

# Dual Tone Multi Frequency (DTMF)

DTMF was designed so that it is possible to use acoustic transfer. The DTMF tones can be sent from a standard speaker and be received using a standard microphone (providing it is connected to a decoding circuit of some type). DTMF tones are simply **two frequencies** played simultaneously by a standard home phone/fax or mobile phone. Each key on your telephone's keypad has a unique frequency assigned to it. When any key is pressed on your telephone's keypad the circuit plays the corresponding **DTMF tone** and sends it to your local exchange for processing. DTMF tones can be imitated by using a White Box or Tone Dialler. It is also possible to record DTMF tones.

Below is a Dual Tone Multi Frequency (DTMF) map for a 4X4-matrix keypad, the map shows each unique frequency which is assigned to each key on a standard 4X4 telephone keypad. The frequencies are exactly the same for a 3X4 matrix keypad, without the keys A, B, C and D.

|       |          |           |           |        |
|-------|----------|-----------|-----------|--------|
|       | 1209Hz   | 1336Hz    | 1477Hz    | 1633Hz |
| 697Hz | 1<br>ABC | 2<br>DEF  | 3<br>GHI  | A      |
| 770Hz | 4<br>JKL | 5<br>MNO  | 6<br>PQRS | B      |
| 852Hz | 7<br>TUV | 8<br>WXYZ | 9<br>*0   | C      |
| 941Hz | *        | 0         | #         | D      |

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|--------|---------|---------|---------|---------|
| 697 Hz | 1       | 2       | 3       | A       |
| 770 Hz | 4       | 5       | 6       | B       |
| 852 Hz | 7       | 8       | 9       | C       |
| 941 Hz | *       | 0       | #       | D       |

However, this is not a standard keypad. This keypad has 4 more keys than a standard keypad (3X4-matrix). The keys A, B, C and D are not commonly used on standard home phone/fax, office phone or payphone. Each of the keys A, B, C and D are system tones/codes and are mainly used to configure telephone exchanges or to perform other special functions at an exchange. For example, the corresponding tone/code assigned to the A key is used on some networks to move through various carriers.