

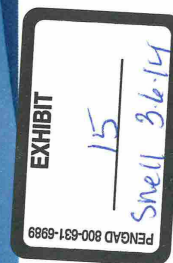
Technology Tutorial

SightSound Technologies, LLC v. Apple, Inc.

No 2:11-cv-1192-DWA

Special Master Gregory Bradley

October 11, 2012



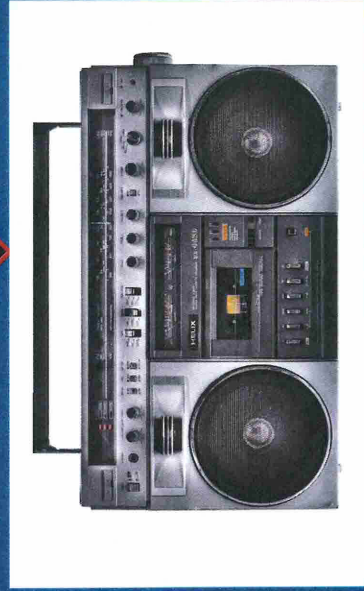
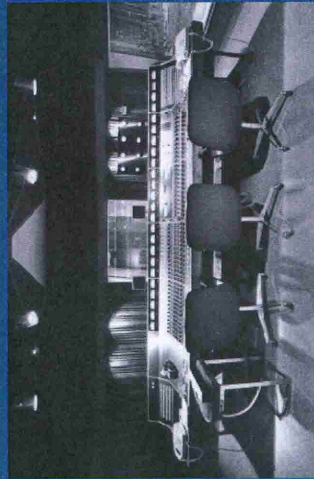
Introduction

- **Hair Patents**
 - 5,191,573
 - 5,675,734
 - 5,966,440
- **Claimed Invention**
 - Method and system for transmitting digital audio and video content over telecommunications lines.

