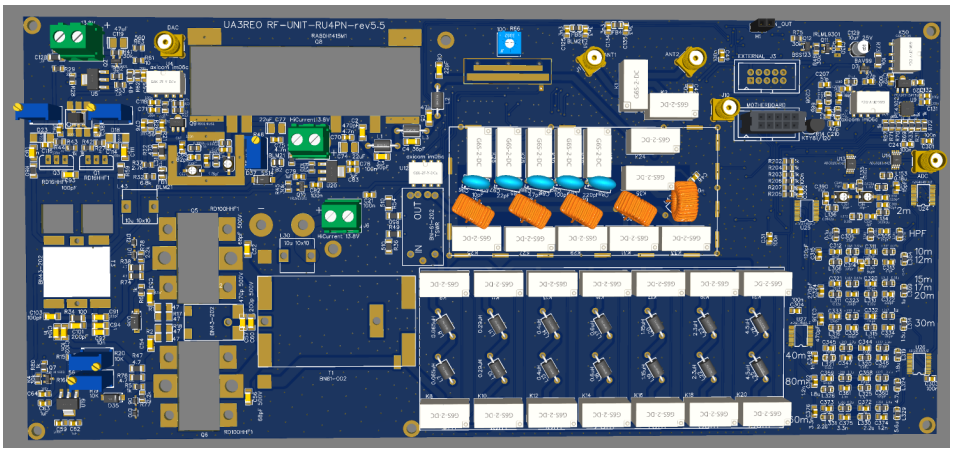
Description of RF-UNIT-RU4PN version 5.6 for Wolf transceiver

This page contains information on a large RF board, on which HF / VHF amplifiers and the input part of the classic 7 "Volk transceiver are located.



general description

At the time of writing, the latest version 5.6 board contains the following nodes:

- **RX reception**

1. Antenna switching
2. Static protection
3. Stepped attenuator up to 31.5 dB
4. LPF with a cutoff frequency of 60 MHz
5. DFT (1.5 - 55 MHz) overlap / HPF (60+ MHz)
6. Switching by 4- and 2-channel AD multiplexers
7. temperature sensor

- **RX transmission**

1. HF: -10dB Attenuator
2. KV: Pre-PA KV on 2xRD16 + quiescent current control circuits
3. HF: PA on 2xRD100 + quiescent current control circuits
4. HF: Two-section LPF
5. HF: Tandem match SWR meter
6. HF: Tuner 5x5
7. HF/UHF switching TX
8. HF/VHF Antenna Switching 1/2
9. VHF: -3dB attenuator
10. VHF: Pre-PA on RD01
11. VHF: DPF 144MHz
12. VHF: RAxxH1317M1 output module
13. VHF: LPF with a cutoff frequency of 160 MHz
14. VHF: SWR Meter

All switching of nodes is carried out using keys on field-effect transistors and / or shift registers. The RF board is connected using a 10-pin cable to the motherboard.

SECTIONS

General Articles
About everything

Web Log AllQSO
Review
Instructions

Workshop
Useful
SDR technology

WOLF transceiver
Description
BIG-RF-RU4PN
RF-QRP-RU4PN

YouTube Channel
News

Regional branch of the CRR
Competitions

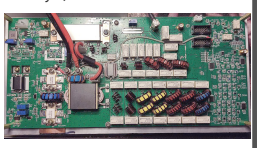
Club life RC4Q

In the "News" section, we post the callsigns to whom the received QSL mail is addressed.

Welcome!

New

July 9, 2023 *1995*



Description of RF-UNIT-RU4PN version 5.6 for Wolf transceiver

October 15, 2022 *1195*

TOP

The board is powered by 4 lines:

1. +3.3V is supplied to the J4 connector through the cable from the motherboard to power the registers, attenuator and multiplexers
2. The J8 connector supplies power from the +12V front board, which appears when the transceiver is turned on. From this circuit, the nodes of the HF and VHF UM bias circuits, the G6S relay are powered
3. Through connectors J6, the main power is supplied to the output transistors RD16 and RD100
4. The J7 connector supplies the main power for the VHF output module RAxxH1317M1

Board Specifications

- Receiver: support continuous range from 137 kHz to 750 MHz
- Transmission: support transmission frequencies from 1.5MHz to 50MHz + 144MHz
- Output power: HF -100W, VHF - depending on the applied RF-module from 30W to 80W.
- Protection: Input static protection
- Switching to 2 antennas
- Built-in 5x5 tuner and SWR meter, antenna matching at SWR up to 5.
- Power supply from 12V to 14V
- Built-in step attenuator up to 31.5 dB in 0.5 dB steps
- End-to-end attenuation from the antenna jack to the ADC connector is on average 5 dB on HF, 8 dB on VHF.
- Power supply from 12v to 14v
- Board dimensions - 281 mm x 128 mm

Scheme

The circuit board of the latest version 5.6 consists of 6 parts and is available for download below:

- Switching, Tuner, TSWR
- VHF amplifier with filters and SWR meter
- Control, LNA, attenuator, LPF
- HF amplifier
- DFTs and their switching
- LPF with their switching

Schematics of previous versions of the board are available below:

- ver1
- ver2
- ver3
- ver4
- ver5
- ver5.1
- ver5.2
- ver5.3
- ver5.4
- ver5.5

BOM file

The BOM file has not changed since version 5.5 and is available for download from this link: BOM-File RF-UNIT-RU4PN

Version history

The history of changes in the scheme and printed circuit board is conducted starting from version 5.4

TOP

Description transceiver Wolf UA3REO

December 26, 2021 815

NanoVNA Calibration

August 15, 2021 218

Ural Cup 2021 - departure of the RC4Q team in the field

--- 5.4 ---

1. Power on RD16 is now taken from power on RD100.
2. Output BPF 144 converted to LPF, less loss.
3. Reworked vias - excluded from PAD elements, which constantly cursed JLCPCB engineers
4. Redesigned LNA switching to eliminate self-excitation in some situations
5. FB1 and FB2 replaced by BLM21 SMD
6. Added resistors in the BIAS_ON key control circuit

--- 5.5 ---

1. One section of the 144MHz notch filter has been removed, less attenuation without loss of rejection + the RX BPF 2m itself has been rewired.
2. Minor changes have been made to the bias circuits RD16, RD100, capacitances have been added.
3. Suppressors have been added to the RD100 gates for protection.
4. Adjusted values in VHF filters RX/TX.
5. Cosmetic edits.

-- 5.6 --

1. Changed quiescent current bias circuit resistor values RD100
2. LPF values adjusted
3. Footprint edits

Description of the receiving part

The RX signal from the ANT1 (J1) or ANT2 (J2) connector, which is selected using the K1 relay, goes through the K2 RX / TX switching relay to the static protection circuit, consisting of the R73 resistor and the D7 protective diode, and then comes to the K50 relay contacts and in parallel on UHF(LNA), performed on PGA-103+. When the "PRE" mode is on, power is applied to the K50 relay and the signal passes only through the LNA, which at this moment is powered by the U6 stabilizer with a voltage of + 5V.

If the "PRE" mode is turned off, then the signal passes directly through the closed contacts of K50, and the UHF is also de-energized at this moment.

Next, the signal goes to the step attenuator U9, which is used as PE4302/PE4312. The control is carried out on 6 lines corresponding to 0.5 dB, 1 dB, 2 dB, 4 dB, 8 dB and 16 dB, which allows you to smoothly change the degree of attenuation of the signal from 0 to 31.5 dB.

From the output of the attenuator, the signal goes to relay K4, which connects or bypasses the low-pass filter with a cutoff frequency of 60 MHz. The bypass is enabled only in the HPF or 144 MHz range, i.e. for reception of 60 MHz and above. In other cases, relay K4 is de-energized and the signal passes through the low-pass filter.

