





WinLink 2000

**Global Radio E-Mail System for
EmComm usage**



Example of EmComm usage

- **Rescue of the *Bounty* by WinLink**



Destruction during Hurricane Sandy 140 km east of USA-eastcoast, Fall 2012



Example of EmComm usage (II)

- Distress call via Maritime mobile Net (HF) and satellite phone failed
- Cpt. Robin Walbridge, KD4OHZ sent an E-Mail to US Coast Guard via PACTOR on HF (WinLink)
- 14 out of 16 crew members were rescued
- KD4OHZ and another crew member lost



Example of EmComm usage(III)

- Hurrican Cathrina 2005
- Amerikan Red Cross and Hams established a HF Network (HFLink) in split mode
- Mode: **Automatic Link Establishment** (MIL STD 181-141 + 188-110)





Requirements of digital modes for EmComm

- Communication with non-ham stations (AtC, AtA) → E-Mail, SMS etc.
- Asynchron Communication
- Availability independent of QTH (global)
- Internet connection to adress non-hams
- Balance robust/fast/cheap
- Less Hardware requirements as possible
- Error free (error correction)



Requirements of digital modes for EmComm (II)

- easy to handle (intuitiv)
- Interoperability
- Adaption of international standards (eg. WRC)
- Redundant and decentral network structure

- WinLink 2000



- jPSKmail



- SCSmail



- RFSM 2400/8000

RFSM2400



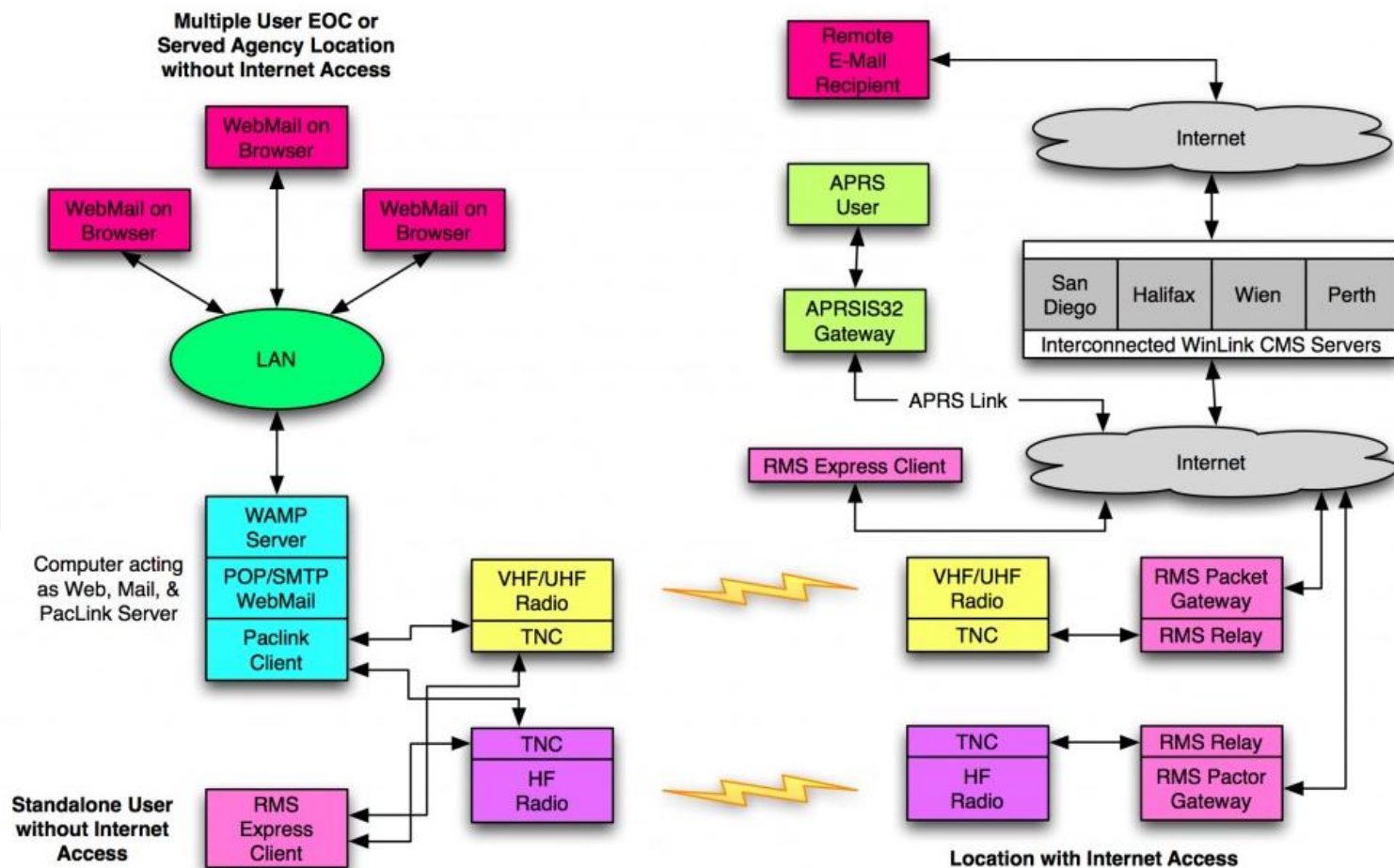
- WinLink 2000 - E-Mailnetwork for **hams** and **sailors** (HF/VHF/UHF); call@winlink.org
- global availability (established infrastructure)
- Redundant and synchron CMS (failsafe through intercontinentally redundancy)
- Error correction procedures
- Bulletins (e.g. weather, keps, broadcasts)
- different modes (interoperability):
PACTOR, WINMOR, ALE, PR, D-STAR, (HamNet)

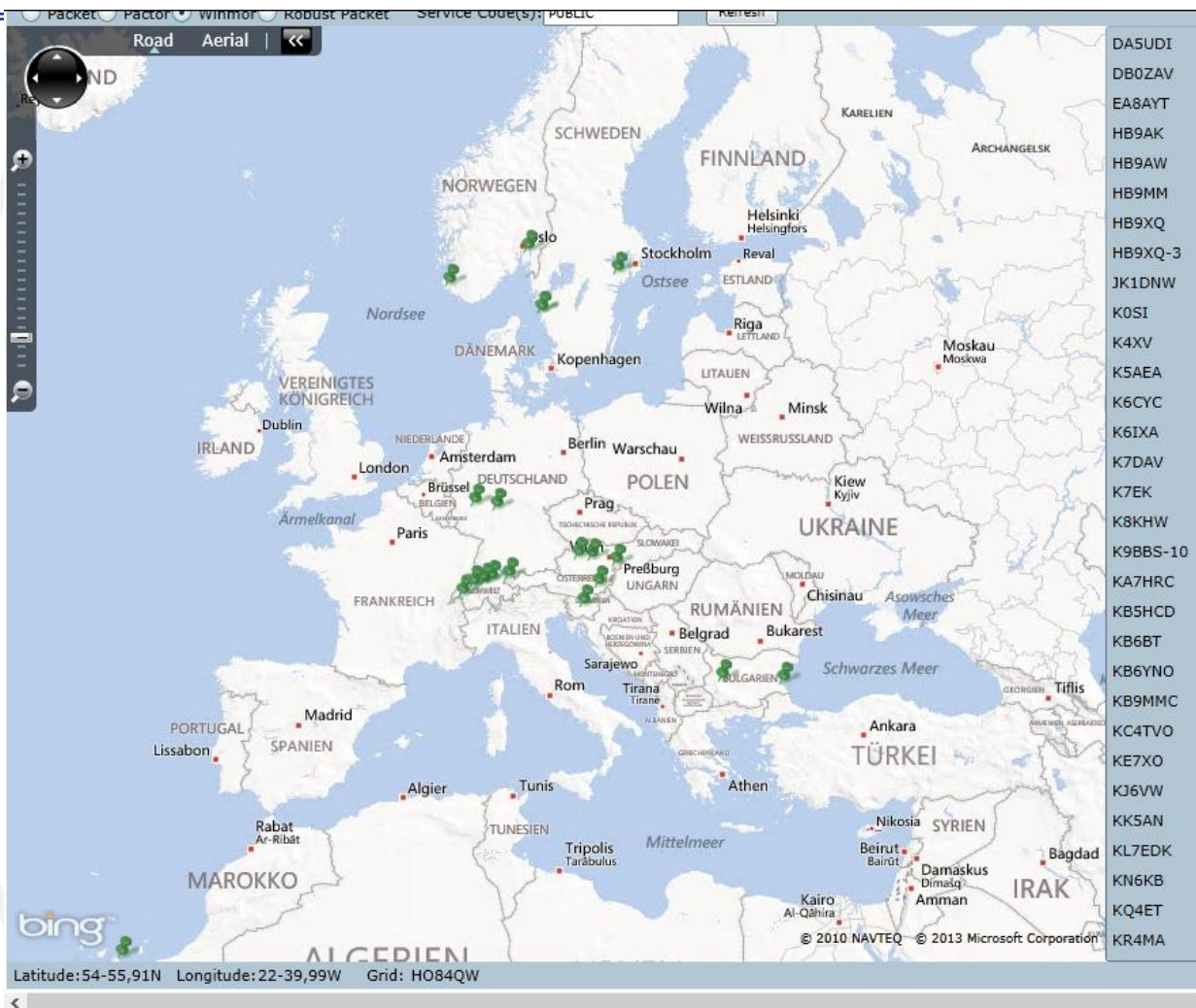


- robust soundcard modes (WINMOR, PR)
- high data transfer rates (PACTOR III and IV) up to 25 kbytes/Min @2,4kHz on HF
- File-recovery
- Peer-to-Peer (P2P)
- Automatically forward via HF if internet loss occurs (ROWN)



