr, Rolf von Kuhlmann	SPPA Engineer
Approver	Henri Laur	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-11-0103 Issue Date: 17/02/2011	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__IP generated with IPF 5.02	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 5.02, ADF 8.4(FR), 8.6(OR) Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Algorithm Theoretical Baseline Document ATBD Level 1: PO-TN-BOM-GS-0012, Issue 1, Rev. C</li> <li>• Product Specification: PO-PL-MDA-GS-2009 Volume 4-C</li> <li>• Aux file Specification: ENVI-BOM-TN-04-0001 Issue 1-I</li> <li>• MIPAS Level 1 Detailed Processing Model Issue 4N</li> <li>• MIPAS Level 1 IODD 5B</li> </ul>	SPPA Engineer
Description	<p><b>IPF 5.02 Level 1 products overview</b></p> <p>The MIPAS Level 1b operational processor IPF 5.02 was activated in the ESA NRT processing centers (Kiruna and ESRIN) on 28 January 2010. The IPF 5.02 was switched in the off-line processing center (D-PAC) about one week later. Full mission re-processing with IPF 5.02 was completed at D-PAC during first quarter of 2010.</p> <p><b>Processor upgrades</b></p> <p>The upgrades in the Level 1b products for this new version include both scientific and format updates, in particular the following ones:</p> <ul style="list-style-type: none"> <li>• Truncation of the Interferogram to 8.0 cm in order to avoid under-sampling the spectrum for the Optimized Resolution mission</li> <li>• Improved Level 1b engineering heights calculation</li> <li>• Calculation of the quadratic terms for spectral calibration that are provided in the output products</li> <li>• Additional fields in the Level 1b products, such as the auxiliary L0 data packets that provide information about house keeping data</li> </ul> <p>A first scientific validation of the IPF 5.02 Level 1b output has been completed based on the processing of about 4000 orbits of the validation dataset. The validation showed that the new IPF improves Level 1b engineering height calculation with resulting reduction of the final chi square in the Level 2 scientific retrieval algorithm.</p> <p><b>Format upgrades</b></p> <p>The updated Product Specification that accounts for the new format of the MIPAS IPF 5.02 Level 1b products is available at this link.  <a href="http://earth.esa.int/pub/ESA_DOC/ENVISAT/Vol12_Mipas_4C.pdf">http://earth.esa.int/pub/ESA_DOC/ENVISAT/Vol12_Mipas_4C.pdf</a></p> <p>The BEAT Software version 6.2.0 has already been aligned to the new Specification. This tool can be downloaded here.</p>	SPPA Engineer

	<p><a href="http://www.stcorp.nl/beat/">http://www.stcorp.nl/beat/</a></p> <p>The BEAT data dictionary corresponding to the new L1b product format can be found at this link.  <a href="http://www.stcorp.nl/beat/documentation/codadef/ENVISAT_MIPAS/products/MIP_NL__1P_v1.html">http://www.stcorp.nl/beat/documentation/codadef/ENVISAT_MIPAS/products/MIP_NL__1P_v1.html</a></p> <p><b>Known quality issues</b></p> <p><u>Engineering heights</u>  The patch in the engineering height calculation included with IPF 5.02 and AUX files 8.xx allowed fixing a bug in the processor that doesn't account for the misalignment matrix. The patch significantly improves the accuracy of the MIPAS Level 1 engineering altitude with respect to the previous processor version. However it was a temporary solution that made use of a tabulated off-line matrix written in the AUX files. The inclusion of the misalignment matrix in the processor will be possible only with IPF V6.xx. The patch largely cures the problem of asymmetry in the engineering heights at the poles, but some issues seem to remain at altitude below 10km around the poles.  The accuracy of engineering altitude with this patch is better than 500m for rearward observation. On the other hand, for sideways observation (Aircraft Emission mode) the accuracy of the engineering height is still limited and the comparison with retrieved altitude shows a bias of about 2 km. This issue is still under investigation.</p> <p><u>Anomaly in num_sweeps for special modes</u>  An anomaly was detected for special mode measurements, namely the NUM_SWEEPS field is wrong in SCAN_INFO ADS when the measurement mode change within one orbit for special event AE measurement type (API=API_MIPAS_EVENT_SCENE).</p> <p><u>Quadratic Spectral correction factor</u>  An issue was detected concerning the quality of the field "Quadratic spectral correction factor" (IODD section "Scan Information ADS" field 12.5). The coefficients reported in L1B product are not in agreement with the equation specified in the DPM section 4.4.4.5 Spectral Axis definition, equation 1d. This should be corrected in next IPF 6.xx.</p>	
