

WSJT-X na kratkem valu

Iztok, S52D

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Program:

Iztok, S52D, YU3FK (brez KV anten 1982–2016)

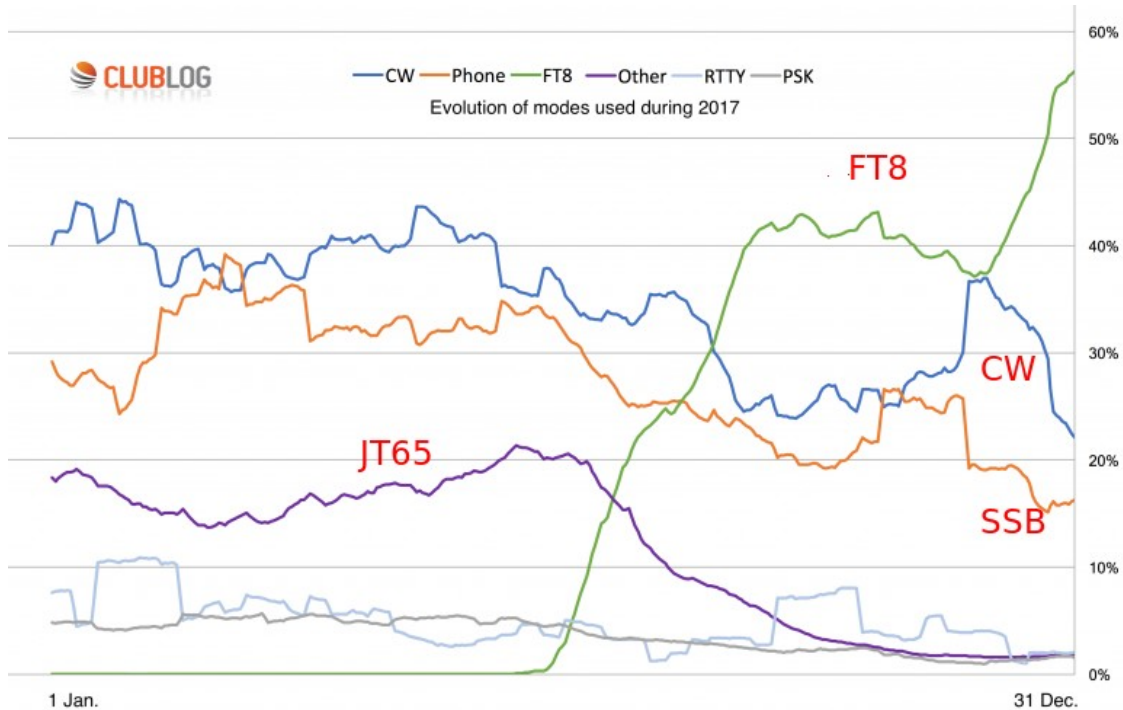
- kaj dogaja na KV, kako je nastal FT8
- tehnikalije
- kako izgleda QSO
- kako začeti?

Linki:

`lea.hamradio.si/~s52d`

Apage Satana

Clublog 2017: FT8 je spremenil klofanje na KV.



K1JT

Joe Taylor. Šef astronomije na Princetonu, nobelovec.
20 let dela, povsem je spremenil klofanje.

- 2001: FSK144, sedaj MSK144 za MS
- 2003: JT65 za EME

JT65 vse več na KV (sončni minimum)

Veliko število protokolov, poleg KV tudi dolgi valovi.

- WSPR: samo RX, ni za QSO. Izredno male moči TX
- na internetu lahko vidimo, kdo nas sliši

2017–2018

2017 Es na 50 MHz: JT-65 je prepočasen. TX 1 minuto.

- odgovor: FT8: TX/RX 15 sekund

2018, Baker KH1/KH7Z: Fox/Hound način dela
Kaj pa kontesti?

- 2019 FT4: 7.5 sekund TX/RX

Zadnja verzija: WSJTX 2.1.0. Princeton.edu

Kako začeti z WSJTX?