WinLink Topology







HF Channel Selector									
Exit Select Update Table Update Table Via Radio SFI All RMS									
Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
DB0ZAV	14092,900	500	JO40JF	09-14	PUBLIC	11	033	100	100
DB0ZAV	7048,900	500	JO40JF	00-08	PUBLIC	11	033	100	100
DB0ZAV	7049,900	500	JO40JF	15-17	PUBLIC	11	033	100	100
DB0ZAV	3598,900	500	JO40JF	18-23	PUBLIC	11	033	100	100
IQ4VU-5	7042,500	1600	JN45UA	00-23	PUBLIC	575	172	100	63
HB9XQ-5	7047,500	500	JN36PV	00-23	PUBLIC	376	197	100	60
HB9XQ-5	7058,000	1600	JN36PV	00-23	PUBLIC	376	197	100	60
HB9AK	7051,500	1600	JN47FE	00-23	PUBLIC	329	183	100	60
SK6PS	7053,500	1600	JO57UQ	00-23	PUBLIC	860	012	100	60
SK6PS	10146,500	500	JO57UQ	00-23	PUBLIC	860	012	100	57
SM0TSC	10145,500	500	JO99CF	00-23	PUBLIC	1176	027	100	54
SM5RVH	10142,000	500	JO88LQ	00-23	PUBLIC	1086	026	100	53
LZ1PKS	10145,900	1600	KN12QP	00-23	PUBLIC	1395	121	100	52
LZ1PKS	10139,500	500	KN12QP	00-23	PUBLIC	1395	121	100	51
LZ1PKS	14111,900	1600	KN12QP	00-23	PUBLIC	1395	121	99	47
RZ3DHN	14105,300	1600	KO94AV	00-23	PUBLIC	2035	064	99	46
RZ3DHN	14098,300	1600	KO94AV	00-23	PUBLIC	2035	064	99	46

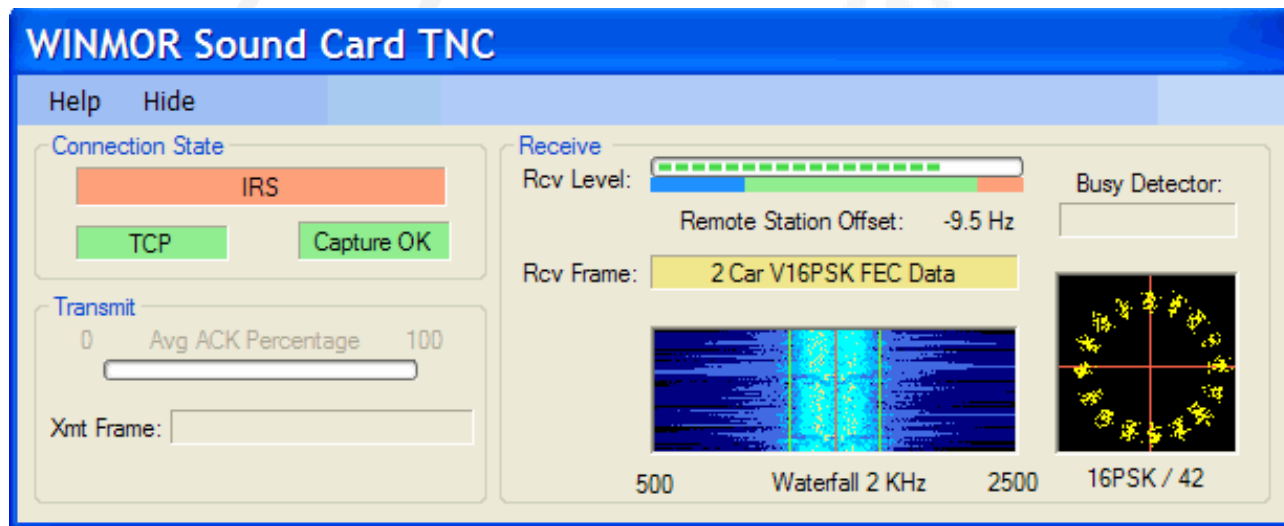


HF-Betriebsarten

- **WINMOR**
 - Sound card FSK and PSK 500/1600Hz
- **PACTOR I-IV (J2B)**
 - TNC-based FSK, DQPSK and QAM
- **Automatic Link Establishment (USA MIL-STD)**
 - soundcard 8FSK @2kHz



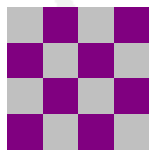
WINMOR



Need:

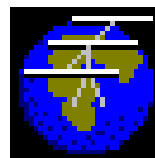
- SSB-Transceiver with VOX or CAT
- PC + Soundcard
- Soundcard interface

Software:



RMS Express

OR



Airmail



BPQ32



- WINMOR (***WinLink Mail over radio***)
- OFDM (Orthogonal Frequency Division Multiplexing) modulation @ 500Hz and 1600Hz
- **500 Hz:** BW 2 carriers 46.875 Baud 4FSK or 93.75 baud PSK at TCM 4PSK, 8PSK or 16PSK
- **1600 Hz:** BW 8 carriers 46.875 Baud 4FSK or 93.75 baud PSK at TCM 4PSK, 8PSK or 16PSK
- Fehlerschutz: CRC, (RS)-FEC, Viterbi, ARQ

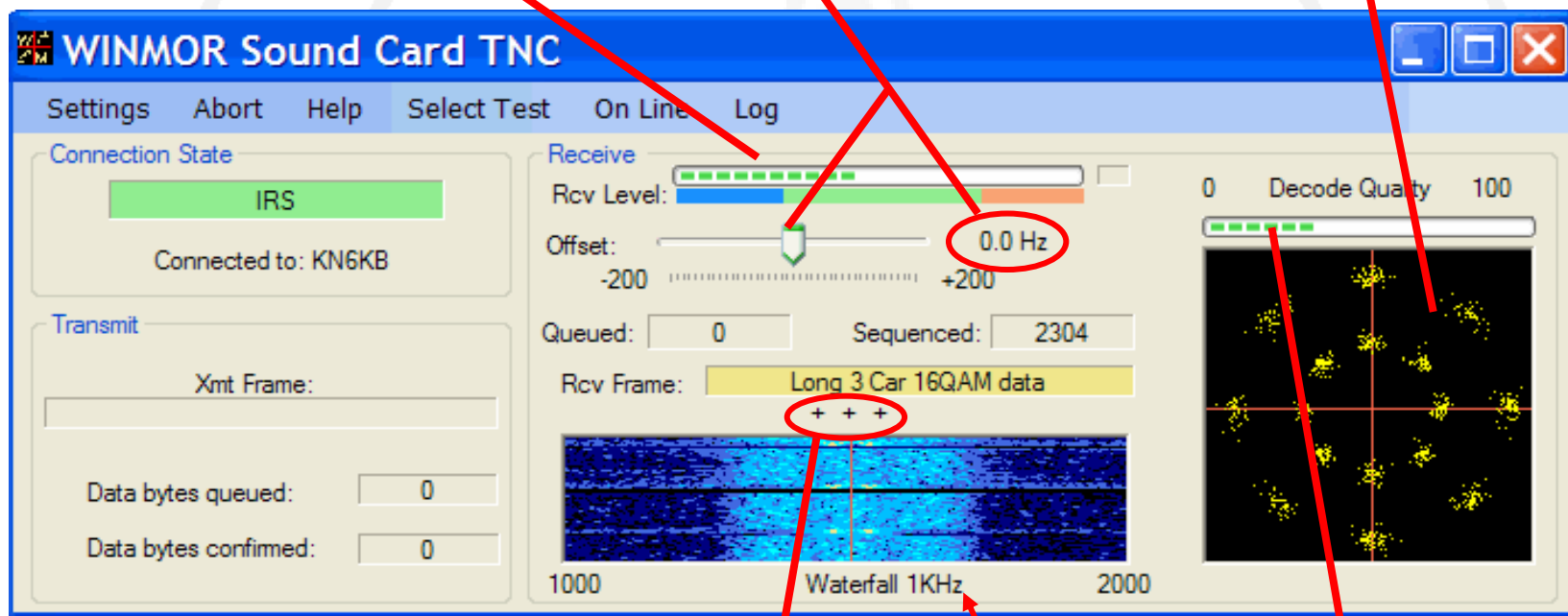


WINMOR TNC (Example 15 Car QPSK)

Receive Level

Tuning Offset

16QAM Circular Constellation
(White Gaussian Noise @ 5dB)
Each pixel = 1 symbol



"+" 3 Carriers
decoded OK

Relative decode Quality
1 KHz waterfall



- **Advantages:**

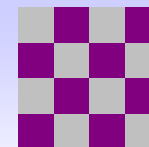
- Cheap (no need of expansive TNC)
- Little setup, little weight:
QRP-Transceiver (5W)+ NVIS/Lngw-Antenne + Netbook
+ 12V/12Ah accumulator (buffered flexible solar panels)
- 500Hz modus garants robust Connection during QRM
- 1600Hz garants fast data throughput (need +6db S/N)

- **Disadvantages:**

Not appropriate for large files (>20kb)



- OE7/DK3CW/P
- FT-817ND, 5W
- Self made soundcard interface
- Netbook 1,1 GHz Dualcore, 2GB RAM, OS Windows XP
- 30m end-fed longwire, 6m abt. the ground
- 12V/12Ah accumulator
- QTH: A Valley in Tirol OE7
- ODX: OH4 on 40m by 2 Car 4FSK@500Hz
- Max. data throughput:
- DH2LC on 30m mit 8 Car 16PSK (=max. 1300Bit/s)



RMS Express

RMS Express 1.2.8.0 - DK3CW/OE

DK3CW Files Message Attachments Move To: Saved Items Delete Open Session: Winmor

In Winmor WL2K session...

