# Setting up the RF kit for VNC screen transmission and TCI frequency data transmission with Thetis

#### Preliminary information to understand the client/server setup with VNC and TCI:

- Transfer RF-Kit desktop to PC desktop via VNC protocol: The RF-Kit acts as a VNC server that is operated by a PC with any VNC client software. Therefore, the IP address of the VNC server (IP of the RF-Kit) must be entered in the client software on the PC.
- 2) Band/frequency data to RF-Kit via TCI protocol: The Thetis PC acts as a TCI server and the RF-Kit retrieves the frequency/band data from the TCI server as a TCI client. The IP address of the TCI server (Thetis PC) must therefore be entered in the RF-Kit (client). Your own PC IP address is also stored in Thetis.

To simplify matters, a static IP address should be configured for both the PA (RF kit) and PC (Thetis):

The RF-Kit and the Thetis computer are connected via a router using DHCP and both devices must be assigned fixed IP addresses in the router. For example, in the FritzBox, "Always assign the same IPv4" must be activated for both devices (i.e. RF-Kit and Thetis PC) under Network (see image).

Adressen im Heimnetz (I	P-Adressen) 🔺
Gerätename im Heimnetz	RF-Kit
IPv4-Adresse	192 . 168 . 178 . 109 zuletzt genutzt am 08.11.2023, 08:01 Uhr
IPv6-Adressen	fe80::720f:b70:a191:561c
	2002:5fdf:d9b3::8fa3:2218:aa18:b0d3
IPv6 Interface-ID	:: 8fa3 : 2218 : aa18 : b0d3

## 1) Set up VNC client for interface control on a Windows or Linux system

Once you have ensured that the PC with Thetis and the RF-Kit receive the same fixed IPv4 address each time they are restarted, you can start setting up the VNC client. The IP address of the PC and the RF-Kit should be memorised. Then enter a port and a password in the RF-Kit menu under VNC Config (remember both):

Settings	Antennas	Update	Calibration	Network	Interface	
VNC Conf	ig LAN	WiFi				
		Dant	5000			
	1	FOIL	- 3700	<b>T</b>		
	Change Pass	word	N			
New Passw	Change Pass	word cters) *****	**			
New Passw	Change Pass ord (>= 6 chara	cters) ****	••			
New Passw	Change Pass ord (>= 6 chara	cters) ****	**			
New Passw	Change Pass /ord (>= 6 chara	cters) *****	•*			
New Passw	Change Pass	cters) *****	**			
New Passw	Change Pass	cters) *****	×.			

On the PC, I use the VNC client software VNC Viewer, which I have had the best experience with. After installation, we start the VNC Viewer and set up a new connection under File - New connection – Properties.

vive viewer			Eigenschaften		- U	×	
Ansicht Hilfe			Ilgemein Optionen Experte				-
Neue Verbindung	Ctrl+N	er sucher	optionen Experte				elden
Anmelden			•			1	
Umbenennen	F2						
Löschen							
Duplizieren	Ctrl+D						
Eigenschaften	Alt+Enter			$\overline{\wedge}$			
Verbindungen importieren							
Verbindungen exportieren			VNC Server: IP-Adresse oder	Hostname			
Offline-Lizenz anwenden							
Einstellungen			Name: Anzeigebezeichn	.er			
-			Bezeichnungen				
Beenden			Um Bezeichnungen zu schad	hteln, trennen Sie die Namen	mit		
			einem schrägstrich (/)				
		Ibr Adı	Geben Sie einen Bezeichnun	gsnamen ein oder drücken Si	e auf die		
		III Au					
	Melden Sie sich	bei Ihrem R	Sicherheit				
Oder geben Sie o	die IP-Adresse bzw	. den Hostn	Verschlüsselung: VNC S	erver trifft Auswahl	~		
			Authentifizierung mit ein möglich	maligem Anmelden (SSO) – si er Smartcard oder einem	ofern		
			Zerunkatspeicher – sorer	moglicn			

Here we enter the IP of the RF-Kit and the port. Next to Name, enter RFKit (pay attention to the spelling). The entry "VNC server meets selection" remains next to Encryption. Then click OK.

	tionen	
VNC Server:	192.168	3.178.109::5900
Name:	RFKit	
Um Bezeic einem Sch	chnunger nrägstrich	n zu schachteln, trennen Sie die Namen mit (/) ezeichnungsnamen ein oder drücken Sie auf die
Geben Sie	e emen be	
Geben Sie	e enten be	
Geben Sie Sicherheit	elung	VNC Server trifft Augushi
Geben Sie Sicherheit Verschlüss Zhuther möglic	elung: htifizierun	VNC Server trifft Auswahl ~

You should now see an RFKit box in the VNC Viewer window.