Obisk pri kolegu, ki mu dela. Hvala S51BW, da mi je pokazal.
Odlična dokumentacija:

- K1JT, K9AN: stara profesorja

Rabimo S5 prevod? Več dela s prevajanjem, kot z branjem?
Tudi izvorno kodo je užitek brati.

- S52D diversity dodatek

Uspeh WSJT

Nekaj razlogov:

- enostaven, robusten protokol
- prijazen program
- dobra dokumentacija
- reklama

WSJT-X ni rešitev, ki išče problem.

- pravi trenutek

Bi FT8 uspel, če bi ga predlagala UN8VYL?

FT8 Marketing

F: K9AN, Stan Franke: profesor, telekomunikacije

T: K1JT, Joe Taylor: Nobelov nagrajenec, Princeton

8: uporablja 8 tonov

- JT65: Joe Taylor, 65 tonov
- FT4: 4 toni

ARRL PR mašina, QEX (in dobro dela)

WSJT-X program: Weak Signal, K1JT

- šibak signal na sprejemu, ne na oddaji.

FSK modulacija

Več tonov, med seboj ravno prav razmaknjeni

- oddaja samo en ton istočasno
- primerno za CW QRO (konstantna ovojnica signala)
- SW: ustrezni prehodi med toni (Gaussovo sito)

FT8 oddaja 12.64 sekunde, JT65 47.8 sekunde, FT4 5.04 s.

- perioda 7.4/15 sekund (FT4/FT8), 60 sekund za JT65

FT8 ima 8 tonov, razmaknjeni so 6.25 HZ, 50 Hz širina

FT4 ima 4 tone, razmik 20.8 Hz, širok 83.3 Hz.

JT65 ima 65 tonov, 2.7 razmika, 177 Hz širina

CW: več kot 200 Hz zaradi 4 ms prehoda

JT/FT specifikacije

Večtonska modulacija: oddaja en ton izmed večih.

- Gaussovo glajenje: izredno čist spekter

Minimalno število bitkov, kompresija

- FEC: povpravljanje napak v naprej (FT4/FT8: LDPC)
- FT4/FT8: zaznavanje napak: CRC

Znanost telekomunikacij v praksi.

- smo blizu Shannonove meje

GFSK

Konstrantna ovojnica: ni intermodulacije.

