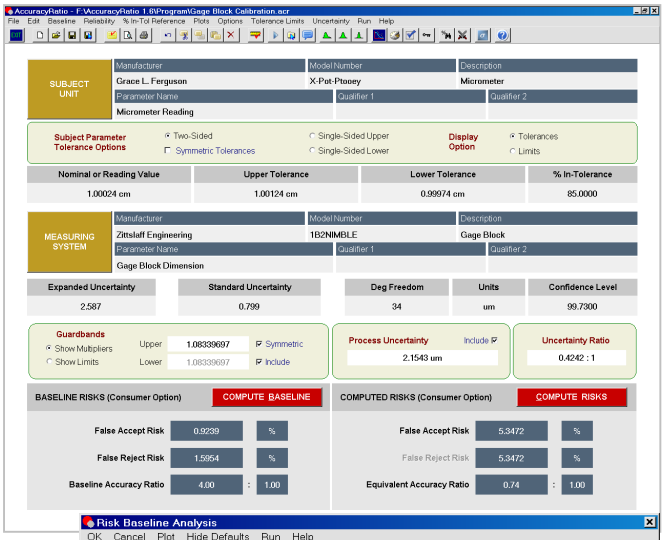
# AccuracyRatio 1.6

from Integrated Sciences Group

**Key Features**

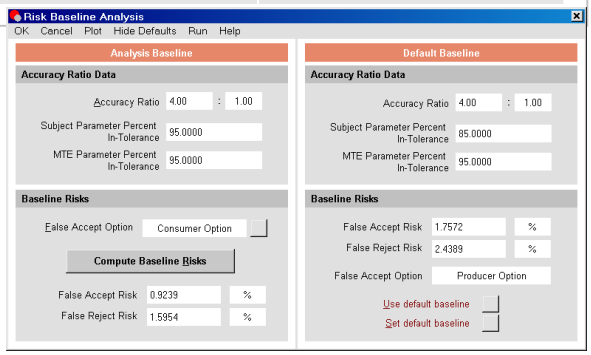
## With AccuracyRatio you can

- Determine whether measurement accuracies are sufficient by calculating false accept risk and false reject risk.
- Define baseline risks for a given application, corporate policy requirement , contract requirement or quality objective.
- Compute risks and accuracy ratios for two-sided or single-sided tolerances
- Apply real-world parameter bias distributions to estimate bias uncertainty.
- Estimate measurement process uncertainty and factor it into false accept risk and false reject risk analyses.
- Establish guardbands consistent with risk requirements.
- Estimate true % in-tolerance from observed % in-tolerance.
- Print comprehensive analysis reports.



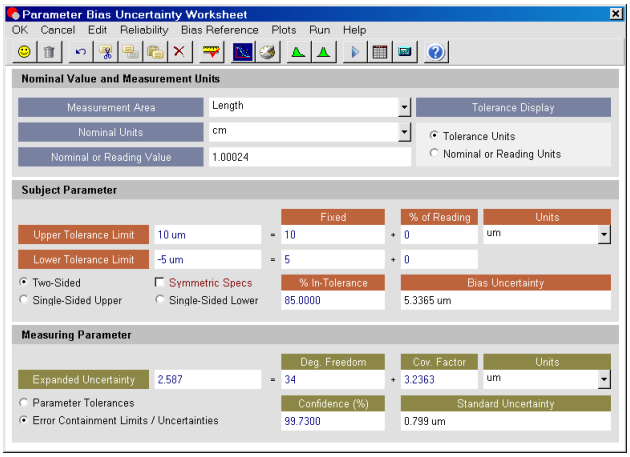

## Measurement Decision Risk

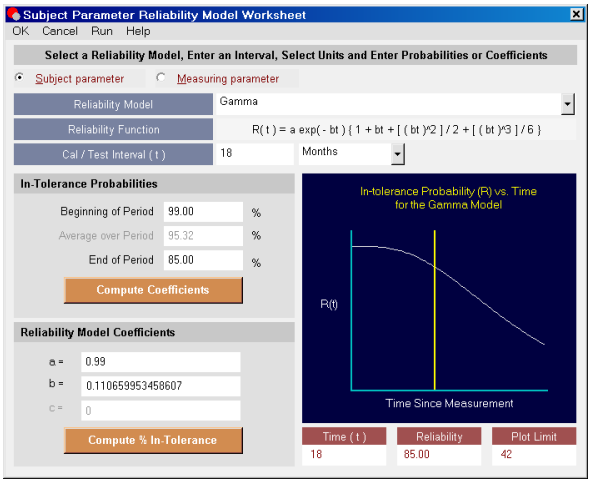
- The main functions and features for estimating risks and computing an equivalent accuracy ratio are accessed from AccuracyRatio's **Main Screen**.
- Maximum allowable false accept and false reject risks and corresponding accuracy ratio are defined on the **Baseline Risk Analysis Worksheet**.
- A plot of baseline false accept risk and false reject risk versus accuracy ratio can be displayed from this worksheet.