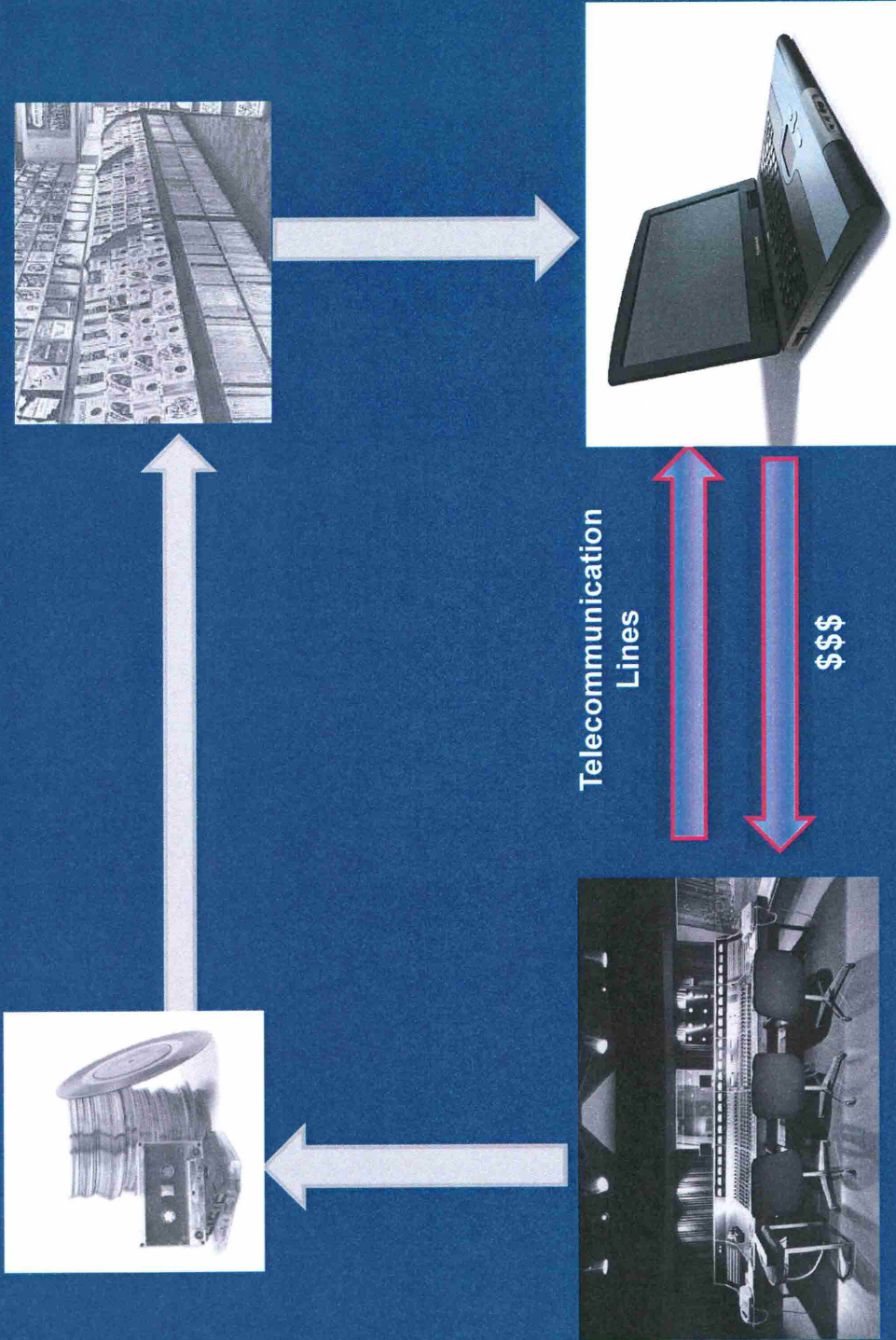
Introduction

- State of Industry and Technology in the 1980s
 - Music Industry
 - Telecommunications
 - Cellular telephony and wireless technologies
 - E-Commerce
- The Invention
 - Method and system for transmitting digital audio and video signals over telecommunications lines.

The Music Industry circa 1988



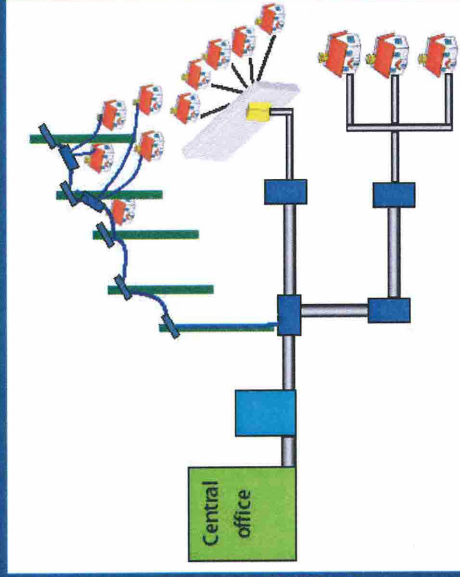
Hair Invention



Hair Invention

- **Bypassing physical mediums and physical sales channels allows for...**
 - **Faster transfer of music**
 - **Better quality (no degradation of medium)**
 - **Reduced costs of storage and transportation**
 - **Enhanced copyright protection**

Telecommunications in 1988



- In 1988, fiber-optics were the predominant mode of long-distance communication
- Copper lines were common only for the “last mile” to households

Telecommunications in 1988



- By 1984, 250,000 miles of fiber optic cables were in place in the U.S. That's over 100x the distance from New York to Los Angeles.
- <http://ecommerce.hostip.info/pages/446/Fiber-Optics.html>

Cellular/Wireless in 1980s

1983 - Motorola DynaTAC 8000X



- Received FCC certification in 1983, and became the first handheld cell phone to be offered commercially when it went on sale in March 1983.