Input	Fabrizio Niro	IDEAS Engineer
Originator	Thorsten Fehr, Rolf von Kuhlmann	SPPA Engineer
Approver	Henri Laur	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-11-0102 Issue Date: 17/02/2011	SPPA Manager
Affected data sets	This disclaimer applies to some MIP_NL__1P off-line products generated at the D-PAC processing center with IPF 4.67	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 4.67 ADF 6.1 Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Product Specification: PO-PL-MDA-GS-2009 Volume 12, Issue 3I</li> <li>• Aux file Specification: PO-PL-MDA-GS-2009 Volume 12, Issue 3I</li> <li>• MIPAS Level 1 Detailed Processing Model Issue 4I</li> <li>• Level 1 IODD 4E</li> </ul>	SPPA Engineer
Description	<p><b>Anomaly description</b></p> <ul style="list-style-type: none"> <li>• The anomaly consists of a wrong assignment of the orbit number in the product's filename and MPH for some off-line MIPAS products provided on the D-PAC ftp server</li> <li>• The anomaly forced two subsequent level 1 off-line products being assigned with the same orbit number.</li> <li>• In total 47 MIPAS L1 products during the period November 2008 - April 2009 are concerned by this anomaly.</li> <li>• Note that the science content of the products is correct.</li> </ul> <p><b>Corrective action</b></p> <ul style="list-style-type: none"> <li>• The problem was solved for the operational off-line processing queue in April 2009.</li> <li>• The 47 MIPAS L1 anomalous products were deleted from the D-PAC ftp server and will be reprocessed</li> </ul>	SPPA Engineer
Input	Fabrizio Niro	IDEAS Engineer
Originator	Thorsten Fehr	SPPA Engineer
Approver	Henri Laur	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-11-0101 Issue Date: 17/02/2011	SPPA Manager
Affected data sets	This disclaimer applies to some MIP_NL__1P off-line products generated at the D-PAC processing center with IPF 4.67	SPPA Engineer
Disclaimer title	Inaccuracy of MIPAS Level 1B engineering altitude	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Product Specification: PO-PL-MDA-GS-2009 Volume 12, Issue 3I</li> <li>• Aux file Specification: PO-PL-MDA-GS-2009 Volume 12, Issue 3I</li> <li>• MIPAS Level 1 Detailed Processing Model Issue 4I</li> <li>• Level 1 IODD 4E</li> </ul>	SPPA Engineer
Description	<p><b>Anomaly description</b></p> <p>It has been noticed that the MIPAS engineering altitude reported in the MIP_NL__1P products (field <i>loc_1</i> of the L1b MDS) differ from the “actual” tangent altitudes, where the “actual” altitudes are those obtained with the pressure retrieval using the CO2 IR signature. The differences depend mostly on the azimuth angle, therefore the bias is varying along the orbit and it changes drastically when sounding with the nominal rearward geometry or with the special sideways observation. For these two extreme cases the following deviations were observed in the L1b engineering altitudes:</p> <ul style="list-style-type: none"> <li>• Rearward observations (Nominal): the engineering altitudes are about 1.5 km higher than the “actual” altitude at the South Pole and 0.2 km higher at the North Pole. The deviations are linearly varying along the orbit from 1.5 to 0.2 km, in fact the azimuth angle is changing during the orbit in order to optimize the coverage at the Poles.</li> <li>• Sideways observation (special mode): the engineering altitudes are around 4 km lower than the “actual” altitude obtained with the pressure retrieval</li> </ul> <p>Most of these deviations are due to a bug in the L1b processor that does not account for an alignment matrix that is used in the planning. This bug is present in IPF 4.67 and previous processor versions. It will be corrected in the future IPF 5.00 with the activation of an updated auxiliary file. The correction will solve large part of the pointing problem.</p>	SPPA Engineer
Input	Fabrizio Niro	IDEAS Engineer
Originator	Thorsten Fehr	SPPA Engineer