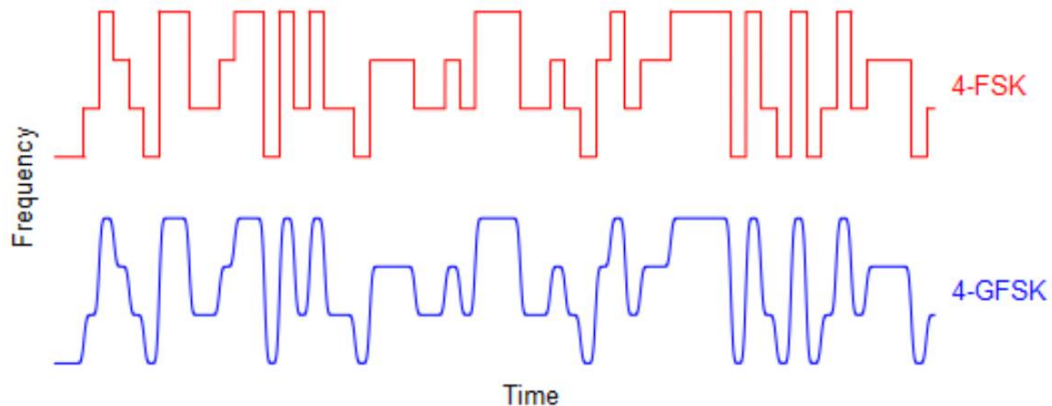
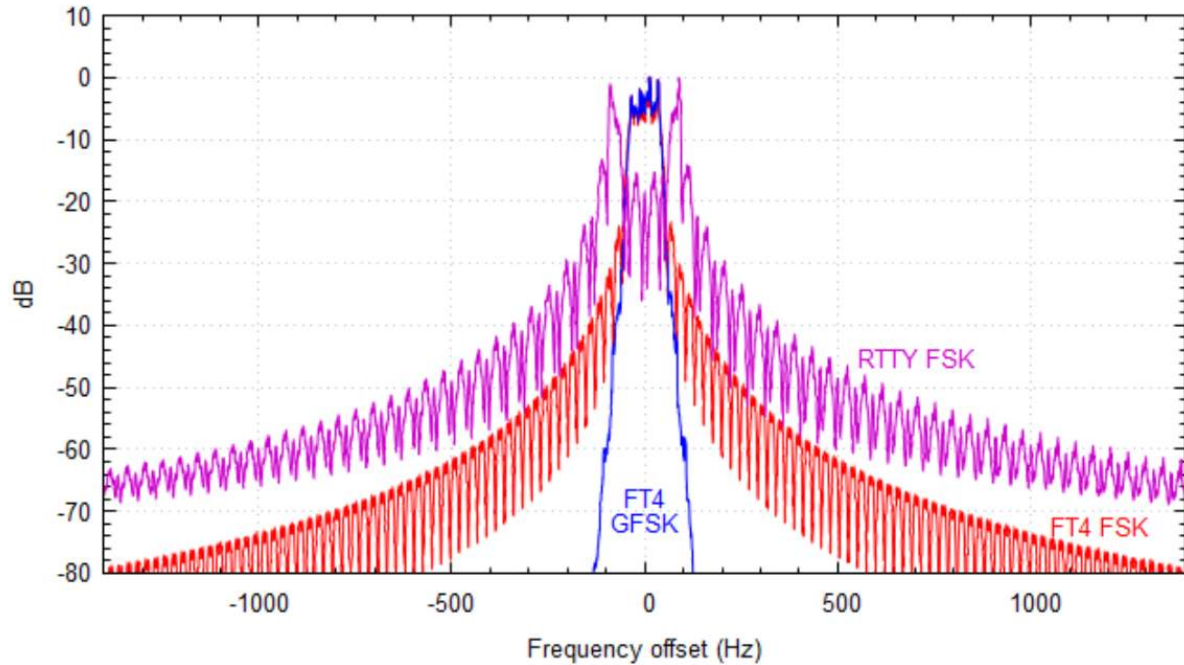


Fig 2. — Example of the encoded (red) and smoothed (blue) frequency sequences for part of an FT4 message.

RTTY, FT4 spekter



Sinhronizacija

Na kateri frekvenci so toni, kdaj se sporočilo začne?

- nujna je točna ura na računalniku, NTP protokol
- napaka do ene sekunde je dopustna

JT65: 65-ti ton, znana sekvenca. Polovico časa/energije za Sync

FT8: trikrat 7x7 Costasovo polje, 27 % za sync.

FT4: štirikrat 4x4 Costasovo polje, 15 % za sync.

QRO/QRP: Energija za preneseni bit, JT65 10 dB ...

Kompresija podatkov

FT4/FT8: 77 bitov v eni oddaji.

UL kvadratki: [A–R][A–R][0–9][0–9], recimo JN76

CALL: [,A–Z,0–9][A–Z,0–9],[0–9],[A–Z],[,A–Z],[,A–Z]

- 268435456 kombinacij, 28 bitov
- S52D, S51AJK je OK, S5700L, 3DA0AO ni OK

Posebni znaki, bližnjice. Označen z "<...>".

- brez kvadratkov
- S5700L in S52DOLG ne moreta narediti QSO (skoraj ne)

JT65/FT8/FT4 raport

Namesto RST se daje razmerje signal/motnje (šum) v dB.

Marketing: meritev na 2500 Hz RX pas

- dejansko za en ton: 28 dB boljše (JT65)
- dovolj tonov mora biti nad 3 dB za dekodiranje
- meri znotraj 177/50 Hz, izračuna za cel pas

Številka se izboljša, če imamo ozko sito (CW filter)

- učinkovito pri močnih signalih v 2 kHz pasu

Kako dela RX

Vsakih 15/7.5 sekund (enako FT8/FT4):

Trikrat ponovi:

- poišče vse morebitne signale
- dekodira. Poleg LDPC dekodiranja tudi Apriori (znani znaki, CQ)

Bolje dekodira vpisan znak

- za RX zadošča slaba polovica simbolov
- kar je pravilno sprejeto, izpiše in odšteje

Izpiše: prvo svoj RX QRG, potem cel pas (do 4 kHz)

Samodejni QSO

Pri MSK144 (MS) in FT8 je perioda 15 sekund, čas za klik cca 2 sekundi

- prehitro za počasne HAME

Avtomatika za QSO:

- odgovor na CQ, vzame prvega
- klikneš CQ in program sam naredi QSO

Best SP: pri FT4 sam išče klicoče.