Cellular/Wireless in 1980s

Mobile phones: Hot new industry (Fortune Classics, 1984)

July 9, 2011, 8:43 AM ET

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Editors Note: Every Sunday step back in time to August could afford a mobile phone. Even though the phones were promise of the budding wireless

Buyers are rushing to get price is sure to go down

By Colin Leister

FORTUNE -- The hottest new now is cellular telephony -- early July cellular telephony operating in eight major U.S. areas, including New York, Washington-Baltimore, and other cities. By 1990 the subscribers chatting away today on the

expressways in those eight cities will have grown to nearly a million -- even on the unlikely assumption that costs of subscribing will not have dropped from today introductory levels. But that scarcely measures the potential for a cellular explosion

Cellular telephones will be available in most of

FORTUNE

4 comments

FORTUNE -- The hottest new U.S. industry right now is cellular telephony -- phones in cars. In early July cellular telephone systems were operating in eight major U.S. metropolitan areas, including New York, Los Angeles, Washington-Baltimore, and Chicago, and they are being switched on at the rate of one a week



Ed Kock makes the first call to Albany. The phone, in a car parked at City Hall, is owned by Nynex Mobile Communications, the New York system's operator.

Fortune, August 1984

Cellular/Wireless in 1980s

- By 1988, there were over 2,069,441 million cellular telephone subscribers in the US. (NY: World Almanac Books, 2008 at 356.)



Cellular/Wireless in 1980s

14 THE WITNESS: So in my opening report,
 15 paragraph 24, I mentioned that in 1988, there are
 16 already a number of well-known wireless networking
 17 standards. There were even more in 1993, including

12 Q. Are you aware of any wireless networks in
 13 1988 -- okay. Are you aware of any wireless
 14 networks in 1988 for pure computer-to-computer
 15 communication that's considered telephone lines?
 16 A. Yes.
 17 Q. And what are they?
 18 A. I remember seeing demonstrations of
 19 computer-to-computer communications over cellular
 20 telephone lines.

Tygar Tr. at 19:15-17

Tygar Tr. at 33:12-20

E-Commerce in the 1980s

- Electronic credit card payment was well understood by 1988:
 - VeriFone had been engaging in electronic point-of-sale (POS) transactions with credit cards since at least 1984, when it widely offered low cost authorization terminals.
(<http://global.verifone.com/company/corporate/timeline>)

