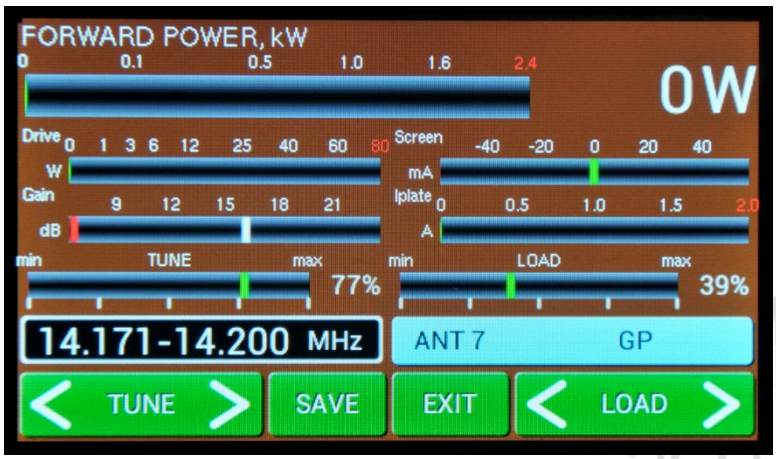
M-TUNE means entry to the manual tuning mode. It allows fine tuning of PA, or in the case if automatic tuning cannot set optimal adjustment of the PA. For proper adjustment we need to show **Screen** current (at least). Prior start M-tune define one bar graph to the Screen current, or define all bar graph as in the next picture.

Press **M-TUNE**. New screen is visible. Slides on the left and right side represent both variable capacitors.

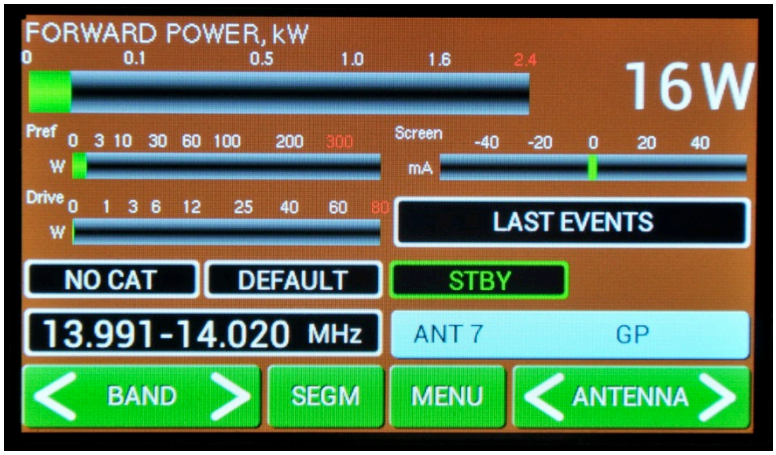
Adjustment process: Move **TUNE** left or right until maximum of **FWD** power reached. Then move **LOAD** carefully so that Ig2 **Screen** current will be not higher than 20mA. **Optimum means maximum FWD power and Screen between 10 – 20mA** for the full power output. Repeat more times.



After adjustment press **SAVE** for writing values to the memory and press **EXIT**.

Repeat adjustment process for other segments / bands.

Now one example from real situation. First we will check driving power from the transceiver. Stay in **STBY** mode, press **PTT** and apply **RF** power.

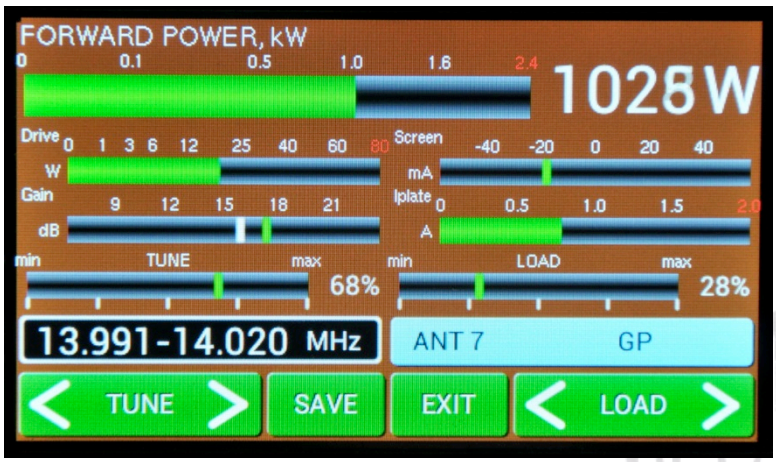


Measured driving power is 16 Watts.