## Parameter Bias Uncertainty Analysis

- The **Parameter Bias Uncertainty Worksheet** is a useful tool for entering specifications and estimating bias uncertainties for subject (SU) and measuring (MTE) parameters.




- Plots of the statistical distributions for the parameter biases can be displayed from this worksheet and from other locations within AccuracyRatio.
- The change in parameter in-tolerance probability over time elapsed since calibration can be modeled using the **Reliability Model Worksheet**.

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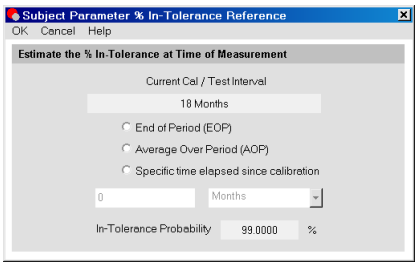
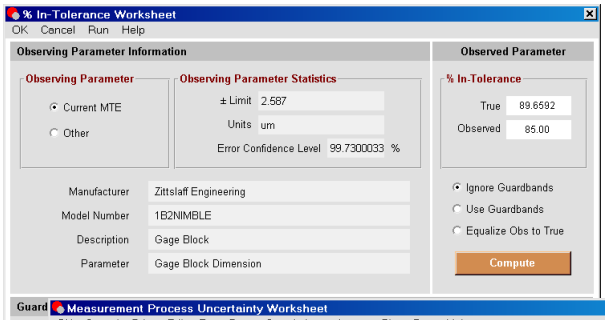
## Parameter Bias Uncertainty Analysis (continued)

- Once the parameter reliability behavior has been modeled, the in-tolerance probability at any time elapsed since calibration can be calculated using the **% In-Tolerance Reference** dialog.



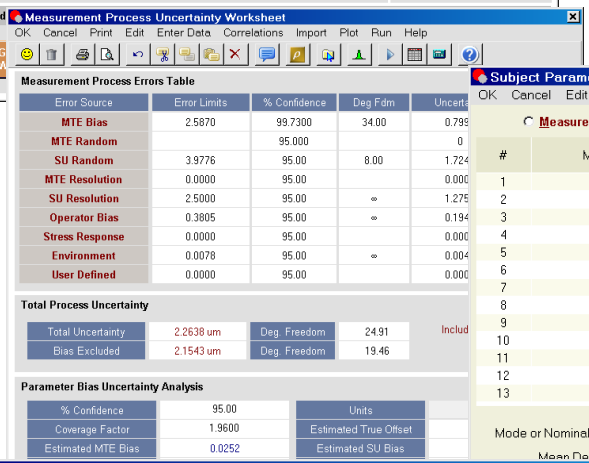

- The true MTE parameter in-tolerance probability can be estimated from an observed % in-tolerance using the **% In-Tolerance Worksheet**. Likewise, the observed % in-tolerance required to attain a specified true in-tolerance probability can be estimated using this worksheet.

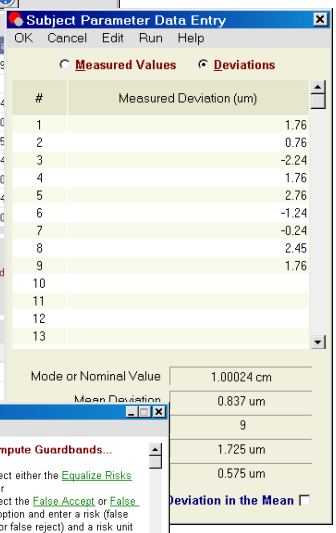



- AccuracyRatio also features a Bayesian analysis method called **Statistical Measurement Process Control** (SMPC) to obtain best estimates of both subject parameter and measuring parameter biases and bias uncertainties.

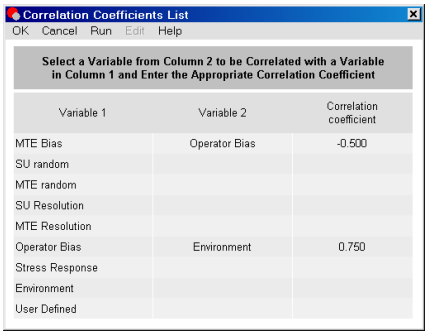
## Measurement Process Uncertainty Analysis

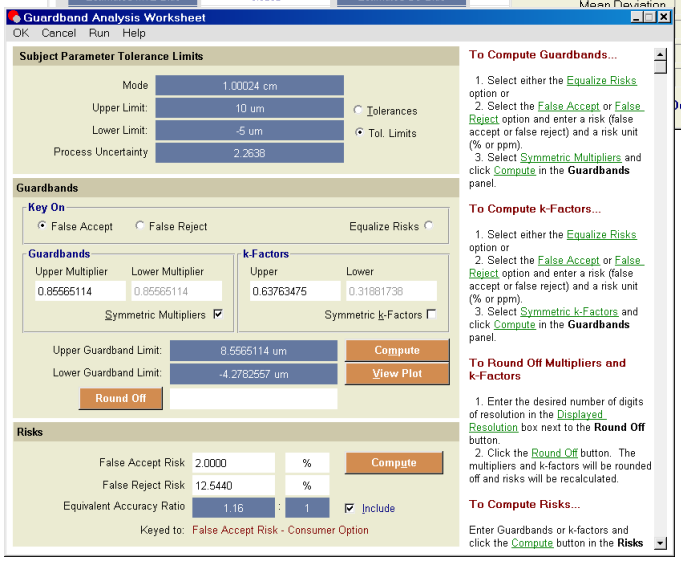
- The uncertainties due to measurement process error sources can be estimated using the **Measurement Process Uncertainty Worksheet**. This ensures that the total measurement process uncertainty is accounted for in estimating risks.