Approver	Henri Laur	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-07-0087, (Revision of ENVI-GSOP-EOGD-QD-04-0067)	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__1P datasets generated with IPF 4.61 and Auxiliary Data Files version 3.1 from 17 March 2004 and 3.2 from 26 March 2004 MIP_PS1_AX	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 4.61 ADF 3.1 and 3.2 Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Product Specification: PO-RS-MDA-GS-2009 Volume 12, Issue 3I</li> <li>• Aux file Specification: PO-PL-MDA-GS-2009 Volume 16, Issue 3E</li> <li>• MIPAS Level 1 Detailed Processing Model Issue 4F</li> <li>• Level 1 IODD 4E</li> </ul>	SPPA Engineer
Description	<p>It has been observed that the MIPAS spectra (L1B products) generated with version 4.61 show a systematic oscillation in the baseline with the following characteristics:</p> <ul style="list-style-type: none"> <li>• The problem is not seen for version 4.59 and 4.62 or higher</li> <li>• Only bands A, AB, and C are affected, bands B and D are not affected.</li> <li>• The amplitude of the oscillation is in the order of 0.5 *NESR.</li> <li>• The period of the oscillation is around 0.75 cm-1, though not regular.</li> <li>• The oscillation is different for forward and reverse spectra.</li> <li>• The oscillation is systematic within one gain calibration period but changes when a new gain calibration function is applied (approx. once per week).</li> </ul> <p>Further important deficiencies in these products are:</p> <ul style="list-style-type: none"> <li>• Problem in the MIPAS processor ILS retrieval. Fortunately, the ILS used for Level 2 product processing is provided via an ADF and is not affected by the wrong retrievals. The problem has been identified and will be solved with a new IPF version.</li> <li>• Scan sequences made of more than 17 sweeps (Special Modes) have been processed due to an incorrect setting in the configuration file. Such scan sequences are to be discarded, as the processing auxiliary data 3.1/3.2 have not been optimized for such scan sequences.</li> </ul> <p><b>Transient data quality degradation events</b></p> <ul style="list-style-type: none"> <li>• Near-real-time data are degraded after activation of the interferometer heating on 9 January 2004 until the activation of an adapted processor configuration on 17 March 2004.</li> <li>• Oscillating spectra are produced in a small number of</li> </ul>	SPPA Engineer

	products due to an algorithm specification error	
Input	Fabrizio Niro Roberta Mantovani	DPQC Engineer PCS Engineer
Originator	Thorsten Fehr Rob Koopman	SPPA Engineer
Approver	Pascal Lecomte	SPPA Manager



## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-04-0067	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__1P datasets generated with IPF 4.61 and Auxiliary Data Files version 3.1 from 17 March 2004 and 3.2 from 26 March 2004 MIP_PS1_AX	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 4.61 ADF 3.1 and 3.2 Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Product Specification: PO-PL-MDA-GS-2009 Volume 10, Issue 3I</li> <li>• Aux file Specification: PO-PL-MDA-GS-2009 Volume 16, Issue 3E</li> <li>• MIPAS Level 1 Detailed Processing Model Issue 4F</li> <li>• Level 1 IODD 4E</li> </ul>	SPPA Engineer
Description	<p>The most important deficiencies in these products are:</p> <ul style="list-style-type: none"> <li>• Problem in the MIPAS processor ILS retrieval. Fortunately, the ILS used for Level 2 product processing is provided via an ADF and is not affected by the wrong retrievals. The problem has been identified and will be solved with a new IPF version.</li> <li>• Scan sequences made of more than 17 sweeps (Special Modes) have been processed due to an incorrect setting in the configuration file. Such scan sequences are to be discarded, as the processing auxiliary data 3.1/3.2 have not been optimized for such scan sequences.</li> </ul> <p><b>Transient data quality degradation events</b></p> <ul style="list-style-type: none"> <li>• Near-real-time data are degraded after activation of the interferometer heating on 9 January 2004 until the activation of an adapted processor configuration on 17 March 2004.</li> <li>• Oscillating spectra are produced in a small number of products due to an algorithm specification error</li> </ul>	SPPA Engineer