Hair Invention

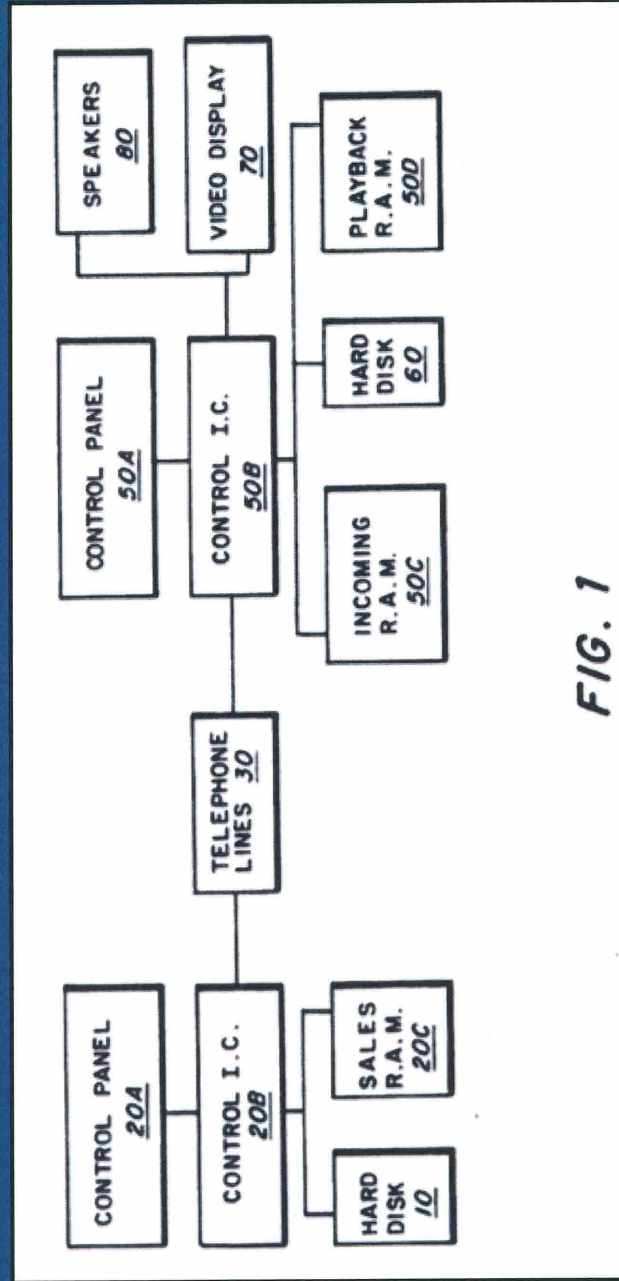
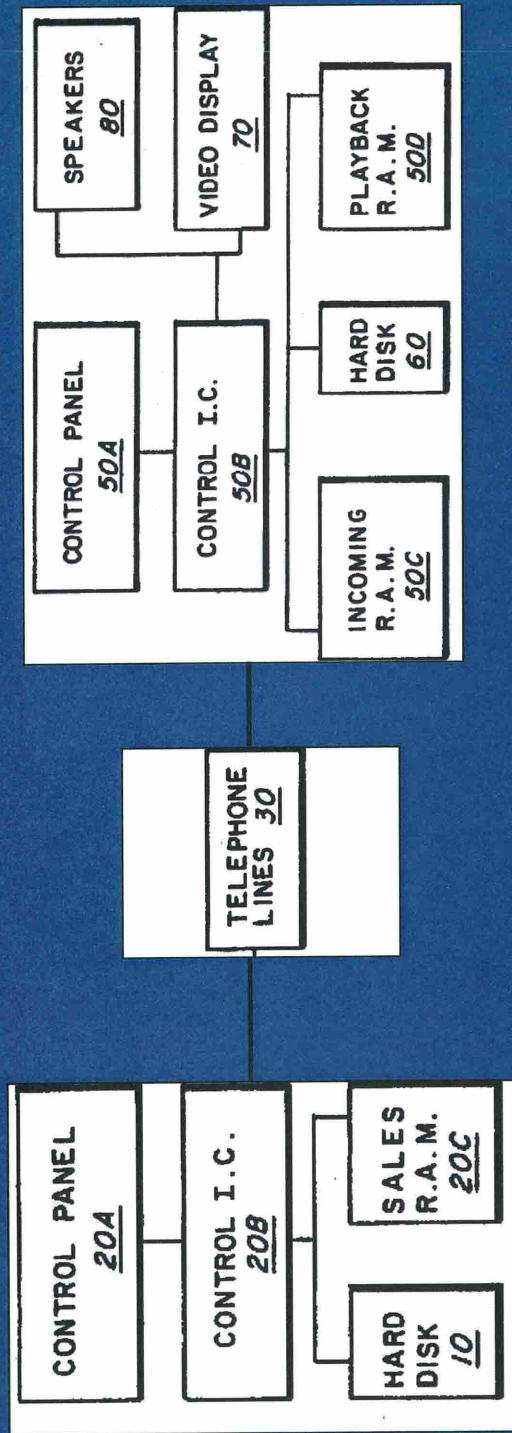