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient
Inbox	2013.01.01 10:19	4RTO5L0S81NM	2672	SMTP	SMTP:query-repl...	DK3CW
Read Items	2013.01.01 09:14	6ZQE7JZ3GGB3	759	OE7FTJ	OE7FTJ	DK3CW
Outbox	2013.01.01 09:13	39VM7ZYI8ID	398	System	SERVICE	DK3CW
Sent Items	2013.01.01 09:13	60VV564NVPZ2	352	System	SERVICE	DK3CW
Saved Items	2013.01.01 09:13	1MZN1ULVYHWH	318	OE7FTJ	OE7FTJ	DK3CW
Deleted Items	2012.07.26 07:27	A99DN1HS008Q	535	OE7FTJ	OE7FTJ	DK3CW
Drafts	2012.07.26 07:27	01KF85TBR568	1058	DJ9OZ	DJ9OZ	DK3CW
Personal Folders	2012.07.24 19:02	82B1NR38OZF	4082	SMTP	SMTP:query-repl...	DK3CW

Message ID: 6ZQE7JZ3GGB3

WINMOR Sound Card TNC Ver:1.4.4.0 Port:8500 DK3CW / OE5XIR-5

Help Hide Send ID

Connection State: IRS TCP Capture OK

Transmit: 0 Avg ACK Percentage 100 Xmt Frame:

Receive: Rcv Level: Remote Station Offset: -4.5 Hz Rcv Frame: 8 Car 4FSK FEC Data

Waterfall 2KHz 500 2500 4FSK / 44

SNR, short path to OE5

1600 Hz bandwidth: (Faster but requires approx 6 dB stronger signal and may be restricted to certain sub bands)

Most Robust: 2 Car 4FSK, 2 Car 4PSK, 8 Car 4FSK, 8 Car 4PSK, 8 Car 8PSK

Fastest: 8 Car 16PSK

In addition the host application (e.g. RMS Express) can send a command to the WINMOR TNC

Winmor Winlink 2000 Session - DK3CW

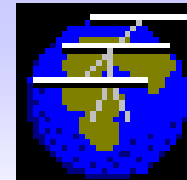
Exit Setup Switch to Peer-to-Peer Session Channel Selection Show/Hide TNC Start Stop Abort

OE5XIR-5 Center Freq. (kHz): 3605,500 Dial Freq. (kHz): 3604,000 Bearing: 063

Favorites: DH2LC @ 10145,600 (0) Select Add to favorites Remove from favorites

1600 In:0/1927 Out:0/3782 BPM:1296/519 Tune: -5 Connected - In receiving state

K O
Bre5 >
Removal of MID 'O' completed.
Brentwood CMS via OE5XIR-5 >
:FW: DK3CW
:PR: 81838413
:OE5XIR-5 DE DK3CW/OE (JN67EP)
FC EM S2E91Q9JX73A 1451 1008 0
FC EM 1HUXVJC2R14A 5499 1103 0
FC EM 605XXW30EWYU 1991 1264 0
F> B6
FS YYY
*** Sending S2E91Q9JX73A...
*** Sending 1HUXVJC2R14A...
*** Sending 605XXW30EWYU...
FC EM RGAHJEXM0K2T 22454 4624 0
*** Completed send of message S2E91Q9JX73A...
*** Completed send of message 1HUXVJC2R14A...
*** Completed send of message 605XXW30EWYU...
F> E0
FS Y
*** Receiving RGAHJEXM0K2T



Airmail

AirMail - [2YPKQDQWL3WT.msg]

File Edit View Message Tools Modules Window Help

From: query-reply@saildocs.com
To: DK3CW

BPQ Hostmodes Version 1.1.8.1

COM Streams Applmask Mode RTS CTS DCD DSR DTR

☒ Virtual COM20 [20] [1] [1] ☒ Kant ☐ DED ☒ ☒ ☐ ☒ ☒

☐ Use Real COM Ports Close after connect fail delay [10] Add Entry Save Settings

HB9XQ-5.WINLINK, Viktor Colombo/HB9XQ, [JN36PV: Neuenegg, Bern],
E colombo@bluewin.ch
H hb9xq.ch
A Neuenegg, Bern
- 3619.0 7047.5 7058.0

HB9XQ-6.WINLINK, Viktor Colombo/HB9XQ, [JN36PV: Neuenegg, Bern],
E colombo@bluewin.ch
H hb9xq.ch
A Neuenegg, Bern
- 14117.5

IK00XK-5.WINLINK, luciano/IK00XK, [JN61JR: LARIANO, RM], (Wed, 06 Mar 2013 13:11:00 GMT),
E lumarte01@libero.it
A LARIANO, RM
- 7045.0

IQ4VU-5.WINLINK, C.E.R. Piacenza Association/IQ4VU, [JN45UA: Piacenza, Emilia Romagna],
E cer.pc@alice.it
H www.cerpc.it
A Piacenza, Emilia Romagna

WINMOR Sound Card TNC Ver:1.4.6.0 Port:8500 DK3CW / HB9XQ-5

Help Hide Send ID

Connection State
IRS
TCP Capture OK

Receive
Rcv Level: [Bar Graph]
Remote Station Offset: -2.0 Hz
Rcv Frame: 8 Car V8PSK FEC Data
Busy Detector
Squelch: [5]

Transmit
0 Avg ACK Percentage 100
Snt Frame:

Waterfall
Spectrum
Disable
500 Waterfall 2KHz 2500 8PSK / 38

Packet Client

Connect to: HB9XQ-51 WINMOR Connect As: DK3CW

RMS Trimode 1.1.12.0 *** WINLINK BERN ***
DK3CW has 120 minutes remaining with HB9XQ-5
{SFI = 118 on 2013-03-06 11:00 UTC}
[WL2K-2.7.6.2-B2Fw/HJM\$]
.PQ: 10685715
Perth CMS via HB9XQ >
[AirMail-3.4.062-B2FHIM\$]
.PR: 77527155
HB9XQ-5 de DK3CW (J040d)
FF
FC EM 7B8YU5THS3J 83119 82049 0
P> 82
PS 145750
Receiving 7B8YU5THS3J 'http://www.blids.de/spion/bilder/akt/kartegergrau.jpg'...

Tx Data 0/0 Rx Data 58573/82049 bytes

Auto check
☐ Check every [01] minutes at [00] minutes after

BPQ32 Console

Window Actions

Flq	Callsign	Program	RX	TX	MON	App	Flq	Callsign	Program
0		BPQHostModes.exe	2*	0	0	1	2	DK3CW	BPQHostModes.exe
80		bpq32.exe	4	0	0	0	0		
0			6	0	0	0	0		
0			8	0	0	0	0		
0			10	0	0	0	0		
0			12	0	0	0	0		
0			14	0	0	0	0		
0			16	0	0	0	0		
0			18	0	0	0	0		
0			20	0	0	0	0		
0			22	0	0	0	0		

(Wed, 06 Mar 2013 13:11:00 GMT)

GMT)

14:58:01 utc

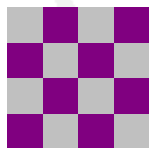
PACTOR I-IV

Need:

- SSB-Transceiver with data jacket
- PC + RS232/USB
- PACTOR-Controller (PTC/TNC)

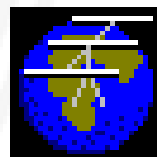


Software:



RMS Express

OR



Airmail

OR



Paclink



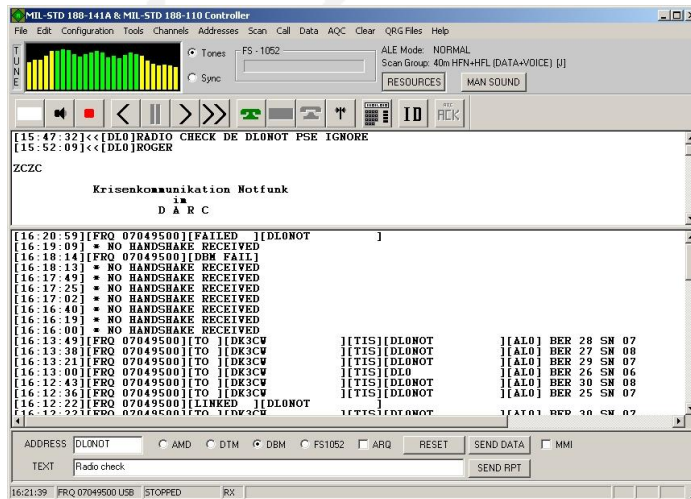
- PACTOR (***P***acket ***T***eleprinting ***o***ver ***r***adio)
- PACTOR I: 2AFSK@500Hz with 200Bit/s
- PACTOR II: 14DPSK@500Hz with max. 1200Bit/s
- PACTOR III: 18PSK@2400Hz with max. 5200Bit/s
- PACTOR IV: 32QAM@2400Hz with max. 10500Bit/s
- Modulation: (A)FSK, (D)PSK, QPSK und QAM



- Error correction through FEC and ARQ
- Huffman-Compression
- (Text) Pseudo-Markov-coding (Huffman * 1,3)
- Capital letter mode
- Run-length encoding



Automatic Link Establishment



Benötigt:

- SSB-Transceiver with VOX or CAT
- PC + soundcard
- Soundcardinterface

OR

MIL ALE Rig



Software:



PCALE

ODER



MARS ALE



- automatic establishment of HF links due to propagation analysis (comparison of BER)
Modulation: 8FSK
- primary selective calling, but can be used for short messages and position reports (WinLink, SMTP E-Mail, SMS)
- global HFLink Network with Pilotstations (cf. RMS)
- FEC and optional ARQ





HFN
HIGH
FREQUENCY
NETWORK

HFLINK.NET
Global ALE High Frequency Network
[Automatic Link Establishment](#)

HF Interoperability - Digital & SSB Selective Calling
Ham Radio EMCOMM - International
[ALE HF Network Connectivity Map](#)

ALE INFO

NET FREQS

GROUP FORUM

HELP

MEMBER Store

SOFTWARE

ROOMS | PROFILE | SETTINGS | LOG OUT | AUDIO | UPLOAD

ALE COMM ROOM [History](#) [I am online!](#) [Away](#)
 [23:45:28] KQ6XA: greetings ALE ops in the chat room now - CT4DK, DK3CW, HB9AUR, HB9MHB, KJ4AYT, N2BHA, WD4KHP, KD2BZZ, KJ4YLP, W6HW... and others I may have missed some callsigns

Online
 DK3CW
 HB9AUR
 HB9MHB
 Rudy
 KJ4AYT
 KM4BA
 N2BHA
 [GUEST]
 WD4KHP
 kd2bzz
 kj4ylyp
 w6hw

Google
Map data ©2013 MapLink, Tele Atlas Imagery ©2013 NASA

MHz: 1-4 4-6 7-9 10-13 14-17 18-20 21-23

04/05/13 23:47 UTC 30 min 1 Hr 2 Hr 6 Hr 12 Hr 24 Hr

NETWORK ACTIVITY LOG - Ham Radio ALE On The Air Now

COPIED BY	TIME	QSO FREQ	CALLSIGNS	OTHER INFO	SIGNAL QUALITY
HFN KB3JA	[23:45:11]	7.1 MHz	De [N2CKH]		BER 28 SN 07
HFN DK3CW	[3.5 MHz]	De [9A5EX]			BER 27 SN 07
HFN 9A0ZG	[23:45:42]	7.1 MHz	De [DK0ESD]		BER 26 SN 05
HFN HB9JBP	[23:45:38]	7.1 MHz	De [DK0ESD]		BER 30 SN 10
HFN 9A0PZ	[23:45:45]	7.1 MHz	De [DK0ESD]		BER 30 SN 09
HFN 9A0ALE	[23:35:30]	7.1 MHz	De [DK0ESD]		BER 30 SN 10
HFN HB9JBP	[23:45:43]	7.1 MHz	De [DK0ESD]		BER 30 SN 09
HFN 9A0PZ	[23:45:48]	3.5 MHz	De [9A5EX]		BER 30 SN 06
HFN 9A0ALE	[23:35:35]	3.5 MHz	De [9A5EX]		BER 30 SN 06
HFN DK3CW	[3.5 MHz]	De [9A5EX]			BER 29 SN 07
HFN DK3CW	[3.5 MHz]	TO [ZPRI]	De [ZLST]		BER 27 SN 08
HFN 9A5EX	[23:46:00]	2013-04-05 Station Active			

AO7AW - Ham Radio HF Interoperability Training Exercise 02 Nov-12 Nov 2012
 Calls received within 1440 minutes:
 KI4VMK, AB8AL, CT7ADH, F4BXW1, , , ,
 NOCALSIGN, , KD2RO, KJ4AYT, 200, , NT0A,
 IW0DJC, ZZO, W6HW, ZBOR, KQ6XA, ZRUE,
 HB9MHB, ZSHO, 9A0OS, WD4KHP, 9A0ZG,
 SM5RVH, F4BXW, DK3CW, 9A0PZ, KJ4YLP,
 CT4DK, HB9AUR, CS7ABQ, 9A2KS, S59I,
 9A0ALE, KB3TAJ, KE6ITY, CT2DKQ,
 YD0OXH, 9A5EX1P, KK7IF, N2CKH,
 DK0ESD, 9A5EX, ZLST

04/05/13 23:47 UTC
 24 Hours
 min Hr Hr Hr Hr Hr Hr
 Previous 24 Hr

SEARCH HAM CALLSIGN:

SEARCH FORUM MESSAGE ARCHIVE:

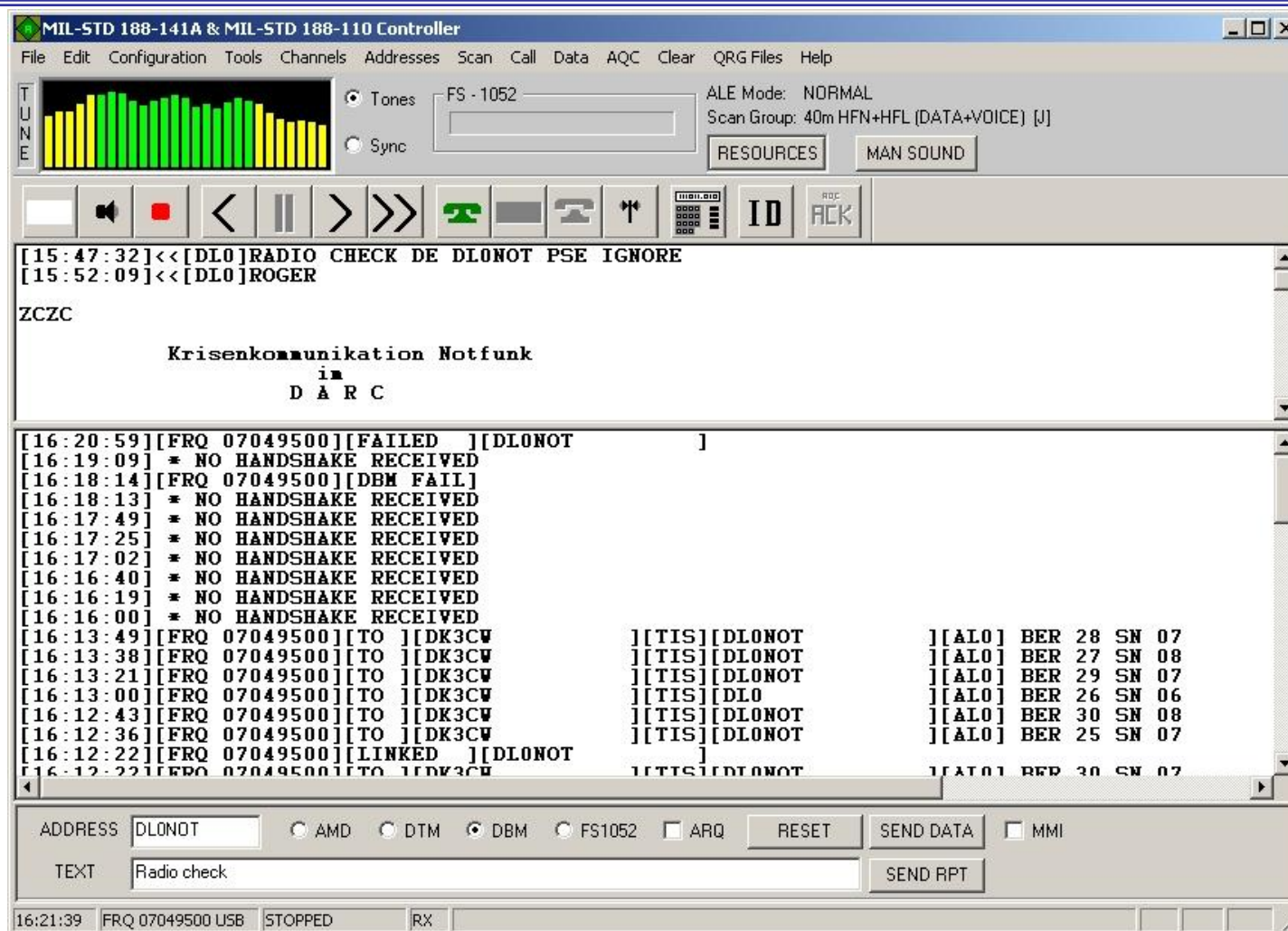
HFN
24 Hour UTC Clock
12:48:26 a.m.
UTC+1
12-hr 24-hr network delay.