Input	Roberta Mantovani	PCF Engineer
Originator	Rob Koopman	SPPA Engineer
Approver	Pascal Lecomte	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-04-00035	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__1P datasets generated with IPF 4.59 and Auxiliary Data Files version 3.6 from 21 October 2003 MIP_CA1_AX MIP_MW1_AX MIP_PS1_AX	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 4.59 ADF 3.6 Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Product Specification: PO-PL-MDA-GS-2009 Volume 10, Issue 3I</li> <li>• Aux file Specification: PO-PL-MDA-GS-2009 Volume 16, Issue 3E</li> <li>• MIPAS Level 1B Detailed Processing Model Issue 4F and IODD 4E</li> </ul>	SPPA Engineer
Description	<p>The most important deficiencies in these products are:</p> <ul style="list-style-type: none"> <li>• Radiance oscillations have been strongly reduced with the new nonlinearity calibration, but residual oscillations persist and will be removed at the next upgrade.</li> <li>• A single spectral characterisation factor is currently implemented for each band, and only at the next update the variation across the bands will be characterised. Currently, the level 2 processor performs a preprocessing correction.</li> <li>• Doppler-shift correction is known to be inadequate, and will be improved at the next upgrade</li> <li>• The instrument line-of-sight deviates at various timescales from its target direction with amplitudes 20 millidegrees and a frequency of 1/0.5 day which have been corrected only from 12 December 2003 onwards. Longer-term oscillations are corrected via frequent updates of the line-of-sight characterisation file MIP_CL1_AX.</li> <li>• An on-board configuration change effective on 12 January 2004 (switch-on of the interferometer heater) resulted in NESR levels incompatible with the ADF 3.6 configuration. Several spectra are flagged as invalid, and no geophysical retrieval is performed for these sweeps.</li> <li>• A coding error in IPF 4.59 Level 1 data processing, results in anomalous calculation of output spectra in several data products.</li> <li>• The strong solar storm in November 2003 has corrupted several products, and resulted in frequent deviations (higher values) for trace gas retrievals.</li> <li>• A coding error in the ILS retrieval algorithm results in errors up to 10% in reported parameters. The level 2 processor uses values calculated with the prototype processor and is therefore not affected.</li> </ul>	SPPA Engineer

Originator	Rob Koopman	SPPA Engineer
Approver	Pascal Lecomte	SPPA Manager

## Product Quality Disclaimer

<b>Field:</b>	<b>Contents:</b>	<b>Filled by:</b>
Product Quality Disclaimer number	ENVI-GSOP-EOGD-QD-03-0031	SPPA Manager
Affected data sets	This disclaimer applies to all MIP_NL__1P datasets generated with IPF 4.59 and Auxiliary Data Files version 3.6 from 21 October 2003 MIP_CA1_AX MIP_MW1_AX MIP_PS1_AX	SPPA Engineer
Disclaimer title	MIPAS Level 1B IPF 4.59 ADF 3.6 Disclaimer	SPPA Engineer
Product specification references	<ul style="list-style-type: none"> <li>• Product Specification: PO-PL-MDA-GS-2009 Volume 10, Issue 3I</li> <li>• Aux file Specification: PO-PL-MDA-GS-2009 Volume 16, Issue 3E</li> <li>• MIPAS Level 1B Detailed Processing Model Issue 4F and IODD 4E</li> </ul>	SPPA Engineer
Description	<p>The most important deficiencies in these products are:</p> <ul style="list-style-type: none"> <li>• Radiance oscillations have been strongly reduced with the new nonlinearity calibration, but residual oscillations persist and will be removed at the next upgrade.</li> <li>• A single spectral characterisation factor is currently implemented for each band, and only at the next update the variation across the bands will be characterised. Currently, the level 2 processors performs a preprocessing correction.</li> <li>• Doppler-shift correction is known to be inadequate, and will be improved at the next upgrade</li> <li>• The instrument line-of-sight deviates at various timescales from its target direction with amplitudes 20 millidegrees and a frequency of 1/0.5 day which are not yet corrected. Longer-term oscillations are corrected via frequent updates of the line-of-sight characterisation file MIP_CL1_AX.</li> </ul>	SPPA Engineer
Originator	Rob Koopman	SPPA Engineer
Approver	Pascal Lecomte	SPPA Manager