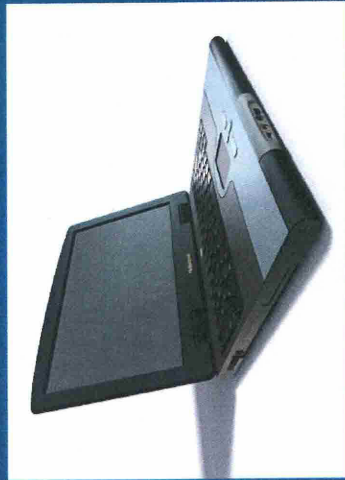
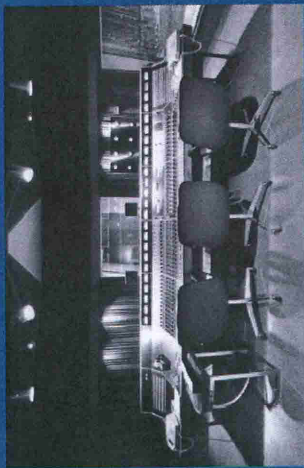
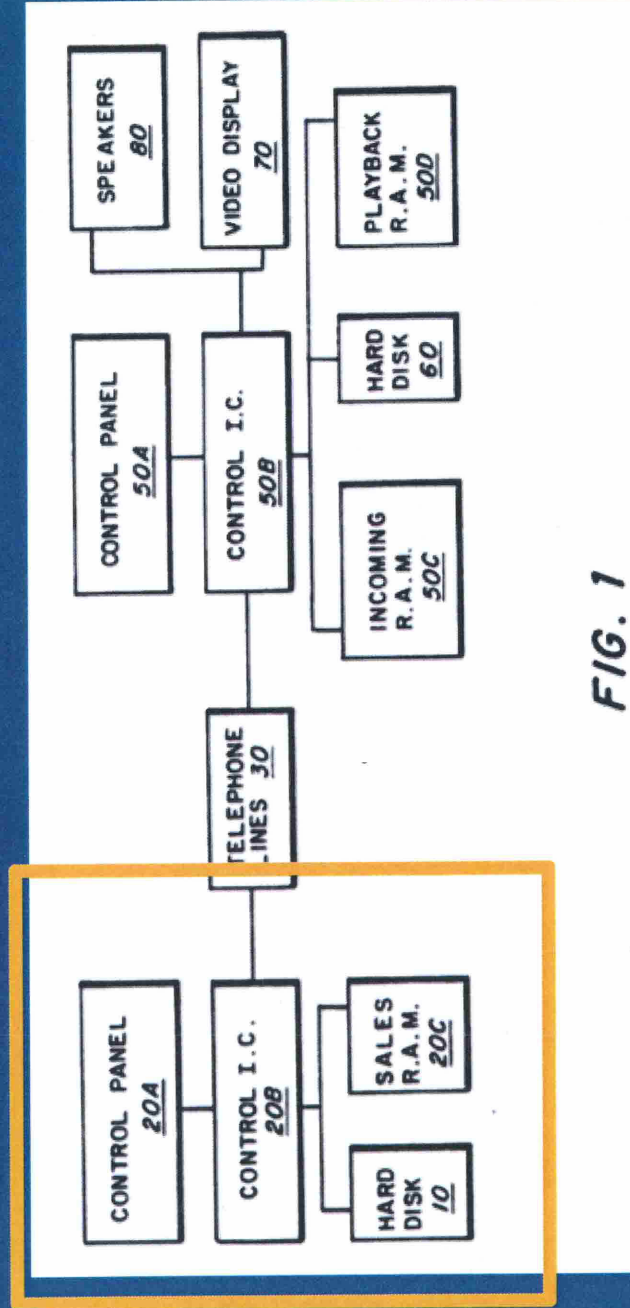