HFN
Pilot Stations
using BBSLINK

HFN
System Stations
using ALE*stat

SIGNAL QUALITY: Very Low 10-20 | Low 21-23
 [Moderate 24-26 | Good 27-29 | Excellent 30-39]
 SN=Signal: SN (0=Very Clear) | SN07 Clear | SN08 Noisy | SN09 Very Noisy
 BER=Digital Signal Quality (Bit Error Rate figure of merit)
 AMD= Universal ALE Text Message | GPR=Geo Position Report
 GPR: CALLSIGN3 LATITUDE3 LONGITUDE3 ALTITUDE3 DATE-TIME3 COMMENT
 Latitude and Longitude are reported in decimal degrees.







- **Advantages:**

- Military standard USA MIL-STD 188-141 / 188-110
- Automatic Establishment due to live propagation analysis
- No need of trying different bands, just start calling
- WSPR alternative (cf. SSB bandwidth)

- **Nachteile**

- ALE is accident-sensitive (2200Hz BW)

Packet Radio 9k6

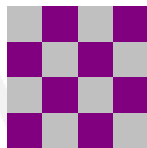


Needs:

- FM-Transceiver (with data jacket)
- PC
- TNC or Soundcard

AGW Packet Engine

Software:



OR



OR



OR

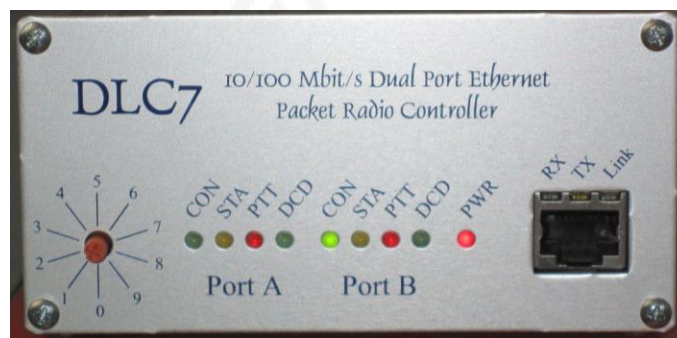


RMS Express

Airmail

Paclink

APRSLink / Packet Radio 1k2



Needs:

- FM-Transceiver (with Data jacket)
- TNC or Soundcard

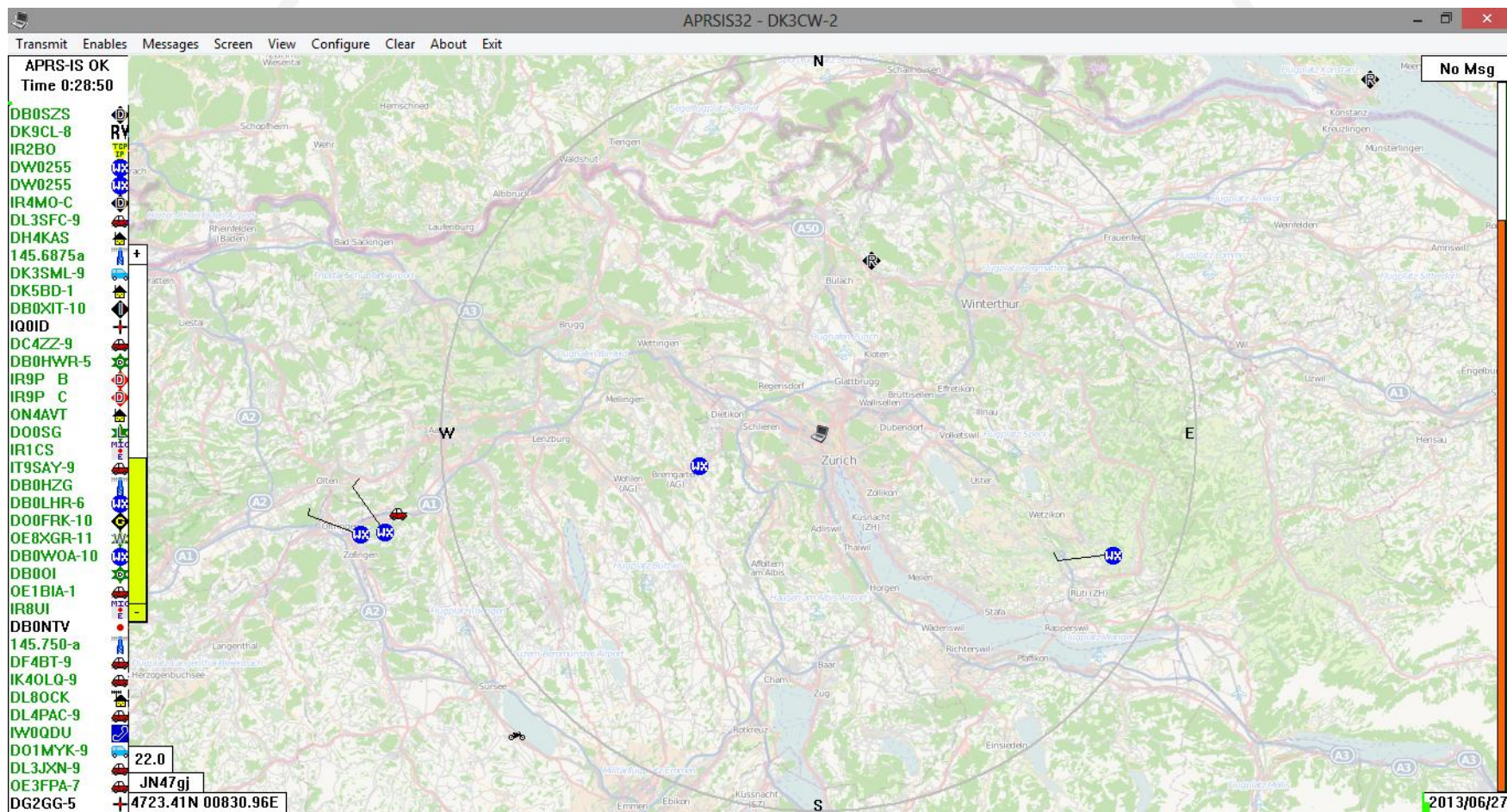
AGW Packet Engine

Software: Diverse (e.g. APRSIS32, UIView32 etc.)



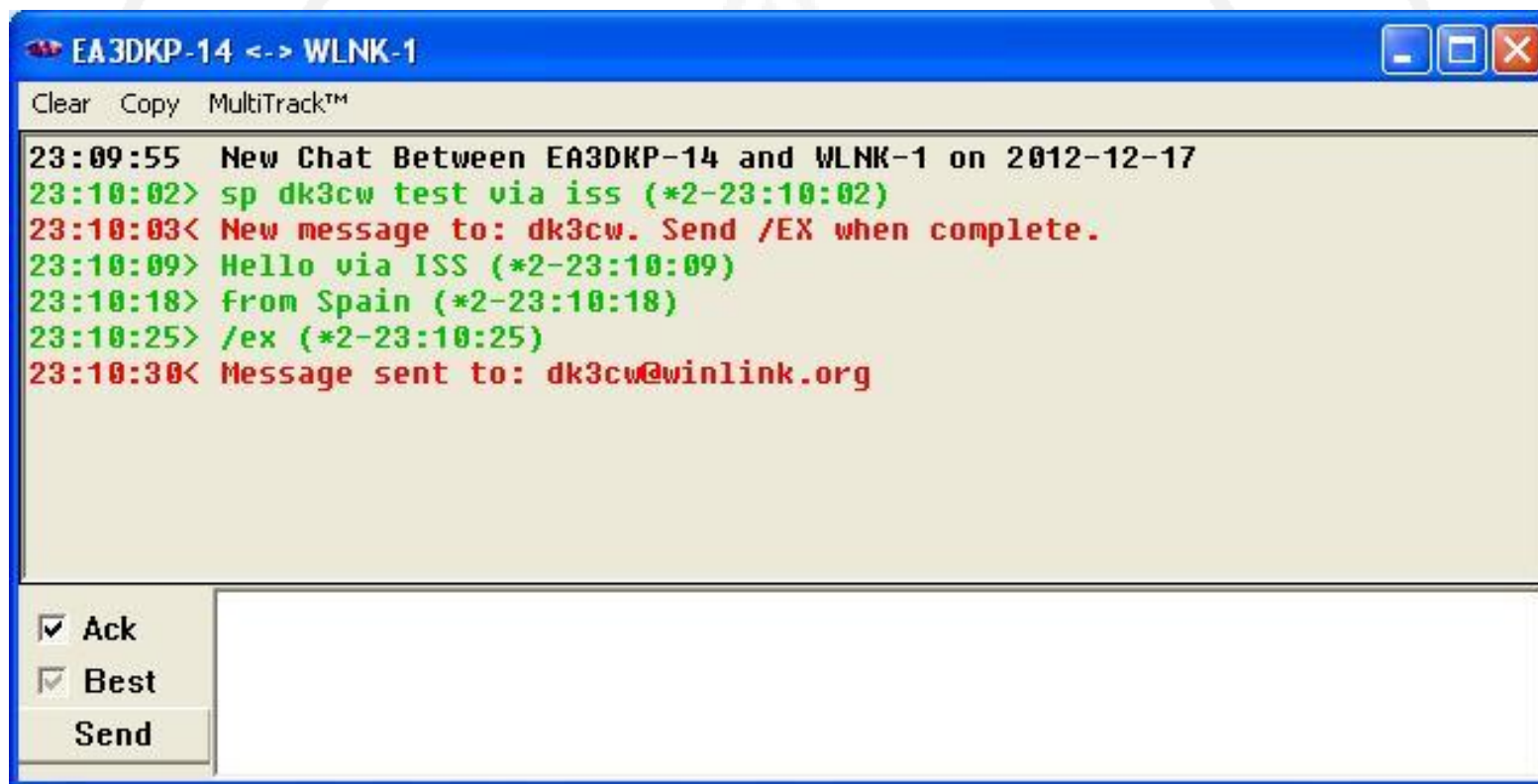
➤ Short message through APRS to „WLNK-n“, via APRSLink:

```
nr 32 p DK3CW 26 pool-town 2215 jan 14 =  
New city  
please send us information about  
following person stop walter smith  
harbour street 4=  
information bureau for river district  
disaster +  
/ex
```