- The uncertainty due to random error in measurements can be computed from measurement data for the measuring parameter (MTE) and/or subject parameter (SU) using the built-in **Parameter Data Entry Worksheets**.




- **SMPC**
  Bayesian analysis results for the subject and measuring parameters are displayed on the Measurement Process Uncertainty Worksheet.

- Correlations that may exist between error sources can be accounted for in the total process uncertainty using the **Correlation Coefficients List**.

## Guardband Analysis

- The **Guardband Analysis Worksheet** is used to compute guardbands to achieve a desired level of false accept risk or false reject risk.

- Guardband calculation can be keyed on false accept risk, false reject risk or to equalize risks.

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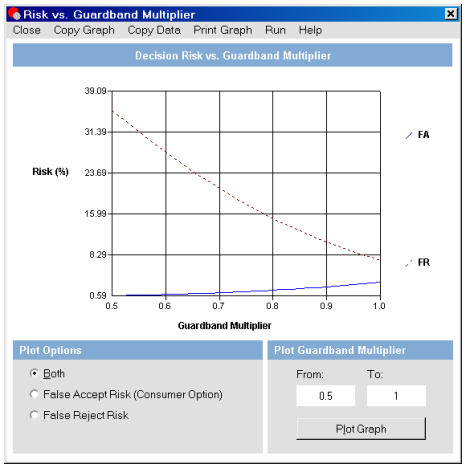
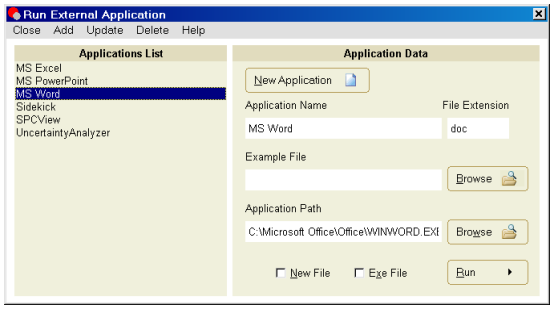



- Corresponding guardband multipliers and k-factors are also computed. The k-factor is the number of multiples of the total process uncertainty used to adjust the guardband limit relative to the parameter's tolerance limit.
- Guardband limits can be displayed on the **Risk vs. Guardband Multiplier Plot**.

## Importing from UncertaintyAnalyzer

- AccuracyRatio is designed to import data and analysis results directly from ISG's **UncertaintyAnalyzer**, the world's most powerful and versatile uncertainty analysis application. In addition, UncertaintyAnalyzer can import data and uncertainty analysis results directly from AccuracyRatio.

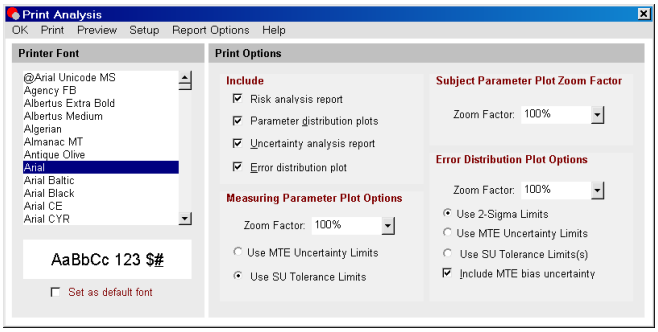


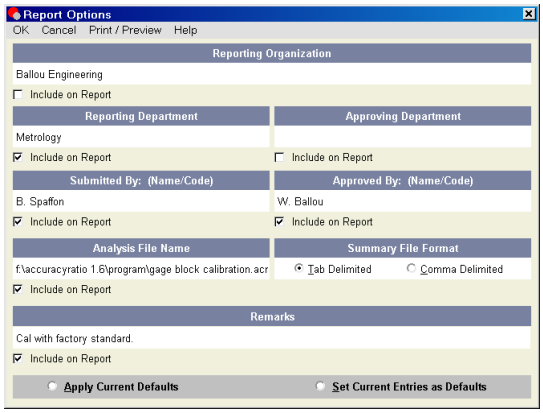

## Running External Applications

- The **Run External Application Launcher** can be used to launch external applications from within AccuracyRatio for off-line processing.

## Analysis Reports

- Hardcopy reports of risk analysis and uncertainty analysis results can be generated from the **Print Analysis Screen**. Parameter bias and process error distribution plots can be included for reference.




- Options for specifying report header information and Summary File format are available on the **Report Options Screen**.