FIG. 1

Hair Invention



System to Transmit Digital Signals



DIGITAL AUDIO MUSIC

5,191,573

METHOD FOR TRANSMITTING A BROADCAST DIGITAL VIDEO OR AUDIO SIGNAL

This is a continuation of copending application Ser. No. 0720,607 filed on Jan. 13, 1988, now abandoned.

The present invention is related to a method for the distribution of digital audio or video signals. In one aspect, the invention provides a method which enables a user to purchase and receive digital audio or video signals from any location which the user has access to a telecommunications line.

BACKGROUND OF THE INVENTION

The three basic means (hardware, serial or digital) of music distribution are: (1) the vinyl record, (2) the cassette tape, and (3) the compact disc. The vinyl record is the most popular of these means. It is stored on each.

MATERIALS. The materials used in the invention are digital audio or video signals which can be stored on a medium such as a cassette tape, a compact disc, or a hard drive.

RETRIEVAL. The retrieval of music from a medium is done by a user who selects a particular song from a list of songs. The user then presses a button on the medium which causes the selected song to be played.

SALES AND DISTRIBUTION. Prior to the invention, music was sold in physical form (vinyl records, cassette tapes, compact discs) and distributed through a network of retailers. The invention provides a method for the direct sale and distribution of digital audio or video signals.

QUALITY. Until the recent invention of Digital Audio Music, as used on Compact Discs, distribution of music has been limited by the quality of the reproduction process. The invention provides a method for the distribution of digital audio or video signals which maintains the quality of the original signal.

COPYRIGHT PROTECTION. Since the invention of tape recording, there has been a concern about the possibility of unauthorized copying of music. The invention provides a method for the distribution of digital audio or video signals which includes a means for copyright protection.

OBJECTIVE. It is an objective of the invention to provide a method for the distribution of digital audio or video signals which includes a means for copyright protection.

ADVANTAGES. Another objective of the invention is to provide a method for the distribution of digital audio or video signals which includes a means for copyright protection.

was virtually impossible. Digital Audio Music is simply music converted into a very basic computer language known as binary. A series of commands known as zeros

'573 Patent at col. 1:53-55

ANALOG VS. DIGITAL



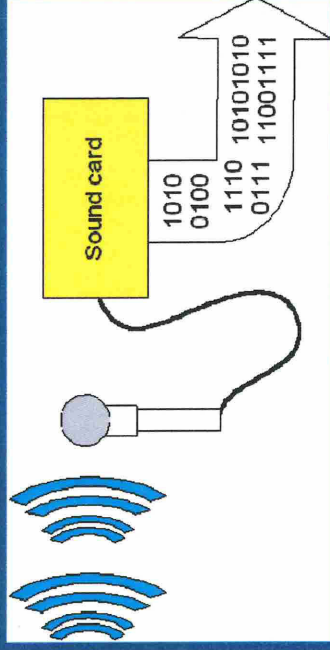
ANALOG MUSIC RECORDINGS

- Microphone detects changes in air/sound pressure levels
- Records acoustic sound waves on a tangible medium, e.g., phonograph (grooved lines), magnetic tape, etc.

