Dual-Tone Multi-Frequency Signaling (DTMF)

Realizing and Retrieving Numbers with LabVIEW

Introduction :

- **Multi-frequency signaling** is a group of signaling methods that use a mixture of **two** pure tone (pure sine wave) sounds.

- The DTMF system uses a set of eight audio frequencies transmitted in pairs to represent 16 signals, represented by the ten digits, the letters A to D, and the symbols # and *

- DTMF was first developed in the **Bell system** in the U.S. , and became known under the trademark **Touch-Tone** for use in push-button telephone supplied to telephone customers, starting in **1963**

- DTMF signals were also used by cable television broadcasters to indicate the start and stop times of local commercial insertion points during station breaks for the benefit of cable companies.

- In the UK, it is also known as **MF4**.

DTMF keypad frequencies (with sound clips)				
	1209 Hz	1336 Hz	1477 Hz	1633 Hz
697 Hz	1	2	3	A
770 Hz	4	5	6	B
852 Hz	7	8	9	C
941 Hz	*	0	#	D

Pressing a key sends a combination of the row and column frequencies.

for example :

the key *1* produces a superimposition of tones of 697 and 1209 hertz (Hz)

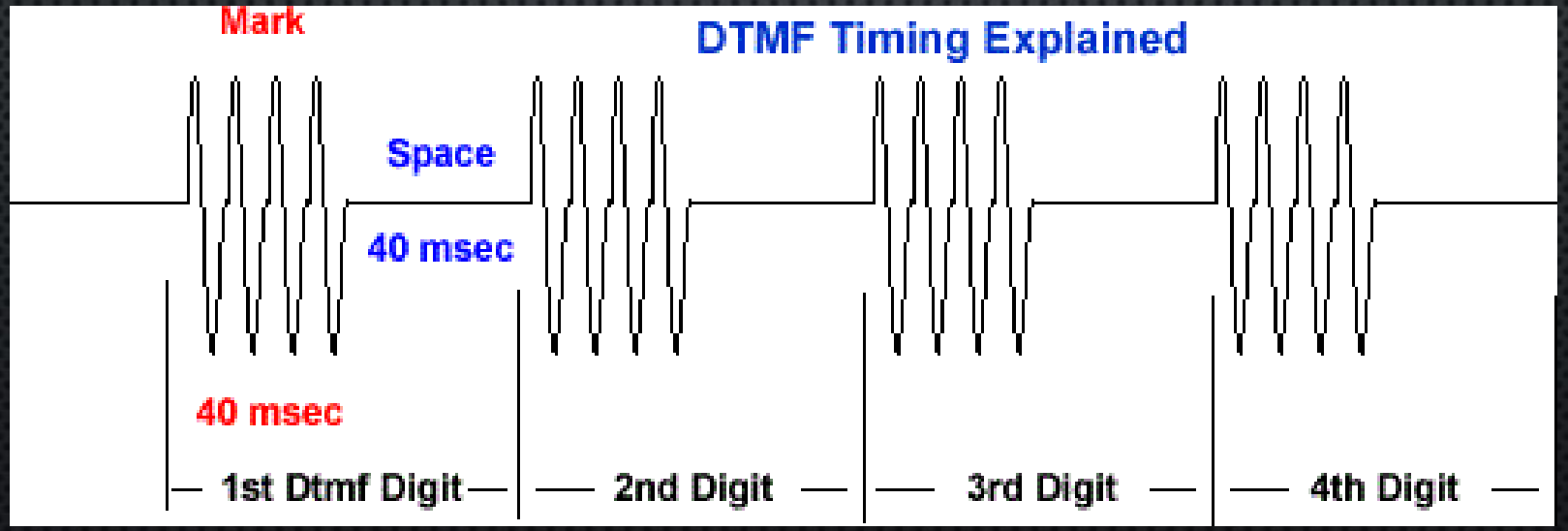
DTMF Timing (Mark and Space)

Mark : The time which a DTMF digit tone is actually producing sound, is called the "Mark" time.

Space : The silence between each one of the digits is called the "Space".

The standard for most radio decoders, as well as most telephone equipment is 40/40.

While it is a generally accepted practice to have the Space duration be the same as the Mark.



LabVIEW procedure concept ：