

## TELEFUNKEN CAPRICE 101 – OM FM RADIO RECEIVER

#### RIFERIMENTI

Genere	DATA	Generalità	Note	Distribuzione
Radio surplus	2012	TELEFUNKEN CAPRICE 101	S/N 200359	



### INTRODUCTION

To the aim of compare MW reception from amateur radio transceiver and other type of receivers i was looking for a medium wave surplus receiver. A friend gave to me his not-too-old Telefunken Caprice 101.

I noted that, after seeking the internet, the electric diagram for this receiver is missing. So I decided to put it on my website. Telefunken is a well-known German firm, but a careful sight inside the receiver suggests it was built in Italy.

At first it was necessary to remake a lot of soldered joints on the PCB, obtaining also that internal voltages were stable. The first receiving session after that was impressive, with strong and clean audio output.



### ELECTRIC DIAGRAM AND ITS UNCOMMONNESS

Now a look at the electric diagram. It is not a common design, showing some differences from ordinary medium wave receivers of the same age.

At first Caprice 101 uses an RF amplifier ahead of the mixer (it uses the same BJT that is also RF amplifier in FM band). Moreover this first amplifier is the only AGC controlled stage.

The first 455 KHz filter is double tuned type.

Medium wave reception has been divided in two band. FM reception is mono-aural, not stereo, after all this was a low cost radio.

After a perusal of the diagram and of the radio I note some singularities.

The switch "TON" should enable some attenuation for audio high frequency. Its circuitry uses A and B pushbutton sections.





On the diagram we see a capacitor (15nF) going from switch A3 to ground. An inspection of the real circuit shows instead the capacitor from switch A3 to switch G4, where it should be nothing connected. I casually noted it, and I'm asking myself why? Could be an error of the assembler or a diagram error? There is a capacitor (2n2) to gnd.

That was not the only difference from reality to the diagram. B section of the switch is not reported on the diagram but it is really used to connect switch point F4, when "TON" pressed, with a capacitor (15nF) to ground.





The pictures above show wave-shapes measured at Q3 collector (AM local oscillator and mixer – FM IF amplifier). Left waveform refers to AM2 band, righto to AM1.

The AM2 band sometimes does not work due to missing local oscillator. I've not understood the exact cause of this malfunction. And I observe that circuit realization is not as clean as it could be. Some wires are used instead of PCB connection. So I would try to separate the functions of mixer and oscillator, for medium wave bands by building a separate but identical oscillator coupled to mixer via emitters.

With only this modify the situation remains critical. Matter became simpler after adding a FET buffer. In this way also AM2 band has an oscillator with 1 Vpp voltage.

#### OTHER MODIFY

I executed another modify. This time to the mixer stage, now equipped with a dual gate MOSFET BF961 with input filter/ferrite antenna connected to gate 1 and not to the RF amplifier.

Operation of the receiver is now ok, without intermodulation. There are not strong medium wave tx in my area.







It could be better with more investigation and probably by carefully studying the diagram re-employ the AGC controlled RF stage. But after all I've spent with joy an afternoon, quite the same as going to the cinema, with advantage that here there is not only to see but also to do. Anyway other modify next time.

# WORKSHOP PRACTICE



Pictures above show at left the new oscillator stage (AM VFO), center the buffer with BF245 and right the new mixer.

Each little module is built on a vetronite pre-drilled board, cut to suit components. module are completed with wires to connect ground, supply and signals. Connection wires also support mechanically the module.

Scale lamp was burnt out. I replaced it with 3 LED with a series resistor 120 Ohm. Light is not very bright but is focused to the plexiglass scale highlighting the labels.

I thought also that performance of the receiver could be better with a regulated supply voltage. So I substituted the 220 Ohm resistor of negative B supply with another little regulator. The supply is negative so I used a PNP BJT, zener and various. This radio common chassis is positive.

Electrolitic capacitors were changed with new, everywhere in the radio, giving a pleasant color to the final work.



At the end of this brief note there is a table showing main tunable components in the radio.

Have fun, Alessandro Frezzotti

