



Enabling CTCSS tone generator in IC-275 Europe version - UPDATE of previous article

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IC-275E(#06E) IC-275H(#02H):

Enabling internal CTCSS Tone generator & 12.5 kHz step in FM mode, info about UT-34

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Warning: This modification might damage your radio, void the warranty, and/or cause personal injury. You are doing this at your own risk and the author does not make any express or implied warranty, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information provided within this document!

This paper describes how to enable CTCSS tone generator on Icom IC-275E (#06E is the version number code for Europe). The mods are applicable for the high power version IC-275H (#02H) too, even if I had no way to verify.

The Europe version of Icom IC-275 has the 1750 Hz tone enabled as default, indeed the CTCSS tone generator is available inside the transceiver (IC8 S-7116 in the block diagrams and logic unit schematic).

In order to enable the tone generator IC8 a few mods are necessary to logic and front unit to transform the version from Europe to USA.

First of all it's necessary to remove the lead W16 peculiar only to European and Swedish version of this transceiver, that it's used to set tx on when the [TONE] button is pressed and the 1750 Hz tone is generated.

In the service manual is possible identify the lead W16 in the Front Panel schematic and pcb diagram (Figure 1).

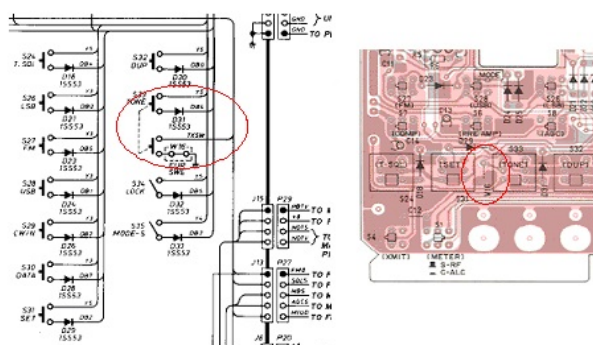


Figure 1: W16 location in Front Panel schematic

In this version of the service manual there is a misprint in this schematic, since as explained in the manual the line marked as DB4 for the [TONE] button should be marked as DB3.

In order to be able to cut this lead removing the front panel is necessary, as described in Section 5 of the service manual.

It's not necessary to disconnect front panel cables from the rear. The W16 lead is visible on the pcb between [SET] button and [TONE] button (see Figure 2).

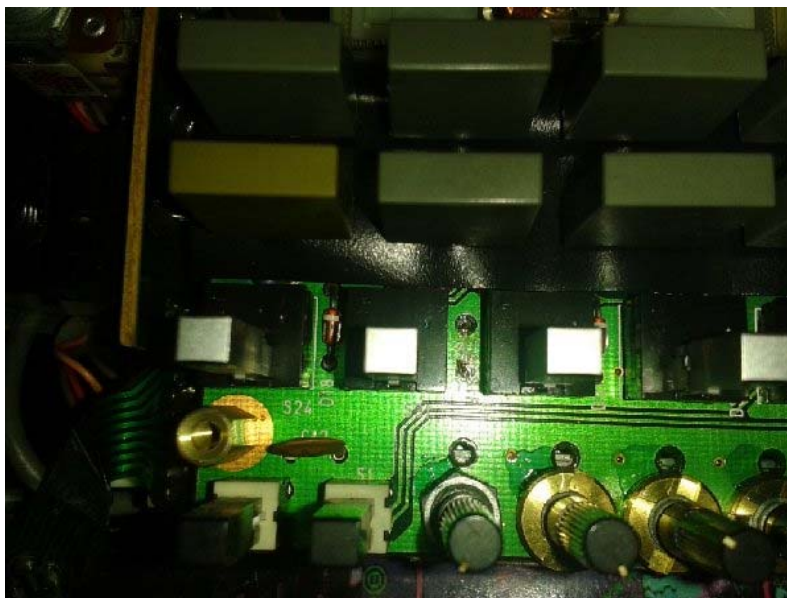


Figure 2: W16 location in Front Panel PCB

12.5 kHz step FM mod

At this step, since the front panel is disassembled, I suggest to install also the diode D45 (see Figure 3) in order to have 12.5 kHz step in FM mode with TS switch released; it's a useful mod if FM work is foreseen.

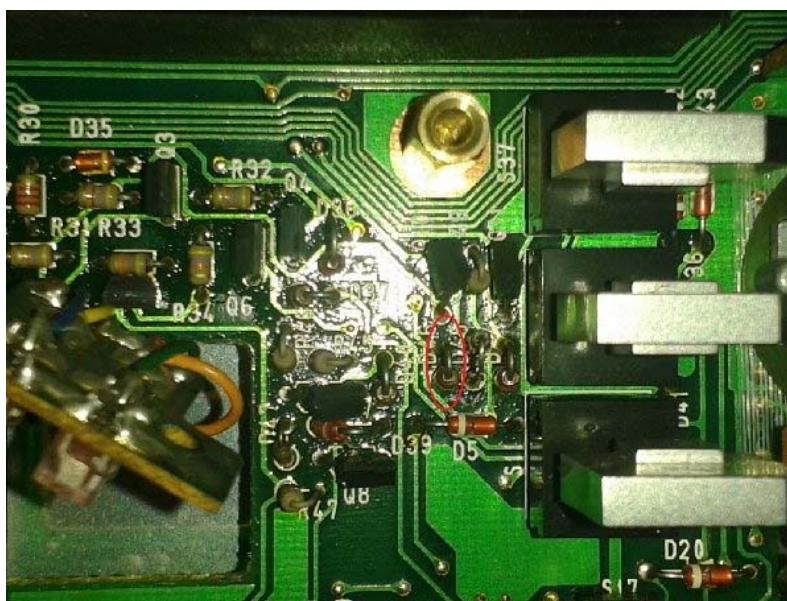


Figure 3: D45 location in Front Panel PCB

In order to change from Europe to USA version mod of diode matrix would be necessary.

