



Digital Network Echo Celler

SIGNALS+SOFTWARE



Processor

Texas Instruments TMS320C5000 DSP range.

Background

Multi-channel digital network echo cancellers are used for echo control on international and mobile telephony circuits. They are voice-operated devices, which are placed in the 4-wire portion of a network and used for reducing the echo caused by impedance mismatches in the circuit. An estimate of the echo is generated, and subsequently subtracted from the circuit echo.

The software is compliant with ITU-T G.165 and G.168 recommendations, and includes a non-linear processor (NLP) and a 2100 Hz tone detector.

Features and Performance

- This software is available eXpressDSP™ compliant
- Tail Span and Frame size are run-time selectable on a per channel basis.

Table 1 gives those resource requirements that are variable depending upon the selected tail spans:

Tail Span (ms)	Data Memory (words)	Data Memory Alignment	Core Processing (MHz)
4	112	64	1.6
8	176	128	2.1
12	240	128	2.6
16	304	256	3.1
32	560	512	5.1
64	1072	1024	9.2
128	2096	2048	17.4

Table 1 : Variable DSP Requirements for a Digital Network Echo Celler

Table 2 gives those resource requirements that are the same irrespective of the tail span:

Program Memory (words)	Data Tables (words)	Stack (words)	Non-linear Processor* (MHz)	Tone Detector* (MHz)
473	4	18	0.6	1.2

Table 2 : Fixed and Optional DSP Requirements for a Digital Network Echo Celler

Note: Processing loads quote worst-case scenarios.

The quoted MIPS figures were obtained using a frame size of 40 samples, and will be higher for smaller frame sizes due to the additional calling overheads.

Items indicated with * are included within the software but are optional in operation

Interface Details

For convenience the individual software functions will be supplied as a single library module. The library will contain all the object code that is required to link in to a user's top- level application code. The functions will either be callable as C functions or as assembly functions.

Availability

The code is available now, for a one-off payment and/or royalties depending on the commercial application.

A full range software for the TMS320C5000 is available including all major vocoders and other communication algorithms. Digital Network Echo cancellation software is also available for the TMS320C6000.

SIGNALS+SOFTWARE

SIGNALS+SOFTWARE was founded in 1992 as a developer of high quality Digital Signal Processing application software for the communications industry. Supplying to a whole range of customers, including large blue chip corporations, **SIGNALS+SOFTWARE** has quickly established itself as the world leader in DSP software design and production.

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