

DUC/DDC SDR Series

19 Febrary 2013

Key Features:

- Direct Digital conversion
- High Dynamic Range
- Wide band bandscope up to 80MHz
- HF/6M/VHF
- Output power 20W (HF)
- Output power 10W (6M, VHF)
- LAN interface
- Embedded WLAN router
- Remote control
- Small size

DUC/DDC HF/6M/VHF SDR transceiver





Quick Start

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Introduction

Please, spend 5 minutes on reading this document and you will be able to start quickly to work with SunSDR2 transceiver and broadcast in a new way today. This document gives answers to the majority of first questions, appearing at a new user who starts working with a transceiver of a new type.

You have bought the most up-to-date radio amateur equipment which can be imagined for today. This transceiver is a compound software defined radio, allowing to provide high quality of signal processing both in receiving and transmitting mode by modern digital methods. PC use in transceiver allows to provide qualitative service not only in receiving/transmitting, but also to use the HAM LOGs and DIGI software without wires.

Effective and quick mastering of SundSDR2 computer transceiver is possible on condition that user has basic skills in using PC. It's considered that computer terms used in this manual on quick start are familiar to the user and won't cause any difficulties in searching one or another tab in Windows 7 or Windows XP. For visualization and simplicity, screenshots of dialogue windows will be given here, necessary functions and fields for editing will be outlined with coloured contour.

SunSDR2 transceiver is a software defined radio. It means that you will need PC or laptop for work with transceiver. PC controls transceiver, RX/TX modes, band switching and data rate processing, coming from and to transceiver. These rates by PC at the input and output gives audio signal and receive microphone signal and by transceiver they give HF-signal, transmitting into the air.

The main feature of this transceiver and its basic distinction from all the other recent output transceivers is the use of absolutely new principle of radio signal processing.

There is no frequency converting units in its classical variant. The signal is converted almost from the antenna, all the further signal processing is in the software. The same process is observed while transmitting. Forming of necessary signal modulation type is made by digital method right at the required frequency. From all the classical nodes there is only preselector, power amplifier and low frequency filter for PA in the scheme.

1. Connection

For starting SunSDR2 transceiver work the following components are required:

- Transceiver power supply unit;
- PC;
- CW key (if it's required);
- Microphone or telephone headset;
- Computer net LAN cable;
- Antenna, tuned into radio amateur frequencies.

Let's have a look at each component.

Power Supply unit must have power not less than 75 W, provide constant voltage of 15 V at the output with 5 Amperes load current. Under 15 V supply voltage transceiver gives full output power of 20 W.

PC or laptop can be of any modern configuration, produced during last 2-3 years. Recommended configuration:

- 2 or 4 cores CPU Intel Core i3 or Core i5
- 2, 4 or 8 Gb RAM
- 40 Gb of available space in hard disk for transceiver and accompanying software.
- 17 24" of monitor screen.
- Video card with OpenGL 1.5 or more updated support.

Transceiver software will work with less powerful PC with Core2Duo and Dual Core, but it will cause increased load level and it's not always good. The more powerful the PC the less resource the software will occupy and the easier and more colourful "waterfall" and panadapter will be painted.

OS must Windows XP 32/64bit or Windows 7 32/64bit.

Information about OpenGL support by video card can be got at the sellers when buying the PC.

Microphone or Telephone headset can be either of the simplest and cheapest as, for example, by Genius, or developed specially for radio amateurs by Heil Sounds.

On the transceiver front panel there is a usual 6,3 mm slot for electret microphone connecting. And also there is a jack, compatible with Yaesu PTT-switches of MH-31 type. This jack allows to connect PTT-switches of such popular transceiver as Yaesu FT-817/857/897 to transceiver.

Receiving/transmitting modes control is produced by pushing the PTT-footswitch (e.g. EE-PC-01), connected to "PTT" jack on the back panel of the transceiver.