-----UPDATE-----

It was found that a complete geographical area version change is not necessary; removing D24 diode is enough for enabling CTCSS Tone generator. In this way no change of radio frequency range is applied.

For documentation purpose settings for different geographical area version are reported in following tables.

Warning: complete mod of area version produces frequency range modification.

In Table 1 Version numbers relative to different geographic areas are reported.

In Table 2 diode matrix setting for different versions is reported.

The five diodes (D20, D21, D22, D23, D24) are located inside the logic unit, easy to identify after removing the PA chassis on the top of the radio and its shielding cover.

In order to configure the diode matrix in accordance with USA version removing diode D22 and D24 and installing diode D20 (1n4148 or similar) (see Figure 4).

IC-275A/E Model		IC-275H Model	
Version Number	Area	Version Number	Area
#06E	EUROPE	#02H	EUROPE
#08A	U.S.A.	#03H	U.S.A.
#10A	AUSTRALIA	#04H	AUSTRALIA
#12E	SWEDEN	#05H	SWEDEN

Table 1: IC-275 versions

• IC-275A/E					
Area	D20	D21	D22	D23	D24
#06E	X	X	○	X	○
#08A	○	X	X	X	X
#10A	X	○	X	X	X
#12E	○	○	X	X	○

• IC-275H					
Area	D20	D21	D22	D23	D24
#02H	X	X	○	X	○
#03H	○	X	X	X	X
#04H	X	○	X	X	X
#05H	○	○	X	X	○

○ MOUNTING X NO MOUNTING

Table 2: IC-275 diode matrix configuration

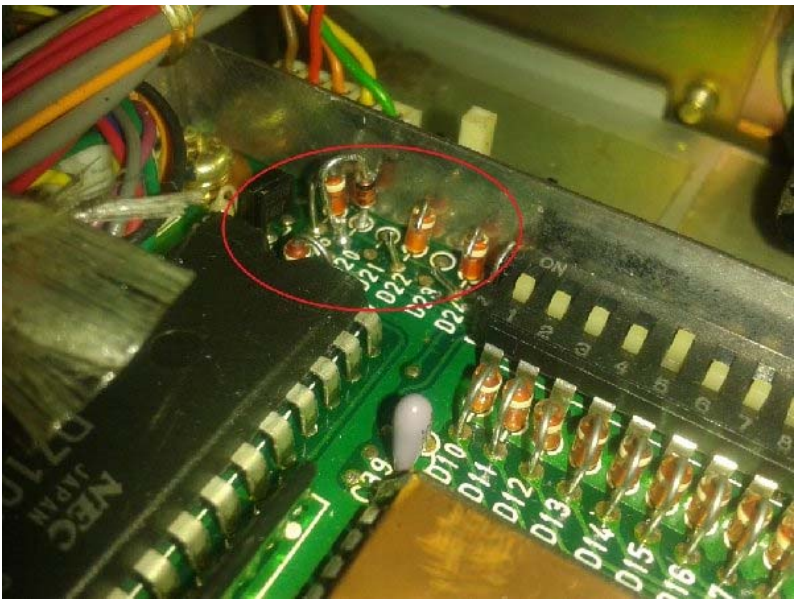


Figure 4: D20, D22, D24 location in Front Panel PCB

After removing of D24 to enable CTCSS Tone generator (or the complete diode matrix mod to enable USA version) close the rig and perform the RESET:
Hold [M-CL] button and turn the radio on

Now you can use CTCSS Tone as detailed in the user manual.

In order to use the Tone Squelch function optional UT-34 unit is necessary to be installed.

Similar mod is possible with area version different from Europe; since I have not the possibility to check on other versions of IC-275, you can proceed at your risk.

For the IC-475 similar mod is available but the diode matrix configuration is different, so please refer to the IC-475 service manual.

A web page with IC-475 mod described by DG4DW is available (in German language) at this [link](#).

Important Update: UT-34

Finally I have designed and built an "UT-34 replica" successfully installed in my IC-275E.

UT-34 unit is a tone encoder/decoder unit based on MN6520 IC that enable tone squelch function and CTCSS tone generator.

I try to explain here why the previous mod is so important also if UT-34 option is installed.

If the T-SQL is selected, tone decoder is activated in RX; when in TX Tone generator in the UT-34 is activated at the same CTCSS frequency.

Using the UT-34 without the previous described mod in Europe version, don't allow to use CTCSS Tone in TX without Tone-Squelch in RX.

If CTCSS Tone transmission is required without using tone squelch in RX, modification to enable the radio on-board Tone generator is mandatory, UT-34 option is not able to perform such configuration.

Tone TX + T-SQL RX needs UT-34

**Tone TX only needs on-board Tone generator
(mod required for EU version)**

Original UT-34 unit is difficult to find and often overpriced, for this reason I have developed a replica using the same MN6520 IC.

Om interested in UT-34 can contact me by email. Anyway MN6520 IC is not so easy to find nowadays.

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