z.B.: Message from EA3DKP to DK3CW via RS0ISS-4→EI4GB->APRSServer->CMS



D-STAR mit D-RATS

Benötigt:

- D-STAR Transceiver / Dongle / DVRPTR etc.
- PC
- Data cable

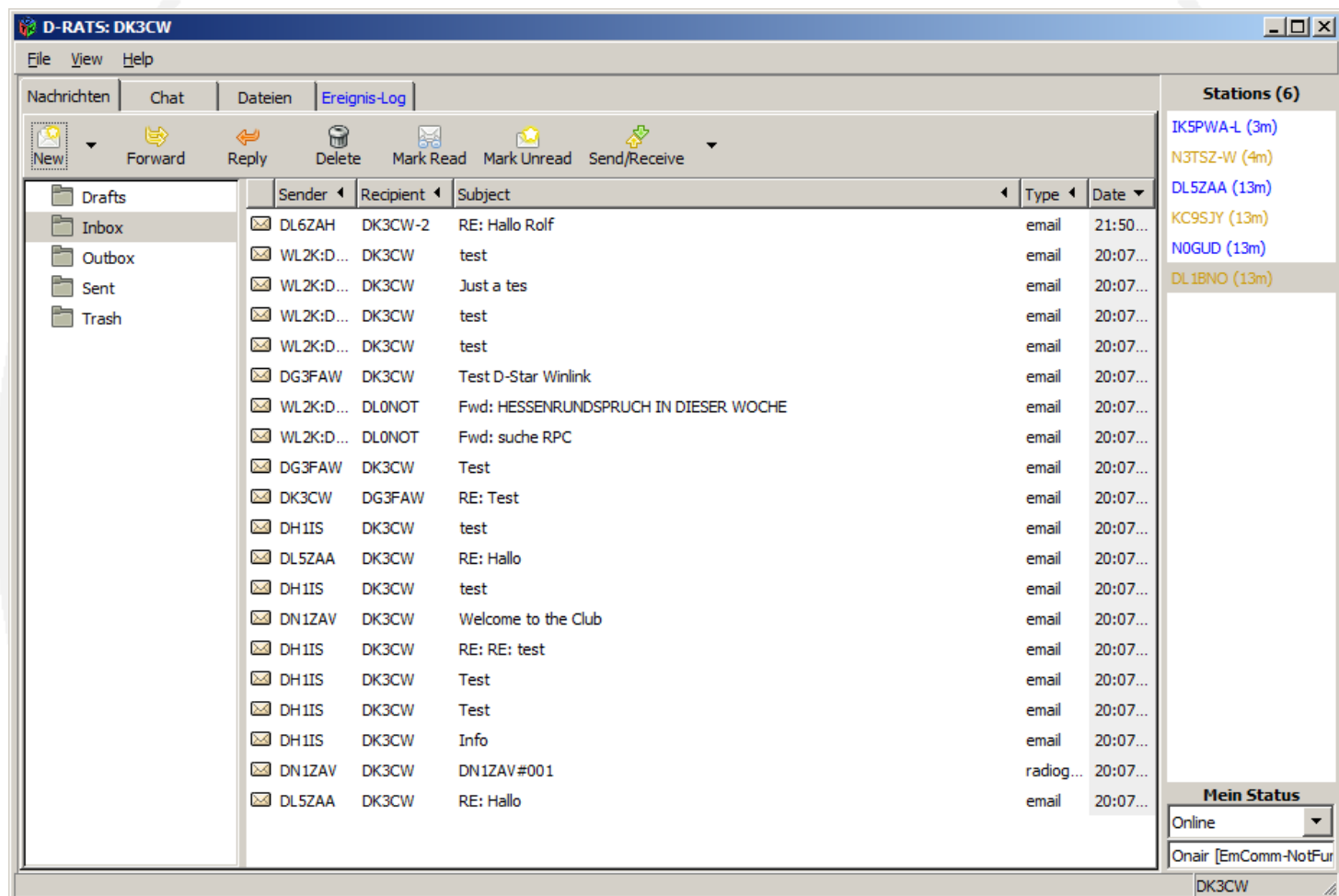


Software:





- D-RATS offers E-Mailtransfer via D-STAR/Packet Radio and:
 - Data file transfer
 - D-APRS (only D-STAR APRS)
 - keyboard-QSO
 - QSTs (Bulletins e.g. weather, *.txt, HTML, RSS etc.)
- Direct Connection to HF PACTOR or PR via Paclink



Notruf nach IARU Notfunk Prozedur (deutsch)

Save Send Send via Print

Notruf nach IARU Notfunk Prozedur (deutsch)

☐ Routing Information

Source Callsign: DK3CW

Destination Callsign: DL0NOT

Number: 1

Dringlichkeit: Routine (r)

Ursprungsstation: DK3CW

Wortzahl: 91

Ursprungsort: Frankfurt am Main

Erstellungszeit: 21 41 25

Erstellungsdatum: Jul 15 2012

Nachricht

Routine-Status Meldung:
Es liegt momentan keine Schadenslage in Frankfurt am Main vor.
vy 73 de Jakob DK3CW

☐ Attachments (1)

Name	Size (bytes)
infofile.txt	830

Remove Save

+ Path

Emergency call according to IARU EMERGENCY OPERATING PROCEDURE (english)

Save Send Send via Print

Emergency call according to IARU EMERGENCY OPERATING PROCEDURE (english)

☐ Routing Information

Source Callsign: DK3CW

Destination Callsign: DL0NOT

Number: 2

Precedence: Routine (r)

station of origin: DK3CW

check (number of words in text): 84

place of origin: Frankfurt / Main

filling time (UTC): 22 45 24

filling date (UTC): Jul 15 2012

Message

Routine-status report:
Currently, no emergency reportet for Frankfurt / Main.
vy 73 de Jakob DK3CW

☐ Attachments (1)

Name	Size (bytes)
infofile.txt	830

Remove Save

+ Path



Email Message

Save Send Send via Print

Email Message

☐ Routing Information

Source Callsign DK3CW

Destination Callsign WL2K:email@adresse.de

Subject E-Mail via WL2K

Message

Hallo,
dies ist eine E-Mail, welche via WL2K versand wird. Somit ist es möglich, weltweit E-Mails zu verschicken, ohne über eine Internetanbindung oder Kurzwelle zu verfügen.