Further, the RX signal comes to the DFT block, the ranges of which are switched using 2- and 4-channel multiplexers.

To receive frequencies outside the filter transparency band (for example, below 1.5 MHz), a bypass mode is implemented. Its switching is performed on 2 ADG918 microcircuits (2-channel RF switches). When the bypass is off, the signal goes to 2 ADG904 4-channel multiplexers - U25 and U27, which switch the signal to one of the 8 band filters.

From the output of the DFT, the signal goes again to one of the 8 inputs of 2 multiplexers U24 and U26, which are switched on synchronously with U25 and U27, respectively. Further, the signal goes through U14 to the ADC(J2) connector, which is connected to the corresponding connector of the same name on the transceiver motherboard.

Description of the transmitting part

TOP

The HF and VHF transmission path is separate, the common part is only the RX / TX switching on the K2 relay and the K1 antenna switching relay.

The signal in TX mode from the motherboard goes to the DAC (J9) connector and through the relay U4 goes either to the input of the HF attenuator -10 dB or to the VHF attenuator -3 dB.

VHF

From the attenuator, the signal in the TX mode is fed to a preamplifier made on the transistor Q9 - RD01MUS. The preliminary PA is powered from the stabilizer U20, designed for 9V stabilization voltage. The bias circuit of the RAxxH1317M1 output module is organized from the same stabilizer.

The voltage to the stabilizer comes from the VHF_AMP_BIAS_ON signal of the transceiver, which controls the Q10 key and supplies the corresponding power to U20.

Further, after the stage of the preliminary PA, the amplified signal is fed to a 3-link DFT, the output of which is directly connected to the input of the terminal module Q8.

From the Q8 module, the amplified signal enters the low-pass filter with a cutoff frequency of about 170 MHz, where it is filtered and goes to the T6 SWR sensor, made directly on the printed circuit board. After that, the signal passes through the switching relay of the HF / VHF K24 output and through the contacts of the relay K2 enters one of the outputs ANT1 or ANT2, depending on the state of the relay K1.

HF

From the attenuator, the signal in the TX mode first enters the balun transformer T5 and then goes to the gates of transistors Q1, Q3 (RD16) - preliminary PA, where the amplified signal through the transformer T3 1: 1 enters the terminal stage of powerful transistors Q5 and Q6 (RD100), to the output of which is connected ShPT T1 1:4.

The quiescent currents of the transistors of the preliminary stage and the final stage of each arm are set separately using multi-turn resistors R30, R40 and R19, R20, respectively. The voltage for the quiescent current is stabilized at U5 and U19. The supply voltage + 12V of the stabilizers appears in the TX mode through the corresponding keys Q2 and Q7.

The power supply of the terminal transistors Q5, Q6 is carried out through the inductor T2 or through the output transformer T1. Because there is no consensus on which method is better, the board leaves the option of choosing the power supply option at its discretion.

The signal from the ShPT T1 is fed to the low-pass filter unit, the range selection of which is switched using relay K8 - K21.

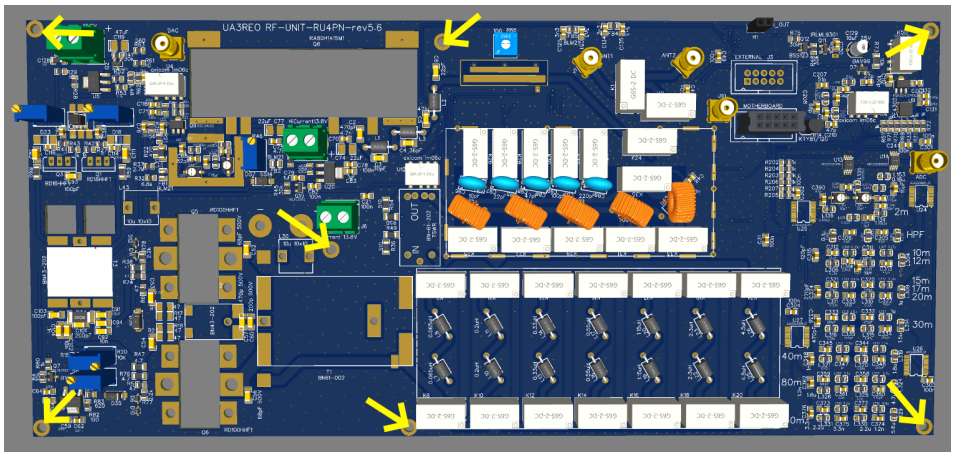
After the low-pass filter, the filtered signal enters the SWR meter, made according to the Tandem-match scheme.

Then the signal goes to a 5x5 automatic antenna tuner. When the tuner is turned off, all its coils are short-circuited using relays K25, K27, K29, K31, K33, due to which the signal passes with a minimum introduction of an inductive component and enters the HF / VHF switching relay K24, then K2 - K1 - Antenna.

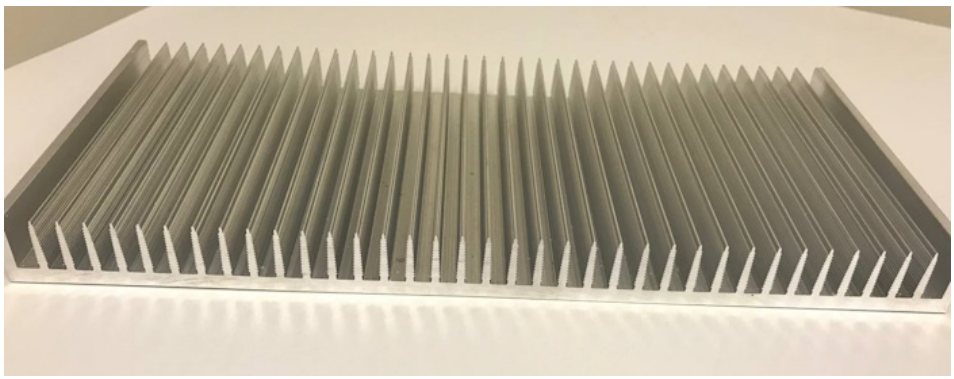
Assembly Recommendations

The board is fixed directly to a 300mm x 130mm x 25mm radiator using 5-6mm standoffs with M3 screws. To do this, the board has 7 holes 3.1mm.

TOP



Before assembling the board, a suitable heatsink is immediately prepared with a fin height of at least 15mm and a 5-15mm flat part, from which the board will be attached.

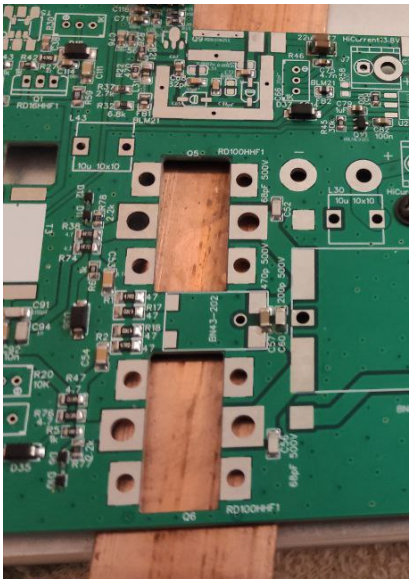


An empty board is attached to the radiator and the mounting points for the racks and RD16 transistors are marked, 2.4 mm holes are drilled and threads are cut for M3.