Computer net LAN – cable performs transceiver connection to PC by ETHERNET-connection. PC connection is also possible "by air", via wireless net. The easiest and quickest transceiver connection to PC is by LAN-cable, supplied with the transceiver.

Antenna, tuned into radio amateur frequencies must have impedance close to 50 Ohm at those bands where work is planned.

2. Transceiver Ethernet-connection setting

There are several ways of transceiver connecting to PC.

Let's have a look at each in detail.

Connection by wire net connection is possible in 2 variants – direct connection to PC by wire Ethernet(LAN) interface and by already working local net via router.

Direct connection to PC by wire Ethernet(LAN) interface.

- Connect your transceiver to PC by LAN-cable, supplied with transceiver.
- 2) Switch on the transceiver.
- Set IP address in Windows XP or Windows Vista/7 as it will be showed in section 3 and section 4.
- 4) Launch ExpertSDR2 software and push «Start».

If you have already local net with IP address not **192.168.16.xxx** and you need to change IP address in SunSDR2.

- Connect your transceiver to PC by LAN-cable, supplied with transceiver.
- 2) Switch on the transceiver.
- Set static IP address in Windows XP or Windows
 Vista/7 as it will be showed in section 3 and section 4
- 4) Launch ExpertSDR2 software and push «Start».
- Change IP address in SunSDR2 as it is showed in section 5.
- 6) Connect transceiver by LAN-cable to local net..

Now at any PC in local net ExpertSDR2 software can be launched.

Transceiver connection by wireless interface.

In wireless variant of connection there are also two ways of connection – direct connection to PC in a "point-point"

mode and connection to WLAN access point, making wireless connection out of one or several computers.

Direct connection to PC via built-into transceiver WLANunit(without access point) as it is showed in Figure 2.1.

Standard 802.11n support with 150 Mbps data rate by wireless PC card is compulsory for connection. Data stream sampling rate recommended frequency from the transceiver is 39062,5 Hz in this case. This rate is set up in ExpertSDR2 software settings at **Options->SDR** tab.



Figure 2.1 – Direct wireless connection to PC

- 1) Switch on the transceiver.
- Push «L/W» (LAN/WLAN) at the back panel of the transceiver
- Wait till yellow led WLAN is lit on the front panel of the transceiver.
- Connect to SunSDR2 wireless net. Make sure that connection rate on wireless net is 150 Mbps or more.
- 5) Launch ExpertSDR2 software and push «Start».

Connection to PC or to the net by access point as it is showed in figure 2.2.



Figure 2.2 – Connection to PC by access point (router)

This scheme is used if you need to work with several devices by wireless connection or you have already wireless net, set according to your requirements. In this case you will need to change SunSDR2 transceiver IP address.

In this scheme computer is a WLAN access point (or Wi-Fi router) in Access Point (AP) mode, SunSDR2 WLANunit in AP Client mode.

If you have already WLAN net with IP address not 192.168.1.xxx and you need to change IP address in SunSDR2.

- 1) Switch on the transceiver.
- 2) Connect SunSDR2 by LAN-cable.
- Change IP address in the device as it is showed in section 5.
- Push «L/W» (LAN/WLAN) at the back panel of the transceiver.
- 5) Wait till yellow led WLAN is lit on the front panel of the transceiver.
- 6) Put SunSDR2 Wi-Fi unit into AP Client mode.
- 7) Launch ExpertSDR2 software and push «Start».

3. IP address setting in Windows Vista/7

 Push Start in the left lower corner in Windows and choose Control panel. There will be a menu, shown in figure3.1. In section Network and Internet choose Tasks and networks status scan.



Figure 3.1 – PC parameters settings window

 In the appeared window (view figure 3.2) choose Adapter parameters change.



Figure 3.2 – Viewing network data and connections settings window

3) Choose network connection with SunSDR2 connected to it as it is showed in Figure 3.3., then push the right button of the mouse on the icon and choose **Properties** in the drop down window.