Split: CQ 908 S52D na 160 m za JA, RX na 1908

Klik, log, klik, log, klik, log ...

SV5DKL

SV5DKL prodaja robotka na ebay. K1JT je besen.

- Upravičeno.

ARRL ne priznava QSO, če operater ni prisoten.

Pravilo: naredi, vendar ne objavlaj.

Se pravi: vsaj en klik za QSO

- tudi če ne veš, s kom delaš QSO

Operaterstvo

Kaj ostane operaterju?

- frekvenca, antena, nastavitve postaj
- izbor: koga klicati, kdaj in kje
- CQ avtomatika: odgovor, ne da bi ga OP izbral

Pravzaprav... Enako kot CW ali RTTY.

- novo: vsi poslušamo 2 do 3 kHz:
- lahko kličem nekoga, ki samo pobira

FT8 QSO

klik na: CQ UX1BZ KN29

The screenshot displays the FT8 software interface. At the top, a log window shows a list of contacts with columns for time, signal strength, distance, and call signs. The contact 'CQ UX1BZ KN29' is highlighted in pink. Below the log is a control panel with buttons for 'Log QSO', 'Stop', 'Monitor', 'Erase', 'Decode', 'Enable Tx', 'Halt Tx', 'Tune', and 'Menus'. The frequency is set to 14.074 000 MHz. The DX Call is UX1BZ and the DX Grid is KN29. The date and time are 2018 Feb 18 17:16:37. The status bar at the bottom shows 'Tx: UX1BZ S52D -13', 'rocn', 'FT8', 'Last Tx: K4AKK S52D -17', '7/15', and 'WD:5m'.

Time	Signal	Distance	Call Sign	Grid	Country
171615 -18	0.2	388	~ CQ KALYQC FN42		USA
171615 5	0.1	507	~ DL6CMF EB5GC RRR		
171615 -13	0.7	760	~ A92AA KC1GNH FN43		
171615 13	1.2	847	~ C31KC CU7AA HM58		
171615 -18	0.2	1045	~ AM5WAP KN9C EM69		
171615 -20	0.8	1240	~ EA7OR PY7KG R-08		
171615 3	0.1	1401	~ 4X1RU EA5IHM IN97		
171615 -8	1.4	1575	~ CQ K4TXX EM95		USA
171615 -11	0.2	1810	~ C31KC DK9WB -24		
171615 -13	0.1	1896	~ CQ UX1BZ KN29		-Ukraine
171615 -16	0.1	2210	~ N6ARY K2KXK EM96		
171615 -15	0.5	1003	~ A92AA K4AKK EM55		
171615 -8	-0.3	552	~ G1IPU EA7IEZ RRR		
171615 -11	0.1	727	~ A92AA W8MRL EM79		
171615 -13	0.1	1570	~ TP9OPR K9EKP R-04		
171615 -17	0.1	964	~ C31KC W8GU R-14		
171615 -17	0.1	1529	~ ZB2ER IK6BSN JN62		

Log QSO Stop Monitor Erase Decode **Enable Tx** Halt Tx Tune Menus

20m **14.074 000** Tx even/1st

DX Call: UX1BZ DX Grid: KN29
Tx 1896 Hz Tx ← Rx
Rx 1896 Hz Rx ← Tx
 Lock Tx=Rx

Az: 62 816 km
Lookup Add Report -13 Auto Seq Call 1st

2018 Feb 18 17:16:37

Generate Std Msgs Next Now Pwr

Message	Next	Now	Pwr
UX1BZ S52D JN76	<input type="radio"/>	<input type="radio"/>	Tx 1
UX1BZ S52D -13	<input type="radio"/>	<input checked="" type="radio"/>	Tx 2
UX1BZ S52D R-13	<input type="radio"/>	<input type="radio"/>	Tx 3
UX1BZ S52D RRR	<input type="radio"/>	<input type="radio"/>	Tx 4
UX1BZ S52D 73	<input type="radio"/>	<input type="radio"/>	Tx 5
CQ S52D JN76	<input type="radio"/>	<input type="radio"/>	Tx 6