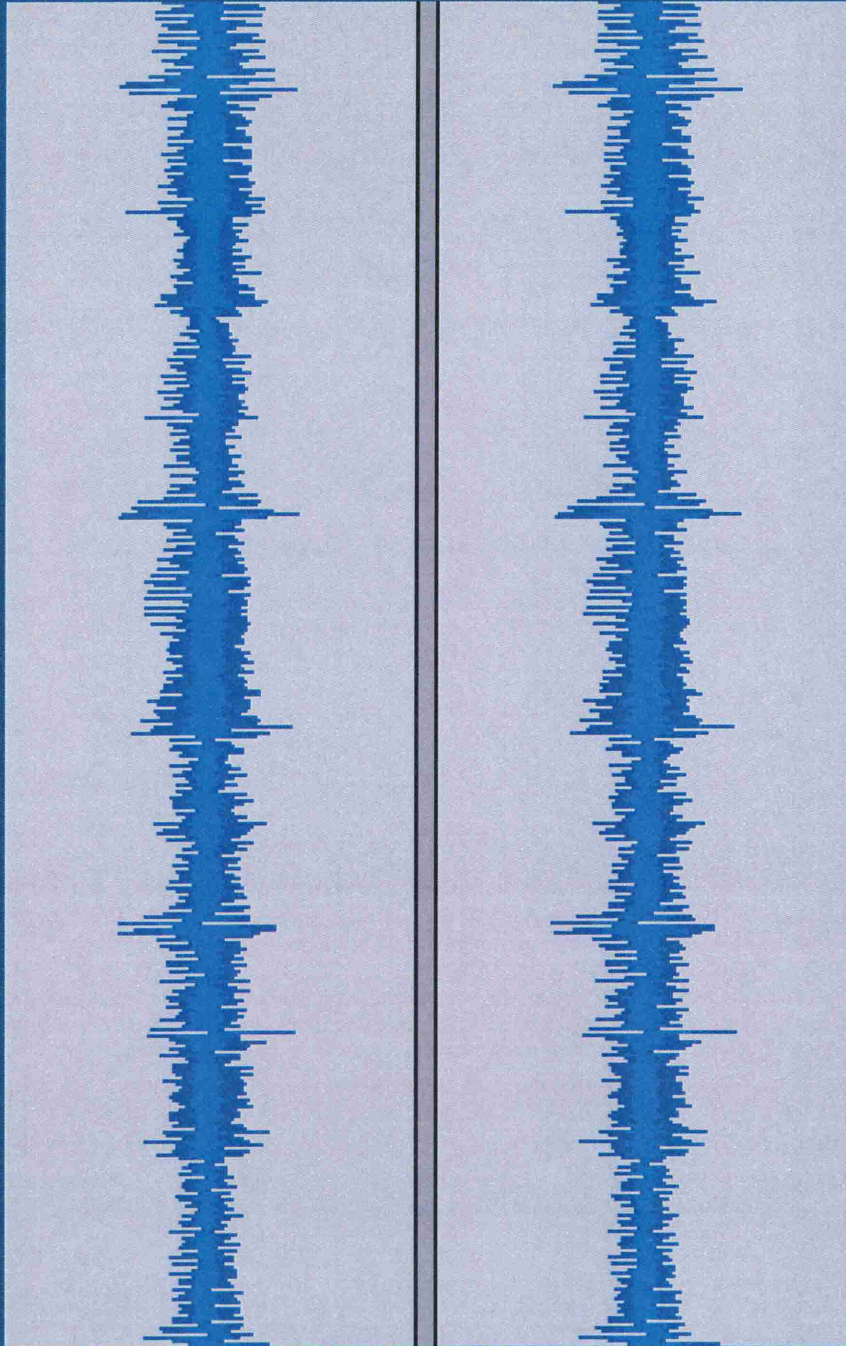
ANALOG VS. DIGITAL

DIGITAL MUSIC RECORDINGS

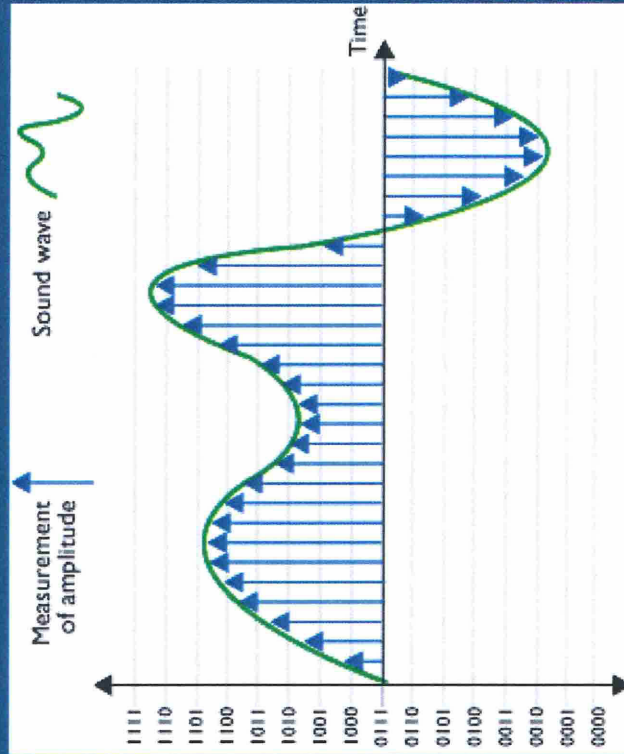
- Analog Input
 - Air/Sound Pressure Change
 - Acoustic Sound Waves
- Convert through an Analog to Digital (A-D) Converter
- Binary output represents amplitude of the audio sound wave at equal time intervals at a high enough sample rate to convey all sounds that can be heard



DIGITAL AUDIO MUSIC



DIGITAL AUDIO MUSIC



Each measurement is assigned a number (byte) according to its amplitude. The end result is a file comprising a string of bytes, eg ...
1001 1110 0001 1010 0111 0100 1111 1101 etc