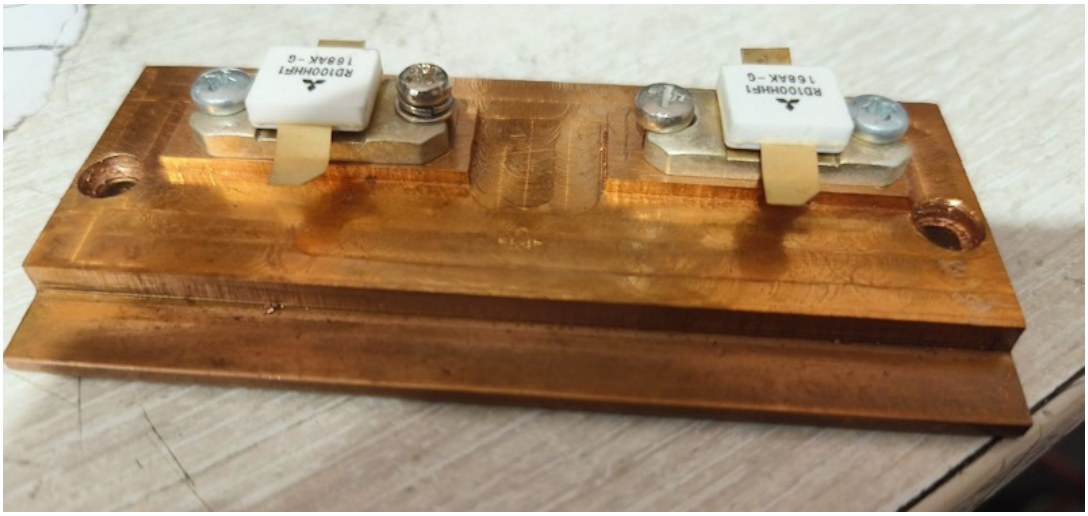
Mounting transistors RD100

The output transistors are attached to the radiator through a 3-4mm copper bus.

TOP



First, the copper strip itself is cut to size and fastened, then the landing sites for the RD100 transistors are marked and a thread is drilled / cut for fastening with M3 screws.

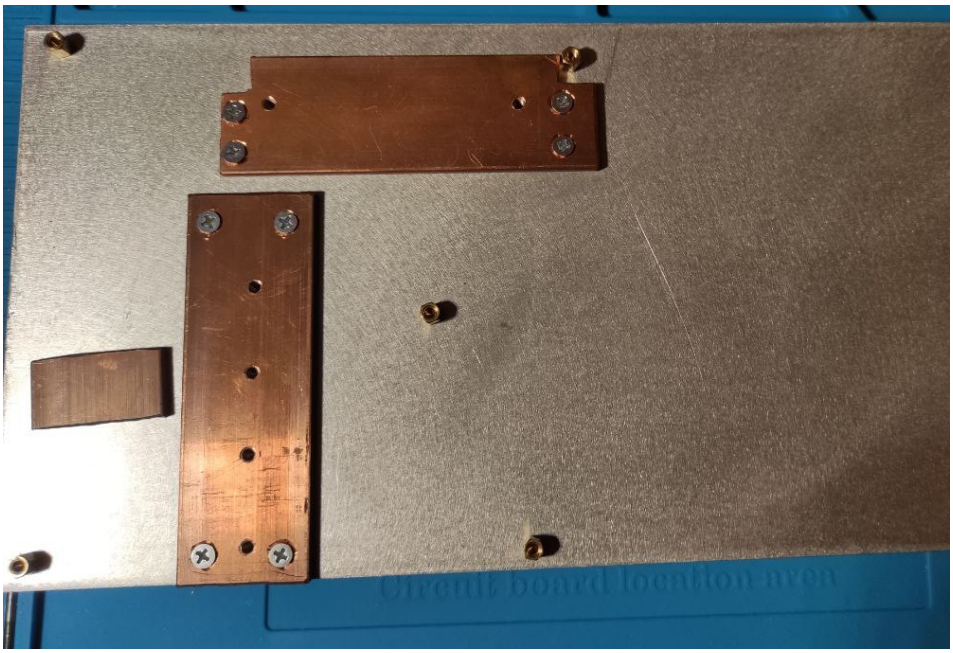


A very thin layer of thermal paste is applied between the copper plate and the aluminum heatsink.

TOP

Mounting the VHF module

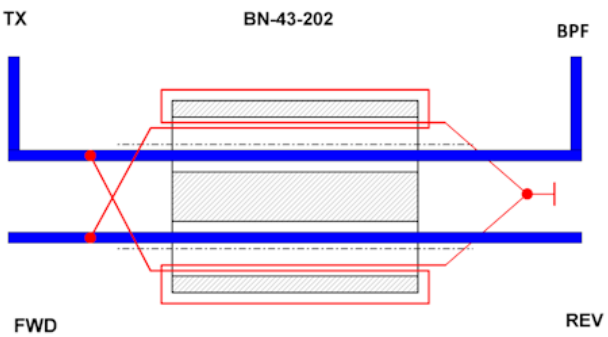
The VHF module (the so-called "Chocolate") is also attached using a copper plate or directly to the radiator with the leads bent to the desired height. Sometimes it is required to slightly trim the module case to avoid pin shorts at the bends.



Fastening is carried out with M4 screws with obligatory ground copper strips on each side, which are then soldered to the board.

Tandem-match making

The tandem-match SWR meter is made on BN-43-202 binoculars. The winding and connection diagram is as follows:



TOP

Рис. 3 Tandem match

First, two windings are wound symmetrically from the center (highlighted in red), each with 19-20 turns of enameled copper wire 0.3mm.

On the Internet, you can find a table for selecting the number of turns of a tandem match, depending on the maximum output power. In our case, we believe that the maximum power is 100W and the output voltage from the sensor should not exceed more than 3.3V. The more turns, the lower the output voltage from the sensor at the same power.

Выбор числа витков трансформаторов направленного ответвителя Tandem match

P (W)	Rload (Ohm)	Iprl I(A)	Turns (V=10V)* DC	Turns (V=5V)* DC	Turns (V=4,5V)* DC	Turns (V=4,096V)* DC	Turns (V=3,5V)* DC	Turns (V=2,5V)* DC	Turns (V=2,0V)* DC
1000	50	4,472135955	22,36067977	44,72135955	48,8803395	54,59150336	63,8876565	89,4427191	111,8033988
900	50	4,242640687	21,21320344	42,42640687	47,14045208	51,79004745	60,60915287	84,85281374	106,0660172
800	50	4	20	40	44,44444444	48,828125	57,14285714	80	100
700	50	3,741657387	18,70828693	37,41657387	41,57397098	45,67452885	53,45224838	74,83314774	93,54143467
600	50	3,464101615	17,32050808	34,64101615	38,49001795	42,28359687	49,48716593	69,2820323	86,60254038
500	50	3,16227766	15,8113883	31,6227766	35,13641845	38,60202222	45,17539515	63,2455532	79,0569415
400	50	2,828427125	14,14213562	28,28427125	31,42696805	34,5266985	40,40610178	56,56854249	70,71067812
300	50	2,449489743	12,24744871	24,49489743	27,2165527	29,90099784	34,99271061	48,98979486	61,23734357
200	50	2	10	20	22,22222222	24,4140625	28,57142857	40	50
100	50	1,414213562	7,071067812	14,14213562	15,71348403	17,26334915	20,20305089	28,28427125	35,35533906
50	50	1	5	10	11,11111111	12,20703125	14,28571429	20	25
40	50	0,894427191	4,472135955	8,94427191	9,9380799	10,91830067	12,7775313	17,88854382	22,36067977
30	50	0,774596669	3,872983346	7,745966692	8,606629658	9,455525748	11,0656667	15,49193338	19,36491673
20	50	0,632455532	3,16227766	6,32455532	7,027283689	7,720404444	9,035079029	12,64911064	15,8113883
10	50	0,447213595	2,236067977	4,472135955	4,96903995	5,459150336	6,38876565	8,94427191	11,18033989
5	50	0,316227766	1,58113883	3,16227766	3,513641845	3,860202222	4,517539515	6,32455532	7,90569415
2	50	0,2	1	2	2,222222222	2,4414625	2,857142857	4	5
1	50	0,141421356	0,707106781	1,414213562	1,571348403	1,726334915	2,020305089	2,828427125	3,535533906
			Turns (V=7,071V) RMS	Turns (V=3,536V) RMS	Turns (V=3,182V) RMS	Turns (V=2,896V) RMS	Turns (V=2,475V) RMS	Turns (V=1,768V) RMS	Turns (V=1,414V) RMS