Now switch to **OPER**, press **PTT** and apply **RF** from TCVR. See the following picture.

Output power is 577W, reflected power reached abt. 40W and screen current is abt. -20mA. Real antenna had **different** impedance than real 50 Ohms.

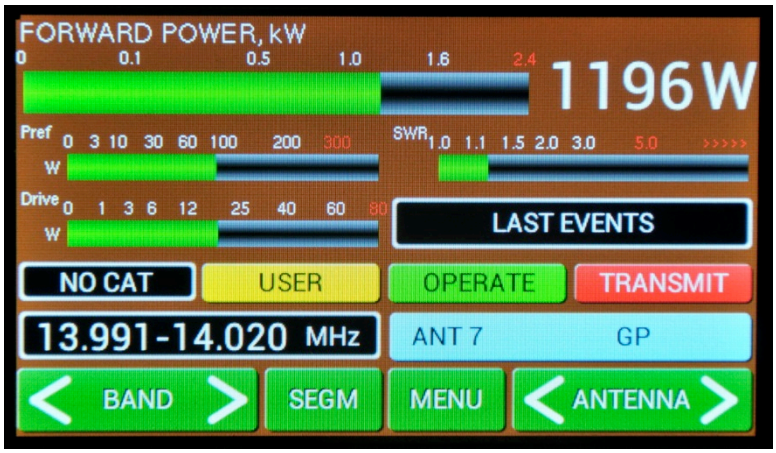
We done **M-TUNE** to optimize PA adjustment (press **MENU, M-TUNE**).



This is the result after manual adjustment process. Output power increased to 1 kW (driving still 16W), Screen current is now abt. -19mA.

These parameters were **SAVED**.

In this segment of 20m band PA was adjusted for use with real antenna. Every time we used this segment with this antenna, result will be very similar. Do this in every band / segment if using not real 50 Ohm antenna.



We can see new small yellow window. **USER** means that we used manual tuning feature to optimize the PA adjustment.

Now SWR is also visible (1.12). It is not a bad SWR, it is mostly real SWR…..

After described procedure the amplifier is tuned correctly and ready to give 1500 W PEP output power in all operation modes. At optimal tuning and full output power a positive max. 20mA current goes through the second grid.

If the amplifier demonstrate any malfunctions during tuning or it does not behave in accordance witch the description, interrupt the tuning procedure immediately and check the amplifier! Be sure not to do any mistakes in choosing antennas, bands or segments! Be sure that VSWR is not higher than 3:1 and input power is LOW!

After excluding possible human mistakes you will be able to work for long time with this amplifier!

6. MAINTENANCE

6.1. Indication of Fault Conditions

If a fault condition appears during the operation of the amplifier, the safety circuits of OM2000A+ will react. There are several warning or fault messages possible to appear on the display, when some of the protection will be activated. The OM2000A+ power amplifier can report one of the following messages:

Power Out is too high
Refl. power too high
Power In is too high
Low output power (tune)
Plate current too high
Grid current is high
Screen current error
Heating voltage error
HARD FAULT
Plate voltage error
Grid voltage is low
Screen voltage error
SWR is too high
Amplifier is too hot

Most of safety circuits are preset for two levels of exceedances. First level is a warning level. In such a case a warning message appears on the display, but power amplifier will stay in **normal operation**. See the table below for warning and fault conditions.

When a fault condition appears during the tuning or operation of the amplifier, the safety circuits will **block transmitting**. The amplifier stays in **OPER** mode. After approx. 1 sec the control circuits will automatically switch the amplifier back to the transmitting mode. If problem persists, safety circuit will react again.

If the fault will repeat 3 times during 10 seconds, the safety circuits will turn the amplifier to STBY mode. To cancel fault status, press STBY/OPER shortly. Power amplifier will stay in STBY mode.