

Measurement of RTX2-U2

The control board must be tested with an appropriate tester which controls the IC4 microcontroller and the modulating amplifier.

The RF-board must be measured with a previously tested control-panel.

Start the measurement in “receive” position. Check the current consumption (the +12V power supply’s current consumption including the control panel).

The current consumption must be $100\text{mA} \pm 5\%$. Tune coil L15 in such way that the voltage at test point MP1 be greater than 1V @ 440MHz, smaller than 4.5V @ 470MHz.

Setting of the front-end circuit:

By tuning coils L1,L2,L3,L4,L5,L6,L7 we obtain an amplification peak between 8-10dB in a frequency range between 440-470MHz, a waviness in this band smaller than 2dB and a damping more than 70dB @ a frequency range between 340-380MHz..

Setting of the discriminator circuit:

Connect the rf modulation signal with $U=50\text{uVemf}$, deviation=1.5kHz(peak) , $f=1\text{kHz}$. Measure the output signal at the control panel’s J1 connector’s pin number 2. Tuning the coil L34 we get the max. amplitude.

Measure the unit’s sensitivity on three frequencies, 440,455 and 470MHz.
The sensitivity must be better than 0.3uV @ 50ohm,12dB SINAD

Measurement in TX position:

Connect an appropriate instrument (measurement of 50 ohm impedance power output) to the unit’s rf connector.

Put the control panel in TX mode. The current consumption can not be more than 1A @ +12V.

Tune condensator C67 in such way that the voltage at test point MP1 be greater than 1V @ 440MHz, smaller than 4.5V @ 470MHz .

Turn the P1 potentiometer counterclockwise until end stand.

Put the control panel in HIGH POWER position.

Measure the output power @ frequencies 440,455,470MHz with +10V power supply.

If necessary correct the power output level with TJ1 and TJ2.

The measured power output after 10 seconds must be at least 2W on the above mentioned three frequencies

With the same HIGH POWER setting, but with +12V power supply and @ 455MHz, set the output power to 2W with the help of potentiometer P1.

Then measure the power output @440 and 470MHz.. The variations from 2W of the measured values must not exceed 1dB.

Now put the control panel in LOW POWER position and measure the output power @ frequencies 440,455,470MHz. The measured values must be $0.5\text{W} \pm 1\text{dB}$

Assemble the RF unit and the control unit.

Check the modulation in TX mode.

Apply 1Vpp 1kHz signal to pin 1 of connector J1.

On a measuring receiver you must get a 1.5kHz+/-10% deviation.

In RX mode set up the "BUSY DETECT" circuit:

from a signal generator apply to the input a signal sufficient to obtain a 20db SINAD

On the control panel turn the potentiometer P2 counterclockwise until end stand, then slowly turn it clockwise until the signal at J1 connector's pin 6 turns from logic 1 to logic 0.