



Gregory J. Miller, Esq.  
General Counsel  
TEF Division of Gold Line  
Box 500  
W. Redding, CT 06896,  
USA

Kampweg 5  
P.O. Box 23  
3769 ZG Soesterberg  
The Netherlands

[www.tno.nl](http://www.tno.nl)

Dear Greg,

According to our agreement on the project of the development of an advanced test signal for application of the STI-method in room acoustics the following actions were taken:

- A specific modulation pattern for an STI test signal was developed and delivered.
- The corresponding algorithm for the analysis was developed and evaluated in a simulation environment. Special attention was devoted to its application in situations of limited bandwidth, reverberation, noise, and combinations of these. The algorithm was also adopted for error detection of illegal test signals (speech).
- Due to limitations of the DSP-30 environment a combination of the 125 and 250 Hz bands was proposed and the algorithm was adapted accordingly.
- With the Gold Line DSP-30 evaluation measurements were performed and modifications were suggested.
- The final test signal (60 minutes length) was delivered on 5 September 2001.
- The evaluations of the system was performed in September and October.

T +31 346 356 211  
F +31 346 353 977

**Subject**

Project 71170

**Date**

November 8, 2001

**E-mail**

[steeneken@tm.tno.nl](mailto:steeneken@tm.tno.nl)

**Direct dialing**

0346 356 269

All these efforts resulted in a reliable system (STI-PA, STI for Public Address). The deviation of measurement results with the so-called full STI (according IEC 60268-16) is typically 0.02 and maximum 0.03 (for the selected test conditions)

We believe that the present system is suitable for the objective prediction of speech intelligibility in room acoustics as described in standard IEC 60849 and DIS-IS09921.

The nice and efficient co-operation with you and with Steve McManus during this project is highly appreciated.

We are looking forward to continue our co-operation in the future and suggest to commercialise our present STI-software through your organisation.

Sincerely yours.

Dr. Herman J.M. Steeneken

The Standard Conditions for Research Instructions given to TNO, as filed at the Registry of the District Court and the Chamber of Commerce in The Hague shall apply to all instructions given to TNO.

The Quality System of TNO Human Factors has been certified in accordance with ISO9001.