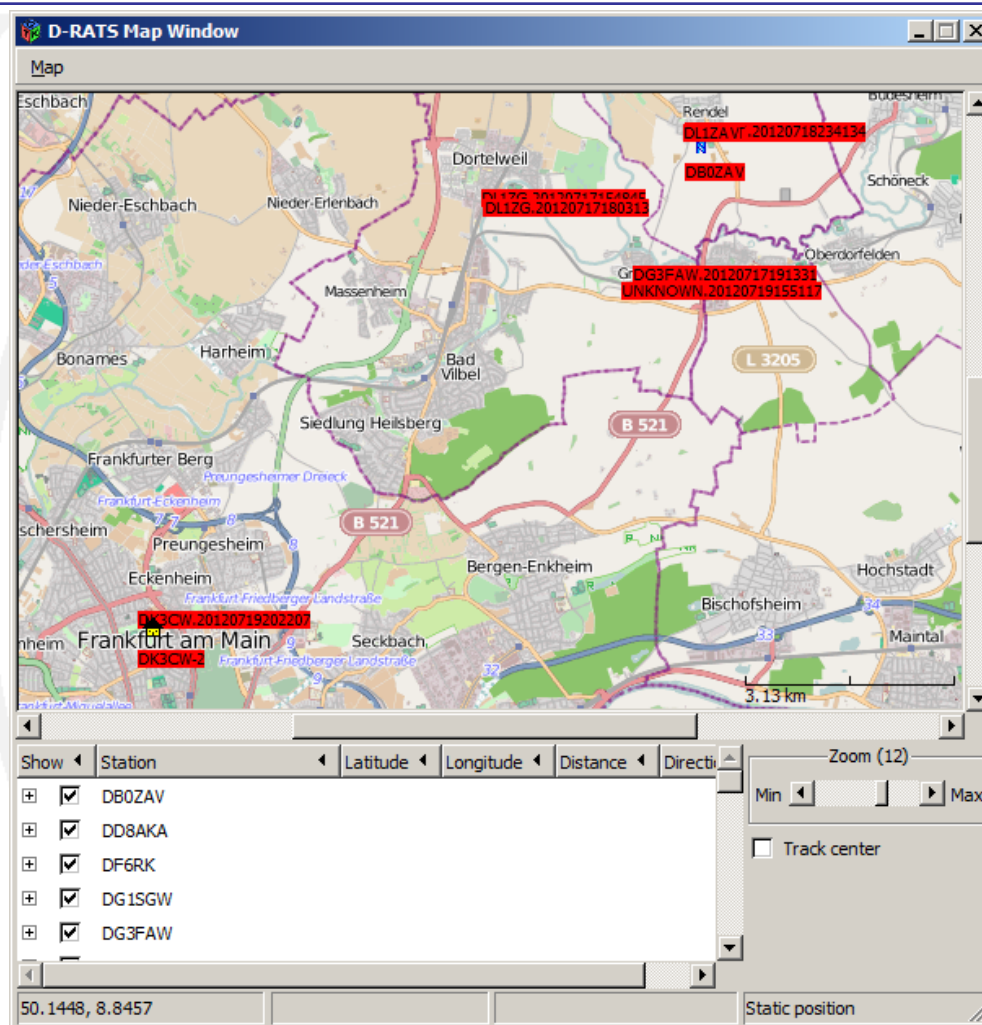
vy 73 de Jakob DK3CW

☐ Attachments (1)

Name	Size (bytes)
INT.NOTFUNK.PROZEDUR.pdf	20794

+ Path

Add Remove Save



Region ohne Internetanbindung



OM Willi



D-RATS

VHF/UHF



RMS HF Gateway 1



Kurzwelle

PACTOR/
WINMOR



Externe Region

E-Mail
Empfänger



Internet

CMS Server

San Diego	Halifax	Wien	Perth
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Internet



RMS HF Gateway 2





Paclink Bridge for D-STAR / PR ↔ PACTOR / PR

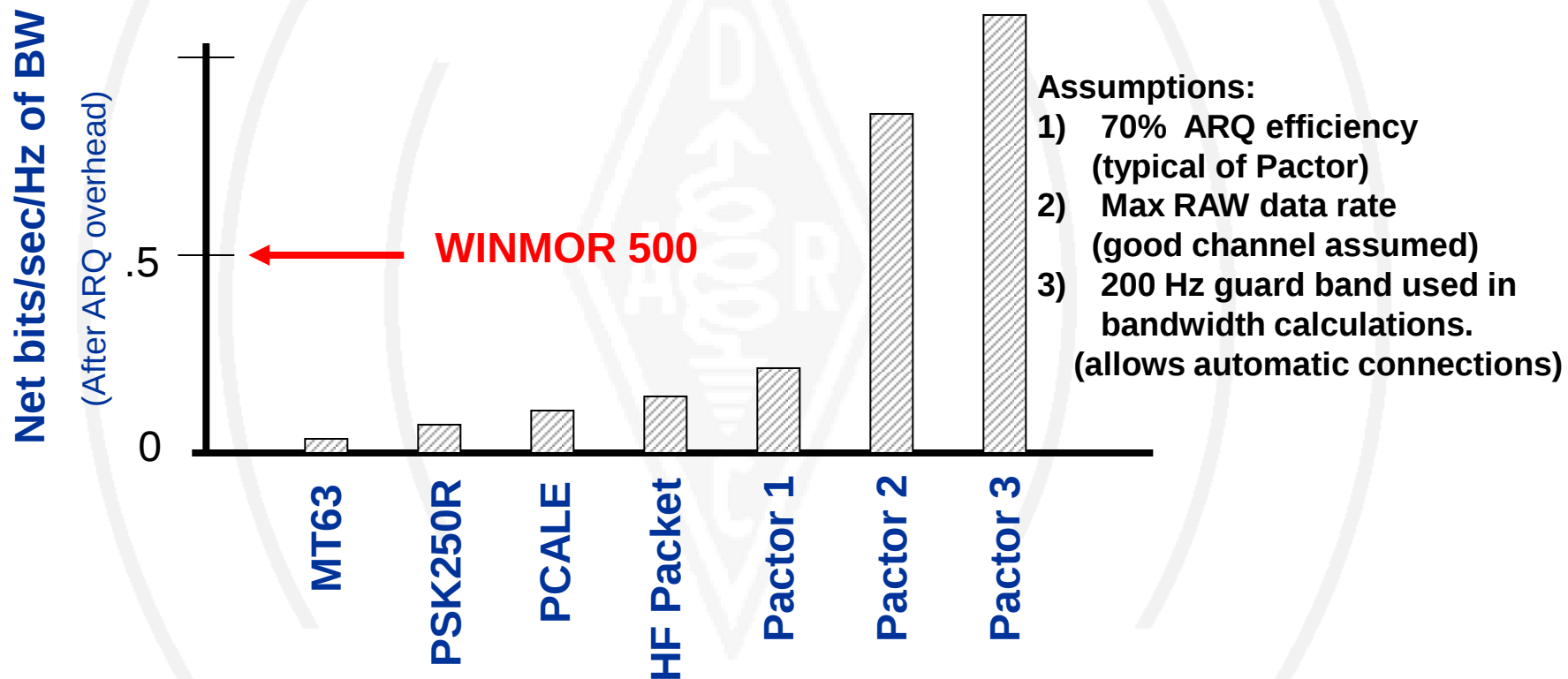
```
Paclink - N6KZB
File Connect Abort Logs Help Next Poll in 14 Minutes

*** Starting Packet Channel: XE2GF-10 RMS 145.09 at 2012/02/02 00:04:34
*** Initializing TNC KPC3+ on COM4 with C:\Paclink\Data\KPC3+.aps
*** Serial port COM4 opened
*** Configuring the TNC - Please wait...
*** TNC Configuration complete
*** Calling XE2GF-10
*** CONNECTED to XE2GF-10
CREBC Tijuana Winlink Gateway (www.crebc.org)
[WL2K-2.7.0.8-B2FWIHJM$]
:PQ: 93433653
Halifax CMS via XE2GF-10 >
:FW: N6KZB N6KZB-1
[Paclink-4.3.0.5-N00B2FIHM$]
:PR: 61103683
: XE2GF-10 DE N6KZB (DM12MM) QTC 1...
FC EM J5XX6P77VRN6 749 529 0
F> 75
FS Y
*** Sending J5XX6P77VRN6...
FF
FQ
*** Closing XE2GF-10 RMS 145.09 at 2012/02/02 00:05:54

J5XX6P77VRN6 received from N6KZB
Subject: //WL2K Hello OM
```