Упорядочить • От	тключени	е сетевого устройства	Диагности	ка подключения	>>	- E 🔹 🗖	
Подключение	е по лока	льной сети					
Realtek PCIe G	BE F	Отключить					
		Состояние					
		Диагностика					
		Настройка моста					
		Создать ярлык					
	0	Удалить					
		Переименовать					
	۲	Свойства					

Figure 3.3 – Properties of connection by local net

4) In the new window put cursor on **Internet protocol** version 4 and push **Properties** (view Figure 3.4.).

📱 Подключение по локальной сети - свойства
Сеть Доступ
Подключение через:
Realtek PCIe GBE Family Controller
Настроить
Отмеченные компоненты используются этим подключением:
 Клиент для сетей Microsoft Планировщик пакетов QoS Служба доступа к файлам и принтерам сетей Micro Протокол Интернета версии 6 (TCP/IPv6) Протокол Интернета версии 4 (TCP/IPv4) Драйвер в/в тополога канального уровня Ответчик обнаружения топологии канального уровня
Установить Удалить Свойства Описание Протокол TCP/IP - стандартный протокол глобальных сетей, обеспечивающий связь между различными взаимодействующими сетями.
ОК Отмена

Figure 3.4 – Network settings properties window

Set IP-address 192.168.16.50 and subnet mask
 255.255.255.0 as it is showed in Figure 3.5. These parameters are spread to the network card of PC. Instead number 50 of IP-address you can set any number, except 255 and 200. Transceiver IP-address is 192.168.16.200 by default. After setting push OK. Here IP-address setting is over.

ойства: Протокол Интернета верс	ии 4 (ТСР/ІРv4) В 23
Общие	
Параметры IP могут назначаться ав поддерживает эту возможность. В IP можно получить у сетевого адни	ітонатически, если сеть противном случае параметры нистратора.
Получить IP-адрес автоматиче	2004
Оспользовать следующий IP-а	дрес:
IP-адрес:	192 . 168 . 16 . 50
Маска подсети:	255.255.255.0
Основной шлюз:	
Получить адрес DNS-сервера а	втоматически
 Оспользовать следующие адр 	eca DNS-cepsepos:
Предпочитаеный DNS-сервер:	
Альтернативный DNS-сервер:	
Подтвердить параметры при	выходе Дополнительно
	ОК Отмена

Figure 3.5 – IP-address setting window

4. IP address setting in Windows XP

 Push Start in the left lower corner in Windows and choose Control panel. Then Network and Internet connection. (view Figure 4.1.).



Figure 4.1 - Windows XP control panel

2) Choose Network connection (view Figure 4.2)



Figure 4.2 – Network connection choice

 Choose network connection with SunSDR2 connected to it, push the right button of the mouse on the icon and choose **Properties** in the drop down menu (view Figure 4.3).

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дрес: 🔕 Сетевые подключения				🖌 🄁 Пере
	^	ЛВС или высокоскорости	ой Интернет	
Сетевые задачи 🛞				
		Откли	0-ить	
подключения		Состе	ояние	
🚳 Установить домашнюю		Испра	вить	
сеть или сеть малого офиса				
😂 Изненить параметры		Hours	IONORINA THING HOLT	
oparighayspa windows		Созда	ть ярлык	
устройства		Удали	π	
BOCCTAHOBЛЕНИЕ		Перен	неновать	
подключения		Свойс	TRA	
Перенненование				
подключения	~			



 In the new window put cursor on Internet protocol version 4 and push Properties (view Figure 4.4.).