*Значение напряжений приведено без учета падения напряжения на диоде

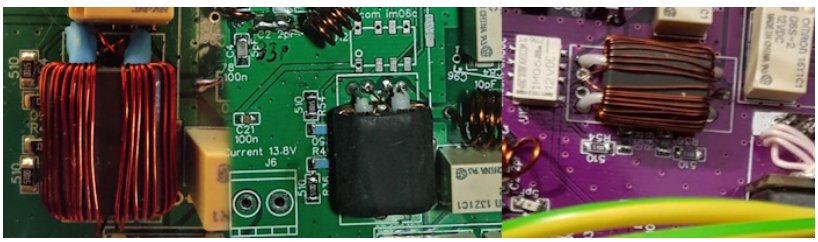
** Turns - число витков, целое число. Число из таблицы округлять в большую или меньшую сторону.

В скалярном виде:
for Pure SIN
Vout = Iprl Rload / Turns; (V) RMS
V = √2*Vout; (V) DC

On one side of the binoculars, the windings are connected at one point and connected to the board ground. On the other hand, the windings are connected crosswise.

After the first windings are ready, 1 turn is threaded into each hole of the binoculars, which is made of 1-1.5 mm copper wire in good insulation. Here, the central core of the cable with an internal insulator is well suited, from which the outer braid and screen are previously removed.

Below are some examples of transformer manufacturing.



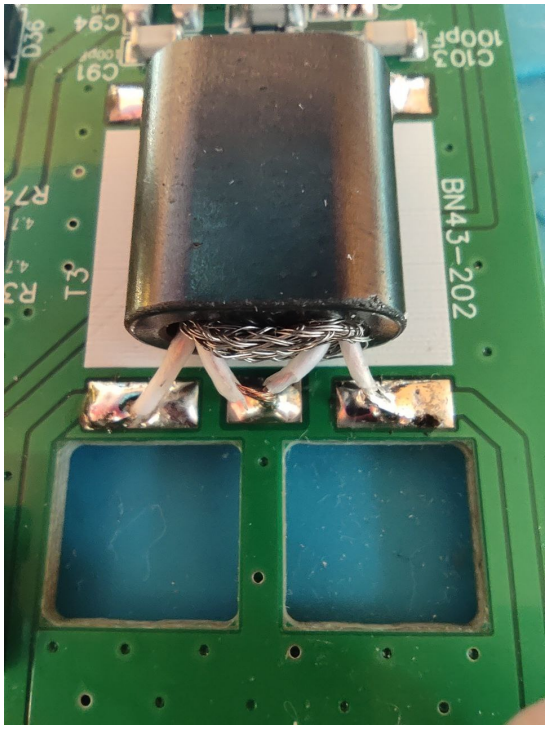
Manufacturing of transformer T3

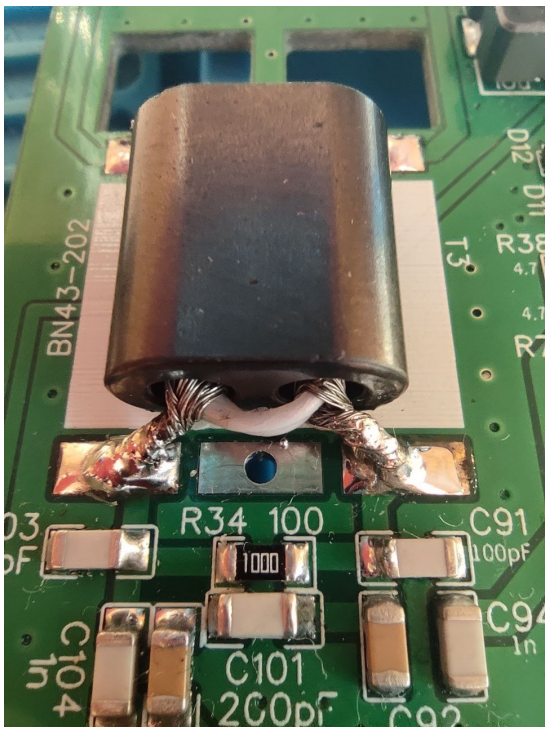
As an output T3 of the preliminary PA on 2xRD16, a transformer has proven itself, designed as follows:

Using binoculars BN-43-202, one turn of the secondary is wound through both halves of the ferrite, made of cable sheath, and one turn of the primary winding is threaded through it. The wires are soldered so that the beginning of one turn of the primary is connected to the end of another turn of the primary.

For clarity, below is an illustration of the manufactured transformer:

TOP





Making a T2 choke

The T2 inductor is used as an OOS output amplifier RD100 to equalize the frequency response in the entire HF range and optionally to power the output transistors. It is recommended to make on a ferrite ring FT50-43 or similar in permeability - 850ui. Before winding, it is necessary to evenly twist 2 enameled wires (at least 1 mm) and wind them 13 turns, carefully distributing the turns around the entire ring. After winding, ring out the conductors, connect the beginning of one winding to the end of the other - this will be the middle point for powering (in the case of powering transistors through T2).

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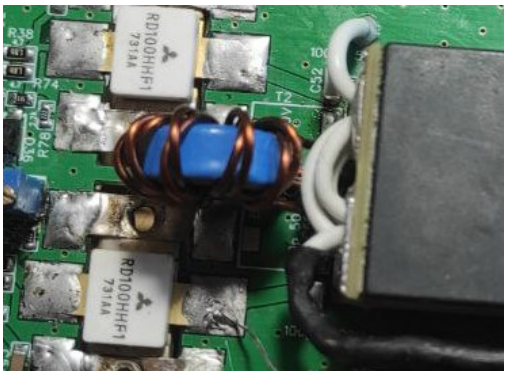
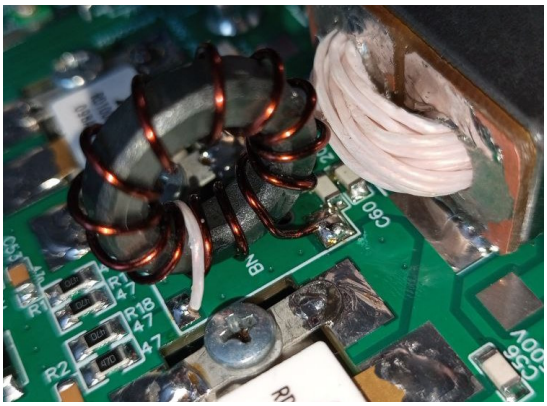


In the case of the option of powering RD100 transistors through a shpi, the inductor is wound in one wire also 13 turns on the same number of FT50-43:

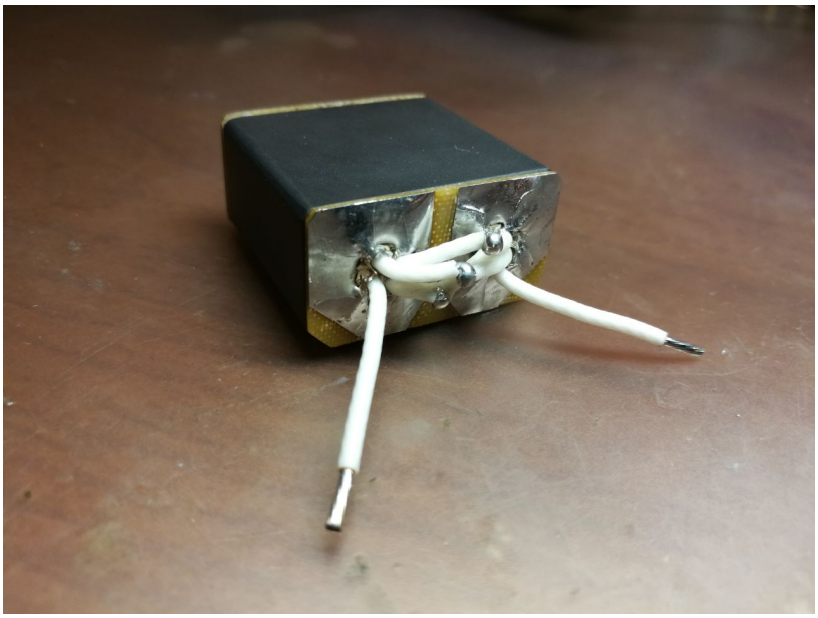


The feedback coil is a 1-2 mm MGTF wire passed through the ring.

Production of the output transformer T1

According to numerous experiments in assembling this PA, the optimal transformer is considered to be made of BN61-002 binoculars and a 25 ohm cable, passed through it until 4 turns are obtained. It is convenient to carry out installation in one turn - the braid is soldered directly to the "cheeks", and the central core of each subsequent turn is soldered to the previous one. On the other hand, the braids are soldered together, forming the middle of the coil, where the supply voltage is applied.

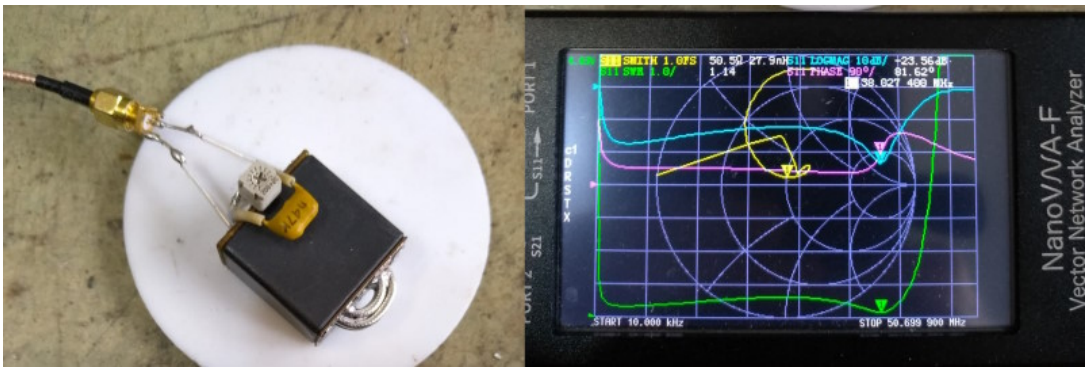
Below are examples of photographs of such manufacture:



TOP

Before soldering the transformer, it is adjusted to a minimum SWR in the operating frequency band up to 60 MHz. The primary is loaded with a resistance of about 3.1 ohms and, by selecting a capacitor in the same circuit, by connecting a spectrum analyzer, the tuning is carried out. In the end, you should get a similar graph:

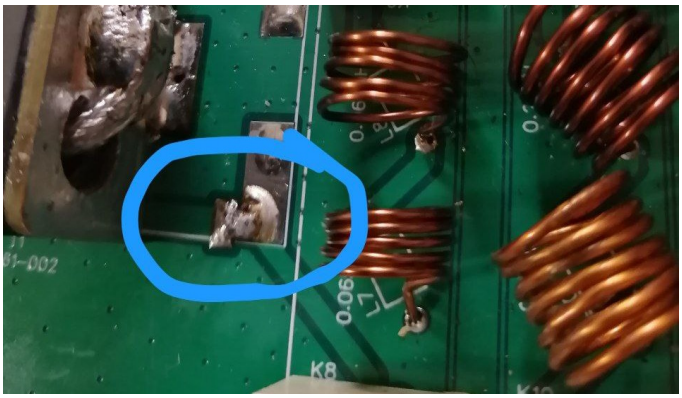
TOP



The value of the capacitor is obtained on average 470-560 pF.

The most accurate setting of the transformer can be "hot", i.e. by disconnecting the DAC connector, shunting the drains of the output transistors, connecting the output of the ShTP (secondary winding) to the analyzer, it is necessary to apply a working bias to the transistors. Also, when selecting capacitors, achieve a minimum SWR reading. ShPT in this case will be configured for specific instances of transistors (not always original).

In the case when the transformer is made with secondary winding taps towards the output transistors, it is necessary to solder the jumper connecting the track from the connection point of the T1 transformer to the low-pass filter input track:



Production of LPF rings

For the manufacture of two-link low-pass filters, Amidon T68 rings of various permeability are used, depending on the selected frequencies. The photo below shows the recommended types of rings for each low-pass filter and antenna tuner:

For the ranges of 50 MHz, 28 MHz and even 21 MHz low-pass filter, winding of frameless inductances is possible, thus saving on rare T68-10, as well as reducing the number of T68-6 rings. For the 1.8 MHz range, T68-1 can be replaced by T68-2 by changing the number of turns upwards.

In the tuner, you can also reduce the number of rings to 3 by winding frameless coils L35 and L36.

TOP

The winding data of the rings for each low-pass filter is shown in the corresponding diagram. I recommend winding the rings always with a margin of +1 or +2 turns and then adjusting them to the desired inductance using any L-meter.

Assembly and setup sequence

I recommend collecting and configuring the board in the following sequence:

Preparatory stage

1. Decide on a radiator
2. Mark the mounting locations of the board on the heatsink
3. Drill holes and cut M3 threads to mount the board, transistors and RA output module.

