VNWA 3 & 3E - Firmware 5.16 or 5.19 to Firmware 5.22 Upgrade procedures

This document shows a procedure how a VNWA 3 or 3E with current firmware 5.16 or 5.19 is upgraded to Firmware 5.22.

Firmware upgrades are either done when prompted by:

i) Automatic Firmware Upgrade – Wizard - see below:

ii) Manual Firmware Upgrade procedure - See Page 7 onwards

Both procedures are illustrated in this document.

Use the Manual Firmware upgrade procedure to restart a failed 5.21 to 5.22 firmware upgrade.

Prior to performing Firmware upgrade ensure you have:

- 1. Plug-in charger when using battery powered Laptop
- 2. Reduce PC activity by exiting all other Windows Applications
- 3. Unplug USB leads from PC which are not required for VNWA upgrade.

A. AUTOMATIC FIRMWARE UPGRADE - THE WIZARD

From VNWA software version VNWA35.5 on the VNWA firmware version will be checked automatically upon every program start, If the firmware requires an update, the software offers to start the automatic firmware upgrade wizard:

NOTIFICATION	20	X
Your firmware version v	5.19 is outdated.	
It is strongly recommend	led to upgrade your firm	iware.
Would you like to launch	the Firmware Upgrade	Wizard now?
	ОК	Cancel

Note that the wizard automatically guides you through the required steps to upgrade your firmware. The wizard also supervises your actions by checking if you follow its instructions and by disabling inappropriate controls.

Summarizing, doing a firmware upgrade with the wizard should be self explaining and perfectly safe.

If you agree to start the upgrade process, the wizard automatically copies the correct firmware into your VNWA, provided you have installed VNWA with the automatic self installer. In this case the software knows where to look for the firmware files. If these are not found at the expected location, you are asked to manually locate the firmware hex-file.

B. After pressing "**OK**", the wizard is started:



C. VNWA Flashing with 5.21 hex in progress – Monitor STATUS LINE on the bottow of this window

🛒 VNWA Firmware Upgrade Wizard	x
 Checking VNWA firmware. Test ok. Flashing VNWA with firmware VNWA_USB_V5.21.hex Observe the flashing progress in the STATUS LINE on the bottom of this window. 	
Flashing address 168016FF hex of 7DFF hex	

D. Flashing Complete. Now POWERCYCLE the VNWA by unplugging the VNWA USB Cable. Wait 5-8 seconds and press "OK"

ļ	VNWA Firmware Upgrade Wizard	ſ
	Firmware updated successfully. Now, disconnect your VNWA USB by unplugging the VNWA USB cable. Make sure there is no other VNWA connected either! When the VNWA is disconnected, then press OK.	
	OK	
F	lashing address 7D807DFF hex of 7DFF hex	

E. Now reconnect your VNWA and wait for Windows to detect it! (wait about 5-20 seconds) In event Windows does NOT detect this, then POWERCYCLE VNWA once more by removing the USB Lead, waiting 5-8 seconds and reconnecting the USB Lead again to the VNWA.

Press **OK** when VNWA is detected

R VNWA Firmware Upgrade Wizard	X
Now reconnect your VNWA and wait for Windows to detect it!	
Press OK when done.	
Flashing address /D&U/DFF nex of /DFF nex	<i>li</i>

SDR-Kits.net VNWA 3 -3E Firmware 5.21 & 5.22 upgrade procedures V1.0 Page 3

F. VNWA is now upgraded to v5.21.

Note: This is a **non-functional interim firmware** to enable upgrade to v5.22 firmware Press **"OK"** to proceed

R VNWA Firmware Upgrade Wizard
Firmware version v5.21 found.
Do you want to upgrade to firmware version v5.22 ?
Press OK to continue with the firmware upgrade or abort.
OK Abot
Elaching address 7D80, 7DEE her