🕹 Подкл	иючение по локальной сети - свойства ?
Общие	Проверка подлинности Дополнительно
Подклю	очение через:
M 🕬	farvell Yukon Gigabit Ethernet 10/1 Настроить
Компон	енты, используемые этим подключением:
	Клиент для сетей Microsoft
	Служба доступа к файлам и принтерам сетей Місго Планировщик пакетов QoS
⊻ ъ	Протокол Интернета (ТСР/IР)
Уста	ановить Удалить Свойства
Описа	ание
Прот сете взаи	окол TCP/IP - стандартный протокол глобальных й, обеспечивающий связь между различными модействующими сетями.
✓ При Уве, подн	подключении вывести значок в области уведомлений домлять при ограниченном или отсутствующем ключении
	ОК Отмена

Figure 4.4 – Connection by local net properties window

5) Set IP-address 192.168.16.50 and subnet mask 255.255.255.0 as it is showed in Figure 3.5. These parameters are spread to the network card of PC. Instead number 50 of IP-address you can set any number, except 255 and 200. Transceiver IPaddress is 192.168.16.200 by default. After setting push OK. Here IP-address setting is over.

Свойства: Протокол Интернета (ТСР/IР) 🛛 🛛 🛛 🛛						
Общие						
Параметры IP могут назначаться автоматически, если сеть поддерживает эту возможность. В противном случае параметры IP можно получить у сетевого администратора.						
Получить IP-адрес автоматически						
 Использовать следующий IP-ад 	1Dec:					
IP-agpec:	192.168.16.50					
Маска подсети:	255.255.255.0					
Основной шлюз:						
 Получить адрес DNS-сервера а 	втоматически					
• Использовать следующие адре	eca DNS-cepsepos:					
Предпочитаемый DNS-сервер:						
Альтернативный DNS-сервер:	· · ·					
Дополнительно						
	ОК Отмена					

Figure 4.5 – IP-address setting window

5. Transceiver IP address change

 Launch ExpertSDR2 software and open settings menu Options -> SDR. Put the current transceiver IP-address in the field SDR Address, it's 192.168.16.200 by default. Settings window is showed in Figure 5.1.



Figure 5.1 – Transceiver current IP-address setting in ExpertSDR2 software

 Tick off Expert. Then in the field New IP Address put new IP-address, in our case it's 192.168.1.200, and push Set IP Address. After this action transceiver will be available by new address 192.168.1.200 (view Figure 5.2).

Cptions	- · · X
SDR Sound and DSP Tulkx CAT	E 🛷 🖶 💻 😨 🛓
Transceiver: SunSOR2 *	
SDR Address: 192.168.16 .200	2 Epert
SDR Port: 50001	New IP Address 192.168.1 _201 New Port: 50001 🗘 Set IP Address
Sample Rate: 39062.5 •	Power Correction:
Test SDR Info	160M 20,0 C 30M 20,0 C 12M 20,0 C
Deable audo output	80M 20,0 C 20M 20,0 C 10M 20,0 C
Use RX LPF filter	60M 20,0 C 17M 20,0 C 6M 20,0 C
VHF DIA	40M 20,0 C 15M 20,0 C 2M 10,0 C
Use bandscope for RX0	Frequency coefficient: 0,000000 C
Mici boost	Firmware update DUC out
	Default Read Write
Save Lond	Default Cancel Apply OK

Figure 5.2 – New IP-address setting in SunSDR2 transceiver

6. WLAN unit IP address change

WLAN unit IP – address by default is 192.168.16.254. In this part two examples how to change IP-address for 192.168.1.254 will be showed.

 Connect to SunSDR2 wireless net and enter in internet browser, for example Opera or Internet Explorer, address field the following line http://192.168.16.254. Then Login and Password input field will appear, as it is showed in Figure 6.1. In the appeared window we put user name admin, password admin, and push Send.

× Экспресс-панель	× 🕀 –	
/192.168.16.254/home.asp		
• Т- Автори	зуйтесь	
Сервер:	© 192.168.16.254	
Сообщение	WLAN-AP	
Имя пользователя:	admin	-
Паролы		
	Пароль будет передан незашифрованным	
Сохранить парол	•	Отправить Отмена

Figure 6.1 – User name and password input window

 Enter the menu Internet Settings -> System IP. For our example we give IP-address 192.168.1.254 to WLAN-unit. Default Gateway is 192.168.1.254 and push Save (View figure 6.2).