Assembly and configuration of the RX path

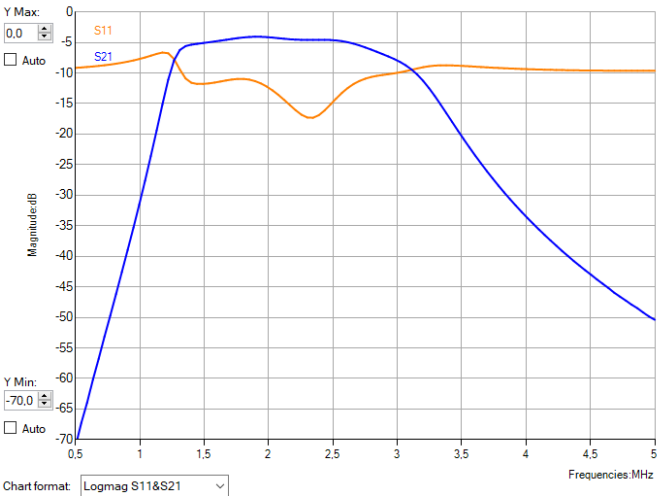
1. Solder all the elements in the power and control circuits of the board - the STPIC control registers, all G6S, im06 relays, key transistors, stabilizers and their corresponding piping. Please note that the K50 relay can optionally be either 12V or 5V. Depending on this, you need to solder the corresponding resistor with zero resistance: For 12V relay K50, solder R18, for 5V - R17.
2. Connect the board by supplying +12 power to connector J8, and connecting the RF board with a cable to the transceiver motherboard (via connector J4). Check the main supply voltages: 12V, +3.3V, +5V, +9V on the quiescent current stabilizers.
3. Select RF Unit type - "RU4PN" in the transceiver calibration menu.
4. Consistently check the operation of all relays: When any range is switched on in the TX mode, the corresponding relays of the low-pass filter K8-K21 and switching RX / TX - K2 should operate. When switching between HF and VHF, relays U4, U12, K24 should work. When the PRE is switched on/off, the K50 relay must operate. Next, in the "TX Settings" menu, find the "ATU Cap" item and, by changing the value with the capacitance encoder, check that the corresponding relays K26, K28, K30, K32, K34 are working. By changing the value of "ATU Ind" check that the corresponding relays K25, K27, K29, K31, K33 are working. Switching the value "ATU T" should work out the relay K35. If during the test it turns out that there are no switches, then check the serviceability of the STPIC registers and the connection of the board, as well as the presence of power on the relay.
5. After checking the operability of all relays, proceed to the assembly of the input part of the RX circuit to the DFT block. This will include a LNA (PGA-103+) circuit with a strapping, an attenuator on a PE4302 with a strapping, incl. attenuation stage control bus, LPF around relay K4 and multiplexers U13, U14 (ADG918). We also install SMA connectors J1, J5, J2.
6. We supply power to the board and control from the transceiver (J4). We turn on the range of 137 kHz, ATT is turned off. We connect to one of the connectors J1/J5 - output and to the connector J2 - input of the analyzer. Check through attenuation. It should be about 3-4 dB. Do not forget to correctly set the included antenna, depending on where the spectrum analyzer is connected. When the attenuator is turned on, the attenuation should increase by the value specified in the settings. The value is changed by holding the touch button "ATTxx". Here we check the cutoff frequency of the low-pass filter by selecting the scanning limit from 1 to 80 MHz. By activating the "PRE" mode, we check that the signal came out at 30 MHz and is amplified by at least 10 dB. If everything is assembled correctly, then these nodes practically do not need to be configured.
7. Next, the rest of the DFT is assembled and its switching to the ADG904. The analyzer connection remains the same - from the antenna input (J1 or J5) to the ADC connector (J2).
8. First, we set up the VHF DFT. It consists of a broadcast FM notch filter and a three-section filter. First, it is recommended to set the notch filter to the maximum attenuation in the FM broadcast band of the higher region. Usually it is 95-106 MHz. To do this, temporarily install a jumper between C390 and L151. After adjusting the notch, we solder the remaining filter elements and adjust the attenuation minimum in the 144-146 MHz band. It is convenient at this moment to focus on the SWR value, which reflect the resonances of the circuits. Adjustment is carried out by shifting / expanding frameless coils L136, L135, L134. The inductance or capacitance of the

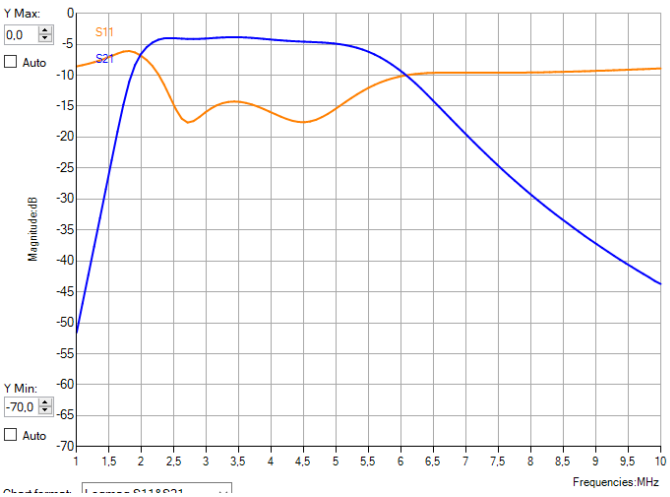
TOP

extreme circuits of the filter must always be changed in pairs. The optimal setting for the 144 MHz filter is up to 8 dB total loss.

9. Further, the filters of the remaining ranges are configured in any order. With careful selection of inductances and capacitances, DFT adjustment is not required.
10. It is desirable to save or record the passband frequencies of each filter and then adjust the filter overlap value in the transceiver's "Calibration" menu.

Below are examples of DFT plots for each of the ranges:





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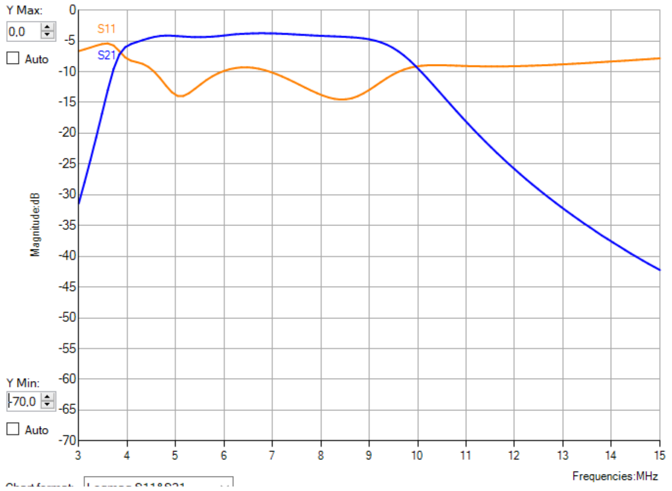
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Frequencies:MHz

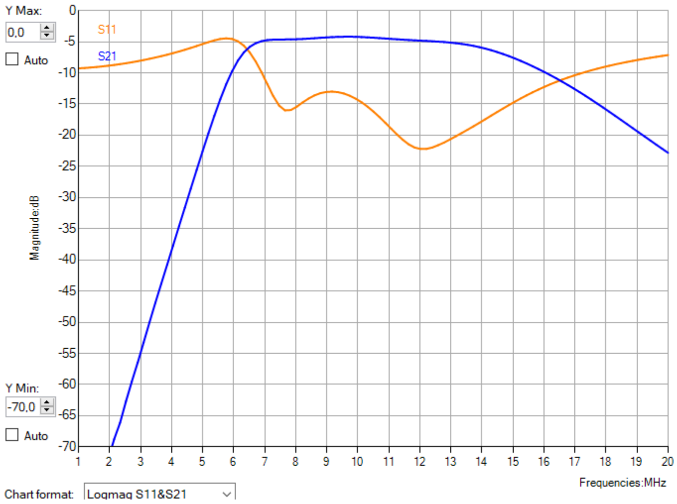
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Chart format:
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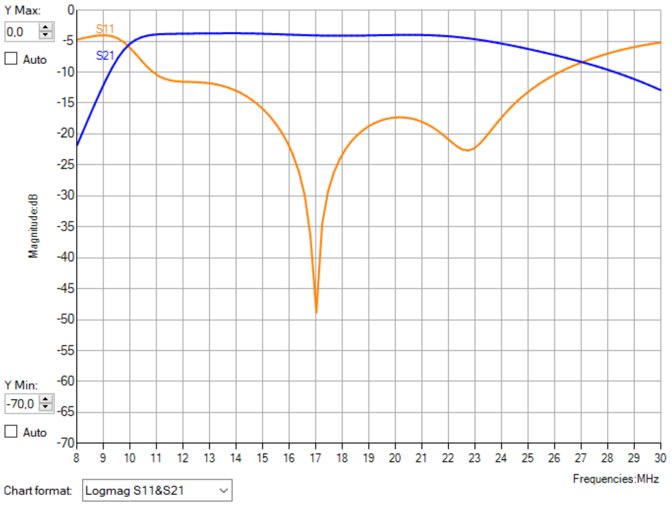
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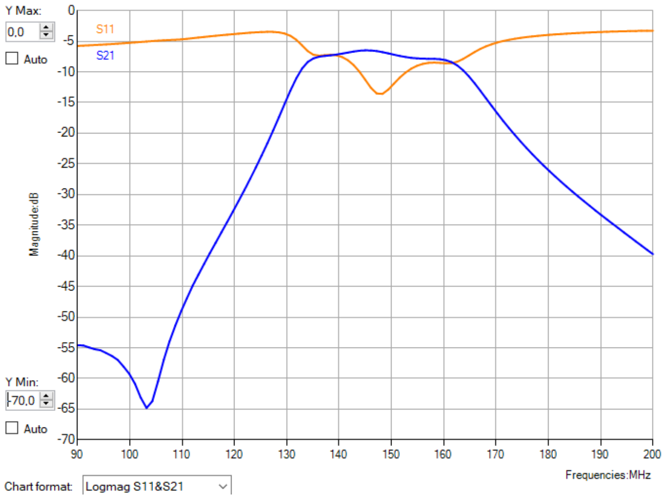
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Logmag S11&S21

