

There are a few extra notes regarding the first testing of the DTMF decoder and display kits and modules.

- 1, Please do not change the ID from it's default of 1234 until you have the decoder working.
- 2, The PIC is code protected and therefore if you were to read it's contents to see if it is actually programmed, the program memory will read as 0000's
- 3, When entering the 6 character sequence (for example 12341*) it should be done in less than 4 seconds, please see the video linked [here](#) for an example.

And finally:-

With DTMF the audio level is important, if the level is too low it cannot be decoded, but if the level is too high this also causes no decode or random / intermittent decode.

The input range of the HT9170 DTMF detector IC is approximately 27mV to 775mV RMS, you can check the waveform with an oscilloscope (if you have one available) on pin 3 of the HT9170 (AC coupled), here is an example of what the waveform should look like.



The DTMF waveform contains two audio tones from the following table, this creates the complex waveform shown above.

Hz	1209	1336	1477	1633
697	1	2	3	A
770	4	5	6	B
852	7	8	9	C
941	*	0	#	D