	WLAN G	ateway Module	
WLAN AP	It shows suggest	System IP Addre	ess Settings
Internet Settings	internet connection	IP Connection Type:	STATIC (fixed IP)
System IP setup information LAN User may choose DICP Clients VIN Config for suitable for vin Config for suitable for wireses Setting works Setting works Setting works Setting works Setting Serial Setting works Setting Setting Setting Setting Setting Setting Setting	setup information.	Static Mode	
	different connection	IP Address	192.168. 1.254
	type suitable for environment, Besides.	Subnet Mask	255.255.255.0
	user may also	Default Gateway	192.168. 1.254
	Primary DNS Server	8.8.8.8	
	selected connection	Secondary DNS Server	168.123.63.1
1	172-0.	IGMP Proxy	Enable - Group List
			Save

Figure 6.2 - WLAN unit IP-address input window

 Disconnect SunSDR2 net. Give static IP-address 192.168.1.1 to Wi-Fi card and connect again to SunSDR2 net. Now WLAN-unit is available by 192.168.1.254 address. Enter line http://192.168.1.254 into browser and enter the menu Internet Settings -> LAN. Here we should write network addresses range. For example we put them as it is showed in Figure 6.3 (outlined in red) and push **Save**.

	WLAN G	ateway Module		
WLAN AP Operation Mode Signature Settings System IP and user can set	It show local networking information	Local Area Netw	vork (LAN) Set	tings
	and user can setup the	IP Address	192.168.1.254	
DHCP Clients	function for user's	DHCP Server	Enable +	
Image: Weit Config Anabodic environments Image: Operation of the control operation operatio operatio operation operation operation operatio operation opera	network environments.	Start IP Address	192.168.1.11	
	Used.	End IP Address	192.168.1.50	
		Subnet Mask	255.255.255.0	
		Primary DNS Server	8.8.8.8	
		Secondary DNS Server	168.126.63.1	
		Lease Time	3600	
		Statically Assigned	MAC: IP:	
		Statically Assigned	MAC: IP:	
		Statically Assigned	MAC:	
			Save]



 Disconnect SunSDR2 net. Enter PC WLAN card properties and tick off «Get IP-address automatically» (View Figure 6.4). Then connect again to SunSDR2 net.

Свойства: Протокол Интернета верси	и 4 (Т	CP/IP	v4)		9	X	
Общие Альтернативная конфигурац	RN						
Параметры IP могут назначаться авт поддерживает эту возможность. В п IP можно получить у сетевого админ	гомати ротивн истрат	чески юм сл гора.	1, есл 1учае	и сеть парам	етры		
Олучить IP-адрес автоматичес	жи						
Использовать следующий IP-ад	pec:						
<u>I</u> P-адрес:							
Маска подсети:							
Основной шлюз:							
Получить адрес DNS-сервера ав	томат	ическ	СИ				
 Использовать следующие адре 	ca DNS	-серв	еров	_			
Предпочитаемый DNS-сервер:							
Альтернативный DNS-сервер:			•	•			
🔲 Подтвердить параметры при <u>в</u>	ыходе		Дог	юлнит	ельн)	
	((ОК		Отм	ена	

Figure 6.4 - IP-address automatic receiving setting

Expert Electronics

7. SunSDR2 WLAN – unit setting in AP Client mode

- 1) Set transceiver IP-address in access point local net range.
- 2) Connect to transceiver SunSDR2 via WiFi.
- Enter WLAN-unit settings <u>http://192.168.16.254</u> via internet browser. Login: admin, password: admin.
- In Operation Mode menu tick off AP Client and push Save (View figure 7.1)

	WLAN G	ateway Module
VILAN AP Comparison Mode Termet Settings Willess Settings Serial Settings Hennessettings Managements	It alowe current operation mode User can change operation mode for his own system purpose	<section-header><form><form><text><text><text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text></text></text></form></form></section-header>

Figure 7.1 - AP Client mode installation

 If everything is done correctly there will be a window as it is shown in figure 7.2. Wait till the countdown finishes.