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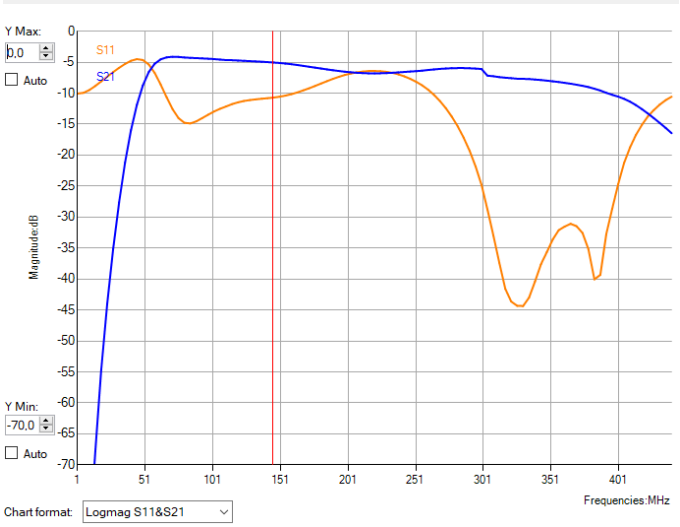
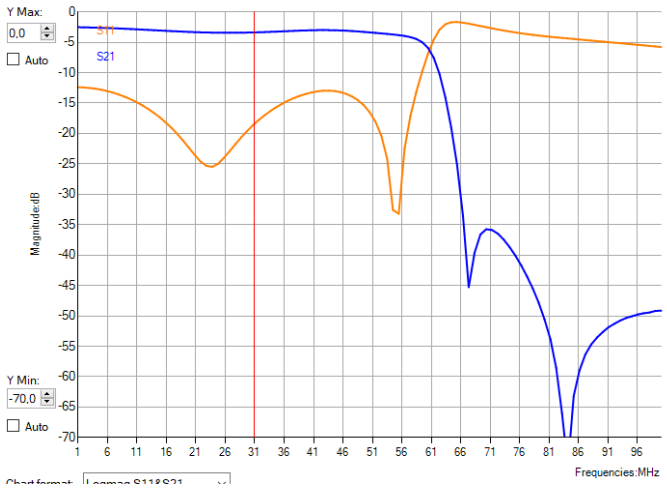




Assembly and configuration of the VHF TX path

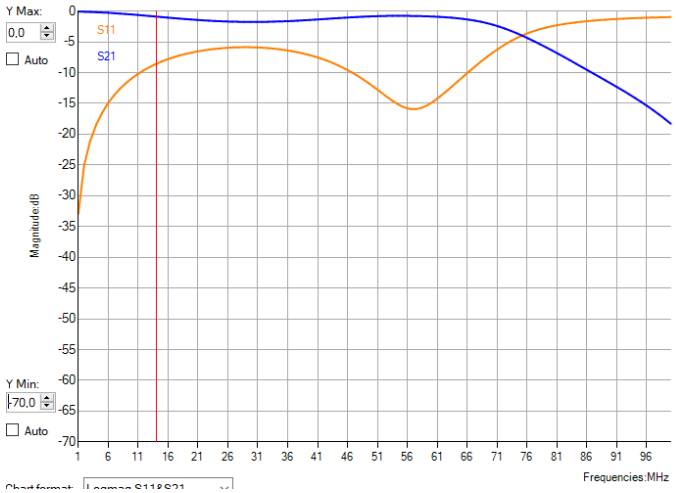
1. Next, we move on to the transmitting part. To begin with, we collect all the TX circuits for VHF: attenuator, preliminary stage on RD01, DFT, LPF. The module itself is not soldered.
2. By connecting a spectrum analyzer to the input and output of the filter between the output from RD01 and the input of the RA module, we achieve minimal attenuation at frequencies of 144-146 MHz.
3. Next, we connect the spectrum analyzer to the output LPF (L1, L3, L2) and achieve a minimum attenuation / SWR in the 140-148 MHz band.
4. We check in the TX mode that the voltage on the track going to the 2nd output of the RA module is less than 1V.
5. Next, install the RAxxH1317M1 module or similar.
6. We supply + 12V power to J7, preferably with a current limit of up to 3A.
7. We turn on the range of 144 MHz, TX mode and set the resting current of the output module to about 1A by rotating the potentiometer R46.
8. After we connect the load of 50 ohms to the antenna input, we send a signal to the input of the DAC board from the transceiver motherboard.
9. We check the output power, which, depending on the module used, ranges from 30 to 60 watts.

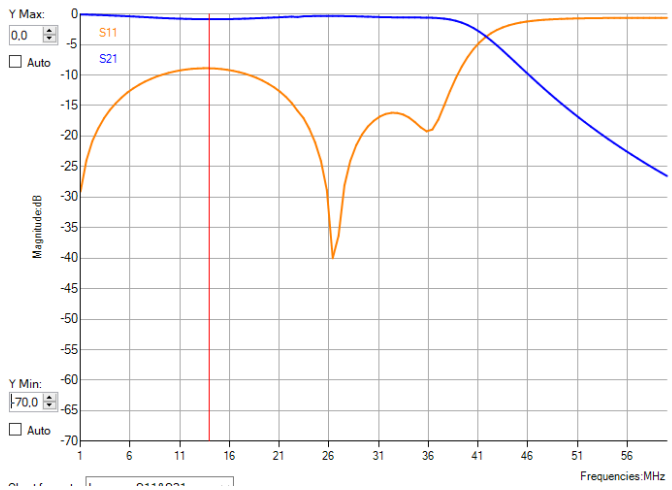
Assembly and configuration of the HF TX path

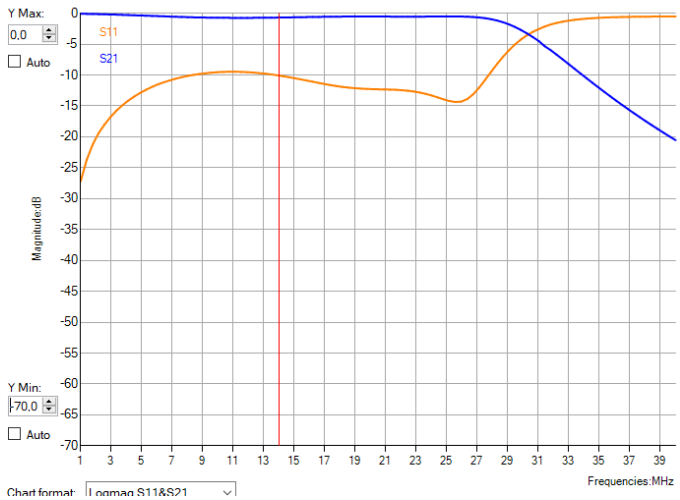
1. We start assembling the path with an attenuator and a preliminary PA on RD16. Before soldering the transistors, set the gate bias voltage to a minimum by adjusting R40 and R30.
2. Next, we solder the RD16 transistors, the T3 transformer and all its piping. We load the output of the transformer T3, supply power to the PA through J6 and set the quiescent currents of the RD16 transistors. Typical value is 250 to 300 mA each. At the same time, it unscrews the trimmers R19 and R20 so that the voltage in the gate circuit is less than 1V.