G. Flashing firmware 5.22 in progress, Monitor STATUS LINE on bottom of this window.



SDR-Kits.net VNWA 3 -3E Firmware 5.21 & 5.22 upgrade procedures V1.0 Page 4

H. 5.22 Firmware updated successfully! Now unplug VNWA cable, wait 5-8 seconds and press "OK"

🛒 VNWA Firmware Upgrade Wizard
> Firmware updated successfully.
Now, disconnect your VNWA USB by unplugging the VNWA USB cable. Make sure there is no other VNWA connected either!
When the VNWA is disconnected, then press OK.
OK
Flashing address 7D807DFF hex of 7DFF hex

I. Reconnect VNWA USB Cable and wait 5-8 seconds and press "OK"

🛒 VNWA Firmware Upgrade Wizard	X
Now reconnect your VNWA and wait for Windows to detect it!	
Press OK when done.	
OK]	
Flashing address 7D807DFF hex of 7DFF hex	/

J. Firmware 5.22 up to date – Aborting Wizard.

Once the flashing process is completed, Once the flashing process is completed, you may need to close and restart the VNWA software"

🛒 VNWA Firmware Upgrade Wizard	X
VNWA Firmware 5.22 is up to date, aborting wizard. You may have to close and restart the VNWA software to reconnect! OK	
OK Abort Flashing address 7D807DFF hex	

END OF AUTOMATIC FIRMWARE PROCEDU

B. Manual Firmware upgrade procedure and recovery of firmware 5.21 to 5.22

This document shows the procedure how a VNWA 3 or 3E with current firmware 5.16 or 5.19 is upgraded to Firmware 5.22 using conventional method. It should also aid in the recovery of a VNWA which fails to connect after an upgrade to 5.21 but failed to upgrade to 5.22

 Plug in your VNWA and run up current VNWA Application which should be either version 36.4.0 or 36.3.0. Goto "Options", select "Setup" and "USB Settings" Press "Rescan USB Bus" and "Test USB Interface" and screen below is displayed.

R PC and Instrument Hardw	are Related Setup
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings
Rescan USB Bus Test USB Interface Verify Firmware Flash Firmware	bus/device idVendor/idProduct bus-0/\\libusb0-00010x20a0-0x4118 0x20A0/0x4118 -Manufacturer : www.sdr-kits.net - Product : DG8SAQ-VNWA 3.0 - Serial Number: None wTotalLength: 18 bNumInterfaces: 1 bConfigurationValue: 1 iConfigurationValue: 1 iConfiguration: 0 bmAttributes: 80h MaxPower: 150 bInterfaceNumber: 0 bAlternateSetting: 0
VNWA Energy Settings: Firmware Energy Settings OFF on power up	binterfaceClass: 0 binterfaceSubClass: 0 binterfaceProtocol: 0 iInterface: 0
ON if software started	
License Code:	EC.Electronics.test1:
Firmware V5.19 for AD9859:	Test passed without errors