	WLAN G	ateway Module					
WLAN AP Derration Mode D. Internet Settings D. Wireless Setting D. Serial Setting D. Managements	It shows current operation mode. User can change operation mode for his own system purpose.	Change setting successfully! Please wait a moment to let the new settings take effect, please wait 0 seconds					
Duo yuo Z Q Information window about avagageful							

Рисунок 7.2 – Information window about successful setting change

6) In Wireless settings -> WiFi Multi Bridge menu tick off Multi-Bridge Mode and in the channel stage drop down списке list set AutoSelect (View figure 7.3). Then push Search AP (access point search).

i ou oounu oonniguro		
	Wireless multi-bridge configuratio	n
	Operation Mode	WIFI is WAN Multi-Bridge Mode
	SSID	WIZARD-AP Search AP
	Frequency (Channel)	AutoSelect
	MAC Address (Optional)	
	Security Mode	WPAPSK .
	Encryption Type	AES -
	Pass Phrase	12345678
	-	Apply
		Operation Mode SSID Frequency (Channel) MAC Address (Optional) Security Mode Encryption Type Pass Phrase

Figure 7.3 – AP-Client mode setting

7) In the appeared window choose access point required and save Encryption and Authentication parameter. For our example (View figure 7.4) EE access point is chosen with the following parameters: Encryption: AES

Authentication: WPA-PSK

192.168.16.254/wireless/search_ap.asp								
Site Si	ation S	Site Surve	у	_	_		_	1
Select	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type	1
۲	EE	f8:d1:11:95:7b:47	100%	6	AES	WPA-PSK	In	1
EFKO_T 64:70:02:9f.4d:21 10% 1 AES WPA-PSK; WPA2-PSK In								

Figure 7.4 – Access point choosing

 Then in AP Client Feature window set additional Encryption and Authentication parameters for chosen access point. In Pass Phrase field enter net password. (View figure 7.5)



Figure 7.5 – Access point choosing Note: Password 12345678, shown in figure above is given as an example. It can differ.

8. Software interface description

In figure 8.1 there is a working software panel.

ExpertSDR				• × •
BX2 - OdB - PA Volume:	(I) Mon.	MON	Options -	About 🗖
MOX TONE EQ VAC SQL EBI	RF:	Drive:	Mic:	1
AM SAM DSB LSB USB CW NFM WFM SPEC	DIGL DIGU DRM 160M 8	0M 60M 40M 30M 20M 17F	1 15M 12M 10M 6N 2M 0.7M	CB GEN
888.888.888.000.000.0	00070	12,000		
Split Tx -> Rx Tx <- Rx Tx <-> Rx ◀ RTTY ▼ ♦ AGC: Slow ▼ Step: 10 Hz	BIN NR NB	NB2 ANF 1.89	2K 2.2K 2.5K 2.7K 2.8K 2.9K 3K	3.5K User
-90-				
-100-				
-110-				
-120- VFO: 7 048 60	9 Hz			
-130126.3 dBm				
- 14 Bis and Martin and Martin and Martin and Martin	alantication sub-configuration	and a second and a second and the se	manual processing the second	warder
7 040 000 7 050 000	7 060 000 7 070 000	7 080 000	7 090 000 7 100 000	7 110
1023x685 🖾 5% 👃 57.0 C° U:14.6V	18:46:	54 UTC	Вт 13 Ноябрь 2012 22	:46:54 LOC

Figure 8.1 – Basic transceiver software panel

3\4 of software panel size is spectrum analyzer panadapter field and "waterfall" field. Waterfall is a convenient function, allowing to watch the signal change dynamics with time.

