Speech amplitude compression system of the Marcou-Daguet type

Gustavsson, L.

journal: STL-QPSR
volume: 4
number: 1
year: 1963
pages: 014-014

http://www.speech.kth.se/qpsr
A speech amplitude compression system of the type described by Marcou and Daguet \(^{(2)}\) has been constructed. This project, carried out as a thesis work \(^{(1)}\), is merely intended for pedagogical purposes and will be used in future comparisons with other speech amplitude compression systems.

The design principles were essentially those of Marcou and Daguet. A single sideband is produced by means of a quadruple modulator and 90 degrees' phase shift networks. This sideband is submitted to infinite clipping and demodulation. The benefit of the Marcou-Daguet system lies in the relative freedom from intermodulation effects as compared with conventional infinite clipping. In other words, clipping of the single sideband produces less distortion than clipping of the input audio band. This is demonstrated in Fig. III-2 which shows the narrow-band spectrum of a vowel [i] before and after processing.

It is known that an oscillographic record of speech with 90 degrees' shift between x-x and y-y plates produces "analytical signals" which might have some benefit over conventional time-base oscillograms as a visual speech indicator for the deaf. Typical examples are shown in Fig. III-3. Although some of the sound characteristics are striking in this kind of display it is believed that a spectrum representation is by far superior.

L. Gustavsson

References:


* The phase shifting network of our system was correct within ± 3 degrees from 280-5500 c/s.
Fig. III-2. Narrow-band spectra of the vowel [i].
A = Input audioband
B = Marcou-Daguet processing
C = Direct infinite clipping of audioband
Fig. III-3. Typical example of analytical portrayal of speech sounds by means of 90 degree phase shift between x-x and y-y plates of an oscillograph.