2. Next select "Flash Firmware" and select firmware 5.21 from the list displayed

WWWA, USA	8_V5.22.hex	26/05/2014 17:48	HEIL File	
WWW.A_USI	8_V5.21.hex	27/05/2014 08:59	HER File	
WWWA_US	8_V5.19.hex	31/01/2013 21:50	HEX File	
WWWA_US	8_V5.16.hex	23/12/2011 20:47	HEX File	
WWWA, USA	8_V5.15.hex	29/12/2011 11:27	HEI File	
WWWA_US2	8_V5.11.bex	29/10/2011 15:20	HEK File	
WWWA_USA	8_V4.15.hex	18/09/2011 19:21	HEX File	
WWWA_USP	8_V4.7.hex	28/06/2010 20:52	HEX File	
WWIIIA, USA	8 V4.5.hex	06/03/2010 20:56	HEX File	
WWWA, USA	8_V4.3.hex	05/10/2010 09:55	HEK File	
Name		Date modified	Туре	Si
	Name WWWA_USI WWWA_USI WWWA_USI WWWA_USI WWWA_USI WWWA_USI WWWA_USI WWWA_USI WWWA_USI	Name VWIIIA_USB_V43hex VWIIIA_USB_V43hex VWIIIA_USB_V45hex VWIIIA_USB_V415hex VWIIIA_USB_V511hex VWIIIA_USB_V515hex VWIIIA_USB_V516hex VWIIIA_USB_V519hex VWIIIA_USB_V521hex VWIIIA_USB_V522hex	Name Date modified VWWA_USB_V43hex 05/10/2010 09:55 VWWA_USB_V43hex 06/03/2010 20:56 VWWA_USB_V45hex 06/03/2010 20:52 VWWA_USB_V415hex 18/09/2011 19:21 VWWA_USB_V511hex 29/06/2010 20:52 VWWA_USB_V511hex 29/10/2011 19:21 VWWA_USB_V515hex 29/12/2011 11:27 VWWA_USB_V515hex 29/12/2011 20:47 VWWA_USB_V516hex 23/12/2011 20:47 VWWA_USB_V519hex 31/01/2013 21:50 VWWA_USB_V521hex 27/05/2014 08:59 VWWA_USB_V522hex 26/05/2014 17:48	Name Date modified Type VWWA_USB_V4.3hex 05/10/2010 09:55 HEX File VWWA_USB_V4.5hex 06/03/2010 20:56 HEX File VWWA_USB_V4.5hex 06/03/2010 20:52 HEX File VWWA_USB_V4.5hex 18/09/2011 19:21 HEX File VWWA_USB_V5.11.hex 29/10/2011 19:20 HEX File VWWA_USB_V5.15.hex 29/12/2011 11:27 HEX File VWWA_USB_V5.16.hex 23/12/2011 20:47 HEX File VWWA_USB_V5.10.hex 23/01/2013 20:50 HEX File VWWA_USB_V5.21.hex 20/05/2014 08:59 HEX File VWWA_USB_V5.22.hex 26/05/2014 17:48 HEX File

3. Open and the 5.21 flash should now start as shown on STATUS LINE on the bottom of the screen below

R PC and Instrument Hardv	vare Related Setup
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings
Rescan USB Bus Test USB Interface Verify Firmware	 Checking VNWA firmware. Test ok: Flashing VNWA with firmware VNWA_USB_V5.21.hex: Observe the flashing progress in the status line on the bottom of this window.
VNWA Energy Settings: Firmware Energy Settings OFF on power up	
ON if software started	
License Code:	EC.Electronics.test1:
Flashing address 2A802AFF	hex of 7DFF hex

4. After a minute or so 5.21 flash is completed - Read the STATUS information on the screen below.

PC and Instrument Hardw	are Related Setup
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings
Rescan USB Bus	> Checking VNWA firmware. > Test ok.
Test USB Interface	> Flashing VNWA with timware VNWA_USB_V5.21.hex Observe the flashing progress in the status line on the bottom of this window. > Checking flash. This may take a few seconds.
Verify Firmware	> Firmware updated successfully.
Flash Firmware	Now, POWERCYCLE your VNWA USB interface e.g. by unplugging and replugging.
	After your PC has redetected the device, press "RESCAN USB BUS" to reestablish USB contact.
	Finally, you may press "VERIFY FIRMWARE" in order to check if the firmware has been updated properly.
VNWA Energy Settings.	
Firmware Energy Settings	
OFF on power up	
Software Energy Settings	
ON if software started	<u></u> /
License Code:	EC.Electronics.test1:
Flashing done!	

- 5. Now remove the USB Cable from the VNWA and wait 5 to 8 seconds before plugging the USB cable back into the VNWA. Wait again 5 seconds and Press "Rescan USB Bus"
 - a) If the VNWA is recognized as shown in fig 5 below. then proceed to Step 8.
 - **b)** If the VNWA is NOT recognized but displays a window "USB Device Not Recognized" as in fig 6. then proceed to Step 6

USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings
Rescan USB Bus	bus/device idVendor/idProduct bus-0/\\libusb0-0001-0x20a0-0x4118 0x20A0/0x4118
Test USB Interface	- Manufacturer : www.sdi-kits.net - Product :: DG8SAQ-VNWA 3.0 - Serial Number: None
Verify Firmware	wTotalLength: 18 IbNuminterfeces: 1
Flash Firmware	iConfiguration: 0 bmAttributes: 80h MaxPower: 150 bInterfaceNumber: 0 bAtternateSetting: 0 bNumEndpoints: 0 bInterfaceClass: 0 bInterfaceSubClass: 0 bInterfaceProtocol: 0 iInterface: 0
ON if software started	
License Code:	EC.Electronics.test1:

6. Once the flashing process is completed, you may need to close and restart the VNWA software" A second VNWA reset is needed. Remove the the USB Cable from the VNWA again and wait 5 to 8 seconds before plugging in the USB Cable from the VNWA. Wait another 5-8 seconds allowing the PC to reconnect to the VNWA and Press "Rescan USB Bus"



7. Once the screen below is displayed the VNWA is now flashed to firmware 5.21. This is a NON FUNCTIONING RELEASE. It will NOT recognize the VNWA license code It's purpose is only to prepare for the subsequent upgrade to firmware 5.22. Proceed to Step 8 to upgrade from firmware 5.21 to 5.22

PC and Instrument Hardware Related Setup			
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings		
Rescan USB Bus	bus/device idVendor/idProduct bus-0/\\\ibusb0-0001-0x20a0-0x4118 0x20A0/0x4118		
Test USB Interface	- Product : DG8SAQ-VNWA 3.0 - Serial Number: None		
Verify Firmware	wTotalLength: 18 bNumInterfaces: 1		
Flash Firmware	bConfigurationValue: 1 iConfiguration: 0 bmAttigutes: 80b		
<u>VNWA Energy Settings:</u> Firmware Energy Settings OFF on power up ▼ Software Energy Settings ON if software started ▼	MaxPower: 150 bInterfaceNumber: 0 bAlternateSetting: 0 bInterfaceClass: 0 bInterfaceSubClass: 0 bInterfaceProtocol: 0 iInterface: 0		
License Code:	EC.Electronics.test1:		
WARNING: DDSs are being overclocked outside the Analog Devices specification! You do that at your own risk!			

Flashing VNWA 3 3E firmware from 5.21 to 5.22

8. After 5.21 firmware is installed and VNWA is recognized on the PC press "**Flash Firmware**" and select VNWA_USB_V5.22.hex as shown. Press "Open" to select this file

JSB Settings Audio Settin	igs Audio Level	Look in:	📜 firmwares		-	← 🖻 😁 🖬 ▼		
Rescan USB Bus	bus/device bus-0/\\\lib	Ca	Name	•		Date modified	Туре	
Test USB Interface	SB Interface - Manufactu - Product - Serial Nur v Totallet bNuminte bConfigur i Firmware iconfigure	Inufactu oduct Recent Places rial Nur otalLer Infigure onfigure Desktop	VNWA_USE	3_V4.3.hex 3_V4.5.hex		05/10/2010 09:55 06/03/2010 20:56	HEX File HEX File	
Verity Firmware Flash Firmware			VNWA_USB_V4.7.hex VNWA_USB_V4.15.hex VNWA_USB_V5.11.hex		28/06/2010 20:52 18/09/2011 19:21 29/10/2011 15:20	HEX File HEX File HEX File		
bmAttribut MaxPowe binterfac bAlternat bNumEn binterfac binterfac	Libraries	VNWA_USE	3_V5.15.hex 3_V5.16.hex		29/12/2011 11:27 23/12/2011 20:47	HEX File HEX File		
	Computer	VNWA_USE	3_V5.19.hex 3_V5.21.hex		31/01/2013 21:50 27/05/2014 08:59	HEX File HEX File	1	
<u>NWA Energy Settings:</u> mware Energy Settings	binterface	Notwork	VNWA_USE	}_V5.22.hex		26/05/2014 17:48	HEX File	
)N on power up	-	Network	•		111			
N if software started	-		File name:	VNWA_USB_V5.22.h	ex		-	Open
cense Code:	EC.Electror		Files of type:	Intel hex files			•	Cancel