1\4 of panel space occupy transceiver functions control buttons, settings parameters and transceiver status panels in the current situation.

Have a thorough look at buttons and power plants appointment:

Left upper button switches transceiver on and off. «Options» button opens general settings and preliminary parameters setting windows. (view Figure 8.2).



Figure 8.2 –General look of control panel with transceiver parameters and status

 In the middle and from the left side of the basic panel there are setting frequencies. In the middle of the panel there is basic frequency VFO-A, frequency VFO-B is from the left side written with less prominent letters . Next to «STEP» button you can choose frequency tuning step (view Figure 8.3).



Figurek 8.3 – Places on the panel, showing transceiver frequency tuning

 RX-TX and «SPLIT» buttons are responsible for switching VFO number and staggering (view Figure 8.4).

MOX T	ONE EQ	VAC	SQL	EiBi					RF
AM SA	M DSB	SB USB	CW	NEM \	WEM	SPEC	DIGL	DIGU	DRM
									m
Split	Tx -> Rx	Tx <- Rx	Tx <->	Rx					
• RITY	· ·	AGC: L	.ong 🔻	Step:	: 10 H	iz 🔻			E

Figure 8.4 – Places on the panel. responsible for frequency exchange between VFO-A and VFO-B

 In the control panel showed below, in Figure 8.5, there are band switching buttons. There is also quick CB band opening button - "CB" button and possibility to open general coverage - "GEN" button.





 In the place showed below, in Figure 7.6., there are buttons for choosing a type of modulation used. In the lower part of control panel one can set a type of filter used for the required modulation mode.



Figure 8.6 – Modulation type choosing buttons

 In the place showed below, in Figure 8.7, there are receiving signal band pass filter choosing buttons.
 For each modulation type one can choose required band pass or tune their own band pass by pushing «User»

				-	• x
1	MON		[Options 🔻	About 🗖
Drive:		N	lic1: 🔻		
30M 20M	17M 15M	12M 10	M 6M	2M 0.7M	CB GEN
-140 ()dBm	-100 -80	-60	-40 -20	0
. S0	S1 S3	S5 S7	S9 +20) +40	+60 +80
	1.8K 2K	2.2K 2.5K	2.7K 2.8	K 2.9K 3K	3.5K User

Figure 8.7 – Band pass filter choosing buttons

 In the place showed below, in Figure 8.8, there are special DSP buttons. They are noise reduction «NR», short time impulse noise blanker «NB» and «NB2» and carrier signal automatic notch filter «ANF». As a separate DSP function pseudo stereo reception "BIN" can be singled out.



Figure 8.8 – DSP – processing buttons

 The following buttons are functions of transceiver parameters operating control: volume control -«Volume»; microphone level - «Mic»; output power level - «Drive»; monitoring - «Mon»; HF manual amplification – RF. AGC rate is regulated by a separate field «AGC».(view Figure 8.9)



Figure8.9 – Basic transceiver statuses power plants

 In the place showed below, in Figure 8.10, there are rare use functions buttons shortcuts. They are SQL button, transmitting button - «MOX», virtual audio cables setting and equalizer menu.

By «TONE» button transceiver is put into transmitting mode and puts a carrier one.

«EiBi» button is now desactivated and reserved for future functions.

ExpertS	DR2 v0.01								
_ ტ	RX2 -	OdB	PA	v Ve	lume:				T
MOX TO	NE EQ	VAC	SQL	EiBi					
AM SAI	M DSB L	SB US	B CW	NEM	WFM	SPEC	DIGL	DIGU	D
Split	Tx -> Rx	Tx <- R	 Tx <-> 	Rx					
▲ RTTY	v Þ	AGC:	Long 🔻	Ste	p: 10	Hz 🔻			
-80-									
-100-									
-120-									



 In transceiver there is equalizer, activated by «EQ» button. It has separate settings for receiving mode (Receive) and separate settings for transmitting mode (Transmit). (view Figure 8.11)



Figure 8.11 – Equalizer parameters settings window

Equalizer window can be moved easily along the screen or can be fixed in a required panel place of transceiver software.