Double-click on it to open the authentication window and enter the password assigned in the RF-Kit and activate "Save password". Then click OK.

by RealVNC VNC Server-Ac	resse eingeben oder suchen	Anmelden
	RFKit - VNC Viewer - X	
RFKit	Authentitizerung bei VNC Server 192.168.178.109:5900 (TCP)   VNC Server-Ammedianformationen eingeben (Hinweis: NICHT Ihre Real/VNC-Kontodsten)   Benutzername:   Kennwort:   Weise   Kennwort speichern   Kennwort speichern   Schlagwort:   Freib gate export. Organic jaguar cola.   Signatur: b7-a5-f2-28-2c-52-9e-18   OK Abbrechen   Beenden	
	Beenden	

Now you can start the VNC client by double-clicking on the RFKit icon and the interface should now appear on your PC screen as on the PA itself and can also be operated with the mouse. **That's it!** 

#### TIPS:

The VNC client window size can be set with the right mouse button on the RFKit entry and there under Options. Here is the example with 75%:

V2 VNC Viewer				- 🗆 🗙
Datei Ansicht Hilfe	RFKit – Eigenschaften —		×	
VNC CONNECT by RealVNC VNC Server-Adresse einge	Allgemein Optionen Experte		_	Anmelden
	Allgemein Bildqualität: Automatisch	~		
RFKit	Skalierung			
	75%	~		
	Seitenverhältnis beibehalten			
	Tasten		1	
	□ Tasten "Lautstärke erhöhen"/"Lautstärke senken"/"Stummschalten" direkt übergeben an VNC Server deinentasten, wie z. B. "Wiedergabe" und "Anhalten", direkt übergeben an VNC Server Sondertasten direkt an VNC Server übergeben			

If the main window of the VNC client - which is now no longer required - is disturbing on the desktop, you can activate "VNC Viewer may be closed" under File - Settings - Display. The main window of the VNC Viewer can then be closed after the VNC connection.

by RealVNC Server-	Adress Anwendungseinstellu	ngen	- 0	× elden
RFKit	Datenschutz Darstellung Drucken Proxy Aufzeichnung Problembehandlung Experte	VNC Viewer darf geschlossen werden, alle aktuelle bleiben jedoch aktiv	en Verbindungen	
		ОК АЬЬ	rechen Übernehi	men

### 2) Setting up the TCI protocol between the RF kit and Thetis

In the RF kit, activate TCI under General:

Jerrings	Anten	nas	Update	Calibration	Network	Interface	
General	CAT	UDP	тсі				
Default o	perational	l interfac	e				
OU	NIVER	SAL					
O CA	٩T						
	DP						
<u></u> Т							
0							

Under TCI, enter the IP address of the TCI server (computer with the Thetis installation) and a port. Then exit the menu again with Save:

Settings	Antenr	nas L	Jpdate	Calibration	Network	Interface	
General	CAT	UDP	тсі				
		Но	st				
				192.168.17	8.53		
		Po	rt	- 40001	+		

In Thetis under Setup - Serial/Network/MidiCAT - Network, the IP address of the Thetis PC and the port must be entered under TCI Server in exactly the same way as in the RF kit. The TCI server must be activated at the bottom left before Server Running:

eneral	Audio	Display	DSP	Transmit	PA Settings	Appearance	Keyboard	Serial/Netw	ork/Midi CA1	Tests		
erial	Network	MIDI	Options	User Int	erface Andr	omeda						
TCI B Rat	Server (1 ind IP:Port te Limit (n Send ir Use R) Use R) Duplica CWL/C Emulat Emulat	clients) rt 192. ns) 100 nitial VFCa ate RX2 \ WU becc e Experts a SupSD	168.178.5 ) state on for RX2 V /FOb to F omes CW SDR3 pro	53:40001 Def connect ( VFOa (in+ RX2 VFOa (out) ptocol	(out) (out)		- TC	P/IP CAT Ser Bind IP:Port Send ver Server Si MM+ Waterfa Enable R	ver (0 clients) 192.168.178 rision on client <b>Running</b> tow Log IlBandmap	.53:13013 t connect dB s 0.30	Def	IPv4
6	Show T Max Spot Li Serve	CI Spots Spots : fetime : Own ( <b>r Runnin</b> Show Log	100 10 Call Appe g	<ul><li>➡ mins</li><li>➡ marance</li></ul>				Enable R Send UDP to Send Rate	×2 : 192.168.17 : 5 \$	0.30	Def	IPv4

Finally, on the RF kit, make sure that TCI is displayed at the top right (above the red arrow), as shown here in the picture. If it says something else such as UNIV or CAT, click on it until TCI is displayed in green.

🔞 RFKit (raspberrypi) – VNC Viewer			- 🗆 🗙
Forward		7200 kHz	тс
┃ 0 40 80 120	160 (0 W / 336 W)	Segment-Size: 25 kHz Adjustment ok! 7192 kHz	AUTO
Reflected			
0 5 10 15			1
SWR	(0 W / 4 W)		
	Вур	oass Reset Tuner	Store
1 1.5 2 3	5 00		
	(1.00 / 1.18)		
DIPOL 40 m BEA	M DUMMY	Reset	
Band: 40m 25.5 °	C 53.5 V Menu T	Tune	Standby
B26 RF2K-S	www.dk1wp.de	(RF-KIT PA Version G141C185 © 20	019-2023 by RF-KIT)

#### That's it!

If you have followed my instructions above in detail, you should be able to operate your RF-Kit with the VNC Viewer on your screen and at the same time the frequency and band data should also run synchronously on the RF-Kit via the TCI interface.