TOP

3. After that, we solder the remaining elements of the PA, including the manufacture of the transformer T1 and its tuning, by selecting the capacitor C57 / C60 for a minimum SWR in the frequency range up to 50 MHz, TSWR tandem match, inductance and capacitance of the tuner.
4. We wind on the inductance rings for the low-pass filter, solder the capacitances in each filter.
5. Next, we connect the spectrum analyzer to the input-output low-pass filter and adjust the characteristics for the minimum attenuation and SWR on each diazone (except for adjacent ones). I recorded a separate video on the AllQSO channel about how to adjust the low-pass filter: Tuning the low-pass filter of the Volk transceiver
   Below are the low-pass filter graphs obtained on one of the 5.0 version boards for example:







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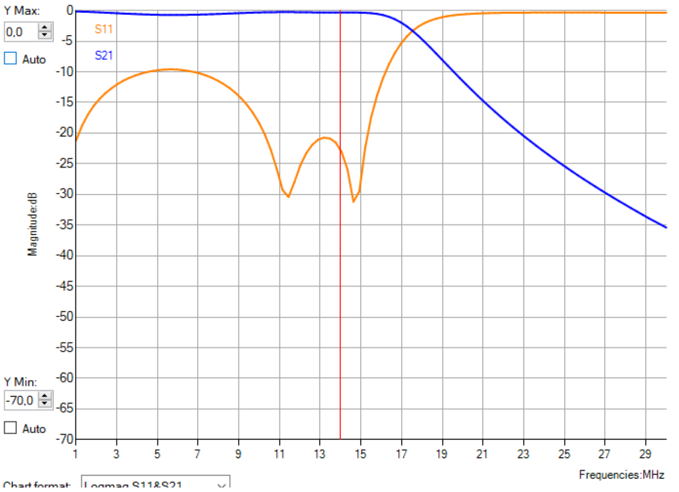
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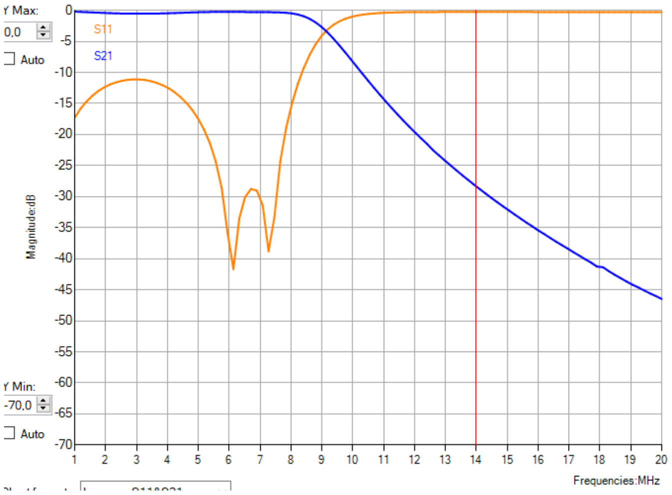
Frequencies:MHz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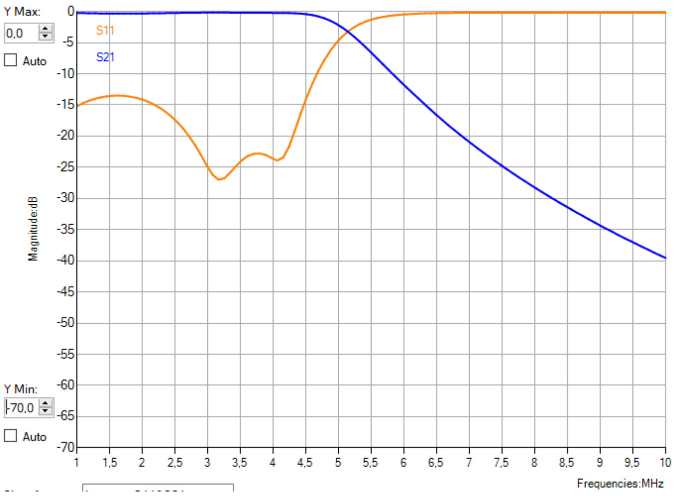
Frequencies:MHz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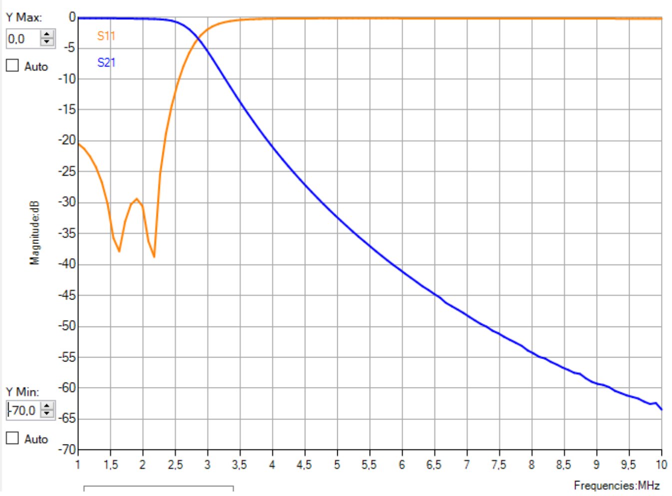
Frequencies:MHz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Magnitude:dB
Y Min:
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Auto
0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50 -55 -60 -65 -70
1 1,5 2 2,5 3 3,5 4 4,5 5 5,5 6 6,5 7 7,5 8 8,5 9 9,5 10
Frequencies:MHz

TOP

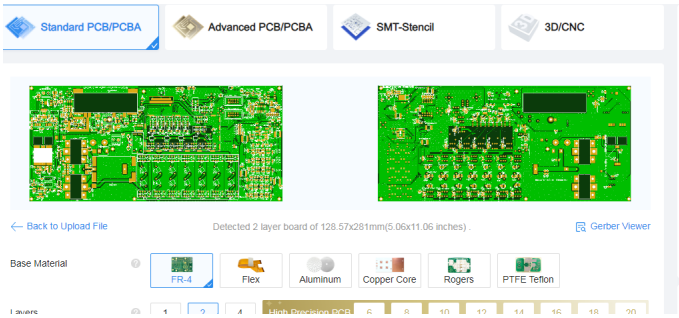
6. After setting the low-pass filter, you can solder the output transistors and set the quiescent currents. At least 0.5A is recommended for each transistor.

Board order

The board is ordered either independently or with the help of a group of like-minded people. In PCB production in China, there is usually a minimum quantity limit of 5 PCBs. Therefore, it is beneficial to unite from 5 people, making a common order. You can find friends by interests in the thematic telegram channel: Volk transceiver TG channel

Gerber for ordering the current version of the board is available at the link: Download Gerber RF-UNIT-RU4PN v5.6

Among the proven productions, the well-known JLCPCB can be distinguished, but recently there have been some difficulties with customers from Russia, but you can find offers of intermediaries on Aliexpress.



Thanks

Anyone who wants to thank the author of this board can do this by donating the form below:

You can also go to the site of the author of the Wolf transceiver and thank him in the appropriate way.
Link to Dmitry's blog, UA3REO

Posted: July 9, 2023 Author: RU4PN

TOP

AllQSO

0.0122 (9)

2 people

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All about radio frequencies

HF and VHF antennas

About service

Contacts

All QSO reviews

Communication

Project Forum

Vkontakte community

Project ideas

TOP