9. Flashing to 5.22 now in progress as shown on the status line on the bottom of the screen

PC and Instrument Hardware Related Setup			
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings		
Rescan USB Bus Test USB Interface	 Checking VNWA firmware. > Test ok. > Flashing VNWA with firmware VNWA_USB_V5.22.hex Observe the flashing progress in the status line on the bottom of this window. 		
Verify Firmware			
Flash Firmware			
VINWA Energy Settings:			
ON on power up			
Software Energy Settings			
ON if software started 🛛 💌			
License Code:	EC.Electronics.test1:		
Flashing address 1900197F	nex of 7DFF hex		
dia	Coffuero Espera / Coffinge		

10. Flashing to 5.22 completed. VNWA needs to be POWERCYCLED

🛒 PC and Instrument Hardw	are Related Setup
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings
Rescan USB Bus Test USB Interface	 Checking VNWA firmware. Test ok. Flashing VNWA with firmware VNWA_USB_V5.22.hex Observe the flashing progress in the status line on the bottom of this window.
Verify Firmware	 Checking flash. This may take a few seconds. Firmware updated successfully.
Flash Firmware	Now, POWERCYCLE your VNWA USB interface e.g. by unplugging and replugging. After your PC has redetected the device, press "RESCAN USB BUS" to reestablish USB contact.
	Finally, you may press "VERIFY FIRMWARE" in order to check if the firmware has been updated properly.
VNWA Energy Settings:	
ON on power up	
Software Energy Settings	
License Code:	EC.Electronics.test1:
Flashing done!	

Now POWERCYCLE the VNWA - Remove the USB Cable from the VNWA and wait 5 to 8 seconds before plugging the USB cable back into the VNWA. Wait again 5 seconds and Press "Rescan USB Bus" and the screen below should be displayed.

If this screen is **NOT** displayed, then **POWERCYCLE** VNWA a second time until screen below is displayed

PC and Instrument Hardw	vare Related Setup	x
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings	
Rescan USB Bus	bus/device idVendor/idProduct bus-0/\\libusb0-0001-0x20a0-0x4118 0x20A0/0x4118	-
Test USB Interface	- Product - DG8SAQ-VNWA 3.0 - Seriel Number None	
Verify Firmware	wTotalLength: 18 bNuminterfaces: 1	
Flash Firmware	bConfiguration/alue: 1 iConfiguration: 0 bmAtributes: 80h MaxPower: 150 bInterfaceNumber: 0 bAtemateSetting: 0 bNumEndpoints: 0 bInterfaceClass: 0	
VNWA Energy Settings:	binterfaceProtocol: 0	
Firmware Energy Settings	linterface: U	
ON on power up 💌		
Software Energy Settings		
ON if software started 📃		
License Code:	EC.Electronics.test1:	
WARNING: DDSs are being o	overclocked outside the Analog Devices specification! You do that at your own risk!	14

SDR-Kits.net VNWA 3 -3E Firmware 5.21 & 5.22 upgrade procedures V1.0 Page 12

12. Now check VNWA – press "Test USB Interface" The VNWA License code should be recognized if properly entered and the bottom line of the screen displays *Firmware 5.22 for AD9859: Test passed without errors.*

PC and Instrument Hardware Related Setup			
USB Settings Audio Settings	Audio Level Aux. Audio Level Instrument Settings Misc. Settings		
Rescan USB Bus Test USB Interface Verify Firmware Flash Firmware	bus/device id/Vendor/id/Product bus-0/\\libusb0-0001-0x20a0-0x4118 -Manufacturer : www.sdr-kits.net -Product : DG8SAQ-VNWA 3.0 - Serial Number: None wTotalLength: 18 bNumInterfaces: 1 bConfigurationValue: 1 iConfigurationValue: 1 bInterfaceNumber: 0 bAlternateSetting: 0 bInterfaceSus: 0 bInterfaceSus: 0 bInterfaceSus: 0 bInterfaceSus: 0		
VNWA Energy Settings:	binterfaceProtocol: 0		
Firmware Energy Settings			
ON on power up 💌			
Software Energy Settings			
ON if software started 🛛 💌			
License Code:	EC.Electronics.test1:		
Firmware V5.22 for AD9859:	Test passed without errors		

END of Manual Firmware upgrade procedure.