\begin {table}[h]

\caption {The 6 significant digits of table \ref{tab:distance} }**\label{tab:digit}**

\begin{center}

\begin{tabular}{|c|c|}

\hline

Test & Parameter Estimator \\

\hline

A & $ \widetilde{\mu}=2.99999, \widetilde{\sigma}^2=4.00000,\widetilde{\alpha}=1.99964,\widetilde{\beta}=3.99991,\widetilde{\rho}=4.00311$ \\

\hline

B & $ \widetilde{\mu}=5.00157, \widetilde{\sigma}^2=3.00002,\widetilde{\alpha}=0.999623,\widetilde{\beta}=9.00002,\widetilde{\rho}=3.00081$ \\

\hline

C & $ \widetilde{\mu}=7.95386, \widetilde{\sigma}^2=9.00000,\widetilde{\alpha}=2.99977,\widetilde{\beta}=2.99977,\widetilde{\rho}=2.00977$ \\

\hline

D & $ \widetilde{\mu}=0.994671, \widetilde{\sigma}^2=4.00000,\widetilde{\alpha}=4.99997,\widetilde{\beta}=5.99998,\widetilde{\rho}=3.00163$ \\

\hline

E & $ \widetilde{\mu}=-5.00075, \widetilde{\sigma}^2=7.00000,\widetilde{\alpha}=5.99985,\widetilde{\beta}=3.99970,\widetilde{\rho}=4.01657$ \\

\hline

F & $ \widetilde{\mu}=11.8629,\widetilde{\sigma}^2=8.00000,\widetilde{\alpha}=3.99937,\widetilde{\beta}=2.99893,\widetilde{\rho}=5.05230$\\

\hline

\end{tabular}

\end{center}

\end {table}

Now in a real situation, the parameters of the distribution are unknown. Therefore, one needs to use statistical methods to find some good parameter estimates. We now test our method for evaluating the TVaR on a data set that follows a generalized normal Laplace distribution. We are using the quadratic distance method on a data set of size $10000$. One can read Groparu-Cojocaru and Doray\citep{Doray} for information on the method. We note $\widetilde{\mu}$ the estimator of the parameter $\mu$ and the same notation is used for the estimator of the other parameters.

\begin {table}[h]

\caption {$TVaR\_{99.9\%}(\widetilde{\textbf{X}})$ using quadratic distance method}**\label**{tab:distance}

\begin{center}

\begin{tabular} {|c|c|c|c|c|}

\hline

Test & Parameter & $\pi\_{99.9\%}(\textbf{X})$ & $TVaR\_{99.9\%}(\textbf{X})$ & Bootstrap Interval \\

\hline

A & $ \widetilde{\mu}=2.99,\widetilde{\sigma}^2=4.00,\widetilde{\alpha}=1.99,\widetilde{\beta}=3.99,\widetilde{\rho}=4.00$ & 25.9432 & 27.1196 & $( 27.0970,

27.1602)$\\

\hline

B & $ \widetilde{\mu}=5.00,\widetilde{\sigma}^2=3.00,\widetilde{\alpha}=0.99,\widetilde{\beta}=9.00,\widetilde{\rho}=3.00$ & 29.4190& 30.7002 & $( 30.6278,

30.7182)$ \\

\hline

C & $ \widetilde{\mu}=7.95,\widetilde{\sigma}^2=9.00,\widetilde{\alpha}=2.99,\widetilde{\beta}=2.99,\widetilde{\rho}=2.00$ & 29.2926& 30.4859 & $( 30.4440,

30.5339)$ \\

\hline

D & $ \widetilde{\mu}=0.99,\widetilde{\sigma}^2=4.00,\widetilde{\alpha}=4.99,\widetilde{\beta}=5.99,\widetilde{\rho}=3.00$ & 13.8871 & 14.8554 & $( 14.8421,

14.9147)$ \\

\hline

E & $ \widetilde{\mu}=-5.00,\widetilde{\sigma}^2=7.00,\widetilde{\alpha}=5.99,\widetilde{\beta}=3.99,\widetilde{\rho}=4.01$ & -3.9333 & -2.4566 & $( -2.4650,

-2.3638)$ \\

\hline

F & $ \widetilde{\mu}=11.86,\widetilde{\sigma}^2=8,\widetilde{\alpha}=3.99,\widetilde{\beta}=2.99,\widetilde{\rho}=5.05$ & 79.3660 & 81.1139 & $( 81.0639,

81.1953)$ \\

\hline

\end{tabular}

\\ \textit{We used 6 significant digits for the calculation, but decided to only show 3 digits in the table.(The 6 significant digits are displayed in annex B)}

\end{center}

\end {table}

Every value of the $TVaR\_{99.9\%}(\widetilde{\textbf{X}})$ in table \ref{tab:distance} is inside its respective confidence interval calculated by the bootstrap method. This leads us to believe that the numerical integration method gives a robust estimator of the $TVaR\_{99.9\%}(\widetilde{\textbf{X}})$. We believe that this method is a good alternative to the bootstrap method since it is faster to calculate (just a few seconds for our method while it takes minutes to create a bootstrap interval with 5000 data).\\