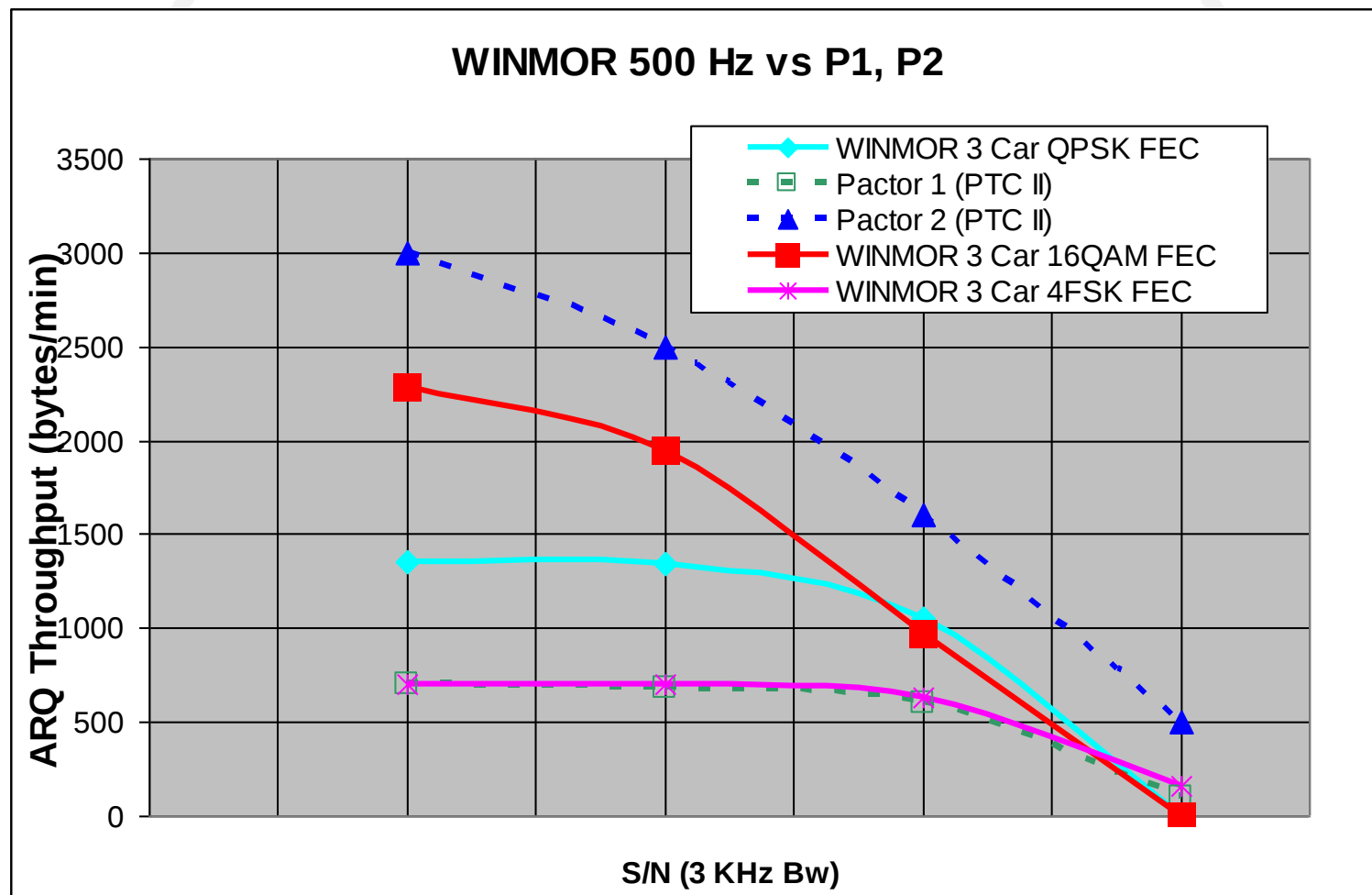


Comparing Digimodes

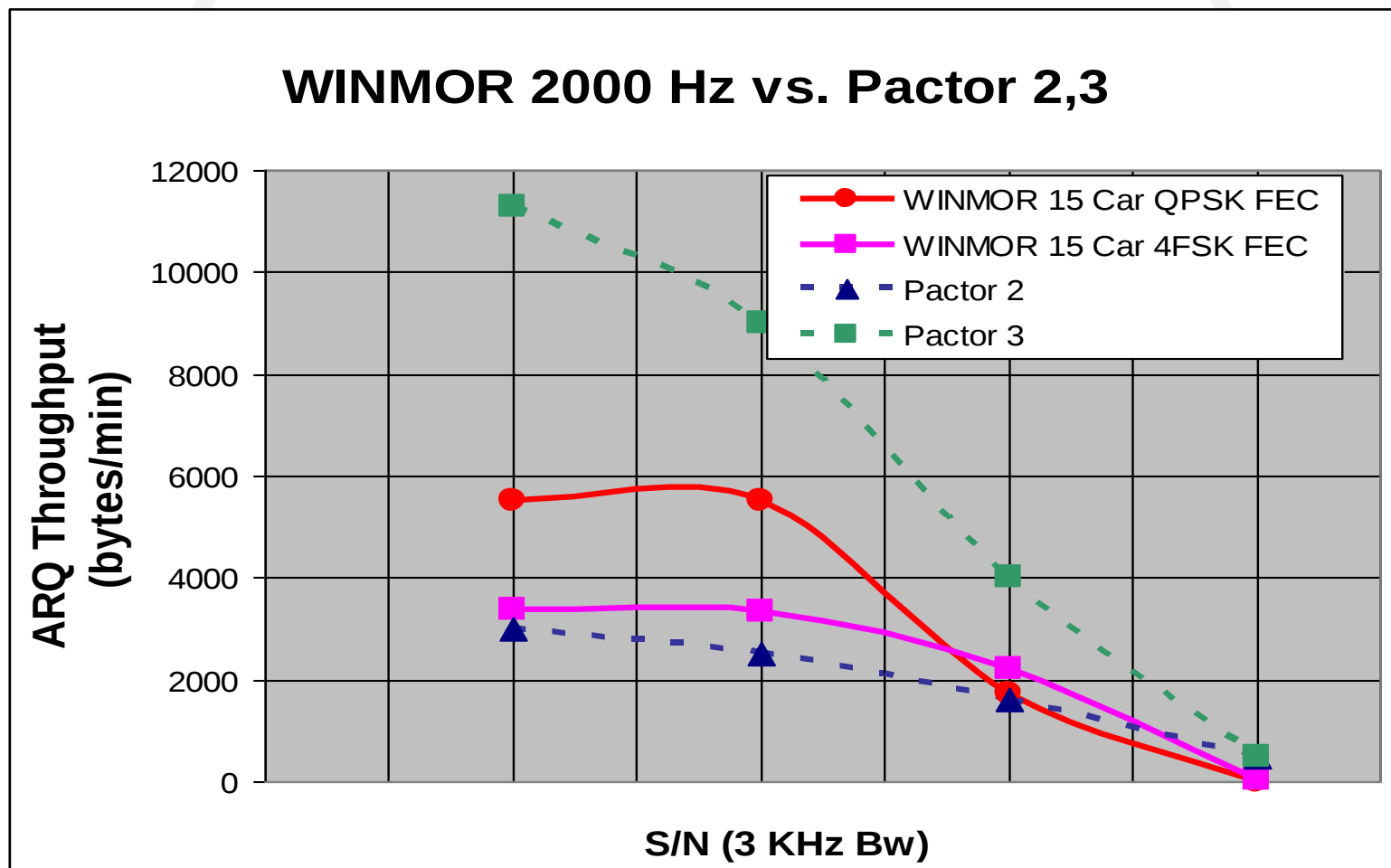




Compare PACTOR 2 / WINMOR 500



Compare PACTOR 2,3 / WINMOR 2000





V4Chat

- Implementation of WINMOR protocol for V4Chat @200Hz for FEC and ARQ text transmissions (very robust, perfect for P2P)
- Simultaneously WINMOR and PACTOR WL2K/P2P and V4Chat using ONE soundcard and ONE transceiver
- Automatical E-Mailtransfer and forward via Airmail (incl. PR and D-STAR)



WINMOR and V4Chat

WINMOR Sound Card TNC Ver:1.4.7.0 Port:8500

Help Hide Send ID

Connection State

DISCONNECTED

TCP Capture OK

Transmit

0 Avg ACK Percentage 100

Xmt Frame:

Receive

Rcv Level: Remote Station Offset: 168.9 Hz

Rcv Frame:

Waterfall 2KHz

500 2500

Constellation

Busy Detector

Busy (N)

Squelch: 5

V4 Sound Card TNC 1.0.2.0

Help Hide Test Send CWID

Status

TCP Sound Card

ARQ State: IRSWaitLeader

Rcvd Frame:

V4 Mode: ARQ (Disconnected)

IRS

Xmt Frame:

Receive

Rcv Level: Remote Station Offset: -15.4 Hz

Squelch: 5 Busy: Busy (N)

Waterfall 1500Hz

-700Hz +700Hz Score:0 S/N

Packet Client

Connect to: DL0NOT 1 WINMOR Connect As: DK3CW

2013/04/06 00:17:03 Packet initialized OK

2013/04/06 00:17:03 Calling DL0NOT v 1 WINMOR, Connected at 00:17:04

Winmor) MYC DK3CW

2013/04/06 00:17:08 Disconnected from SWITCH

V4 Chat 1.0.4.0

File Mode: ARQ Abort Logs User Files ARQ Call OB Queue: 0

Rx: 0 Queue Data

Contact	Call Sign	Freq (kHz)	Name	Grid Square/QTH
2013.03.20 18:46	DL0NOT-5	7047.4	Rudolf	JO40JF EmComm Karb
2013.01.09 01:21		10131,000		
2013.01.09 01:21		21073,000		
2013.01.09 01:21		18103,000		
2013.01.09 01:21		14073,000		
2013.01.09 01:21		10138,000		
2013.01.09 01:21		18085,000		
2013.01.09 01:20		7040,000	EU	
2013.01.09 01:20		3590,000	EU	
2013.01.09 01:20		3583,000		
2013.01.09 01:20		7073,000		

Startup of V4Chat Ver 1.0.4.0 ; Auto Update Enabled using HTTP port 8776

V4 TNC TCP OK on port 8510

9qR[ILX]X#@Sg(---mk445Tnls>u3~xbLm5SqY>G9-4llqlL3")M87E15+le.G[ISICM



Future of WinLink

- ROWN-System
- Included QAM into WINMOR protocol
- WINMOR Integration on iOS and Android, openMORE-Projekt
- WinLink is'nt in competition to PSKMail, both may complement one another