 Transceiver has two microphone jacks, chosen by pushing «MIC» button (view Figure 8.12). «Mic 1» is chosen when electret microphone is connected to the corresponded jack on the front panel of transceiver.
 «Mic 2» is chosen when Yaesu transceiver PTT – switch is connected. PC or laptop microphone headset can be used, chosen as «Mic PC».



Figure 8.12 – Microphone choosing buttons

 Attenuator on or preliminary amplifier is activated by corresponded button within -20 dB up to +10 dB with 10 dB step (view Figure 8.13)





Transceiver gives a possibility to watch simultaneously two radio bands and also receive signals simultaneously from two receivers.

For the second receiver activation push «RX2» button, next to software launching button (view Figure 8.14).





Operating controls arrangement and second receiver panel duplicate completely first receiver window. Receiver can be also put in different parts of the screen or even in two different monitors.

In figures below three possible configuration types of receivers windows are given.

 In Figure 8.15 horizontal arrangement of two receivers is showed. Such order is convenient if operator's work place equipped with one or better two big monitors by diagonal from 22" and more.



Figure 8.15 – Horizontal arrangement of receivers' windows

 In Figure 8.16 vertical arrangement of one receiver above the other is showed. Such arrangement is convenient when an old big monitor with 4:3 side correlation is used or a modern monitor is put vertically deliberately.

ExpertSDR		_
() RX2 ▼ 0dB ▼ PA Volume:	(I) Mon: MO	N Options 🗸 About 🗖
MOX TONE EQ VAC SQL EIBI RF:	Drive:	Mic:
AM SAM DSB LSB USB CW NFM WFM SPEC DIGL	DIGU DRM 160M 80M 40	4 30M 20M 10M 6M CB GEN ▼
0000.000.ccc.c	1100 mm n 🊆	
Split Tx -> Rx Tx <- Rx Tx <-> Rx		2 2K 2 5K 2 7K 2 8K 2 0K 3K 3 5K Hear
A KITT - A AGE LONG SEED, 20 TE - ONT		LIEN LIDN LIDN LIDN DA DIDN OUT
-80-		
-100-		
- 120 -		
7 085 000 7 090 000 7 095 000	7 100 000 7 105 000	7 110 000 7 115 000
	Drives	Mice
AM SAM DSB LSB USB CW NFM WFM SPEC DIGL	DIGU DRM 160M 80M 40M	4 30M 20M 10M 6M CB GEN 🕶
		.0dBm -100 -80 -60 -40 -20 0
Split Tx -> Rx Tx <- Rx Tx <-> Rx	<u>4.11111.000.0 so</u>	S1 S3 S5 S7 S9 +20 +40 +60 +80
	NR NB NB2 ANF 1.8K 2K	2.2K 2.5K 2.7K 2.8K 2.9K 3K 3.5K User
-80 -		
-100-		
-120-		
14 085 000 14 090 000 14 095 000	14 100 000 14 105 000	14 110 000 14 115 000
000-700 00 00 00 10/	10-17-54 UTC	D- 20 UE 2012 22
880X708 🖾 0% 🎍 Co 150	19:17:54 UTC	вт 20 нояорь 2012 23:17:54 LOC

Figure 8.16 – Vertical arrangement of receivers' windows

 In Figure 8.17 there is two receivers configuration when each of them is in their own window and can be moved easily along the screen.



Figure 8.17 – Two independent receivers' windows

Conclusion

This brief description of transceiver connection to PC and basic controls will allow you to master quickly this up-to-date transceiver, learn its work and broadcast quickly with it. More thorough description of all settings and capabilities will be described in the full user manual.

Wish you success in mastering SDR\DDC-radio!

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