Tx: UX1BZ S52D -13 rocn FT8 Last Tx: K4AKK S52D -17 7/15 WD:5m

Kličem

Dvakrat, nisem sprejel odgovora

The screenshot displays a radio software interface with two main panes. The left pane shows a log of contacts, and the right pane shows a list of messages to be transmitted.

Contact Log (Left Pane):

Time	Offset	Power	Mode	Call	Grid	Info
171615	-8	0.3	552	~	G1IPU	EA7IEZ RRR
171615	-11	0.1	727	~	A92AA	W8MRL EM79
171615	-13	0.1	1570	~	IT9OPR	K9EKP R-04
171615	-17	0.1	964	~	C31KC	W8GU R-14
171615	-17	0.1	1529	~	ZB2ER	IK6BSN JN62
171645	9	0.1	508	~	DL6CMF	EB5GC 73
171645	-14	0.3	646	~	DM2DMI	AA7G -19
171645	-14	0.1	726	~	A92AA	W8MRL EM79
171645	12	1.2	847	~	C31KC	CU7AA R+01
171645	3	0.1	1402	~	4X1RU	EA5IHM IM97
171645	-12	0.2	1809	~	C31KC	DK9WB -24
171645	-14	0.2	1942	~	YT1DL	KN9C EM69
171645	-10	-0.3	2152	~	WA2HIP	KJ4FZ +01
171645	-15	0.1	2210	~	N6ARY	K2KXK EM66
171645	-4	-0.3	552	~	G1IPU	EA7IEZ RRR
171645	-14	0.6	920	~	CQ	EA5XY IM99 Spain
171645	-16	0.2	1003	~	IZ8CKY	K4AKK -15

Message List (Right Pane):

Time	Offset	Power	Mode	Call	Grid	Info
171045	Tx	1179	~	N5JJH	S52D	-15
171047	Tx	1179	~	N5JJH	S52D	-13
171115	Tx	1179	~	N5JJH	S52D	-13
171130	-13	0.1	1176	~	CQ	CT1FIU IN50
171145	Tx	1179	~	N5JJH	S52D	-13
171300	-16	1.1	1178	~	VA2ZC	N5JJH RRR
171330	-16	1.1	1179	~	VA2ZC	N5JJH 73
171349	Tx	1179	~	N5JJH	S52D	-13
171415	Tx	1179	~	N5JJH	S52D	-13
171445	-17	0.1	1003	~	CQ	DX K4AKK EM55
171501	Tx	1003	~	K4AKK	S52D	-17
171530	Tx	1003	~	K4AKK	S52D	-17
171600	Tx	1003	~	K4AKK	S52D	-17
171615	-15	0.5	1003	~	A92AA	K4AKK EM55
171615	-13	0.1	1896	~	CQ	UX1BZ KN29
171634	Tx	1896	~	UX1BZ	S52D	-13
171700	Tx	1896	~	UX1BZ	S52D	-13

Software Interface (Bottom):

- Buttons: Log QSO, Stop, Monitor, Erase, Decode, **Enable Tx**, Halt Tx, Tune, Menu
- Frequency: 20m, 14.074 000
- Call: DX Call (UX1BZ), DX Grid (KN29)
- Power: Tx 1896 Hz, Rx 1896 Hz
- Mode: Report -13
- Time: 2018 Feb 18, 17:17:08
- Status: Tx: UX1BZ S52D -13, rocn, FT8, Last Tx: UX1BZ S52D -13, 8/15, WD:4m

Odgovor

Sprejel me je z -6 dB S/N

The screenshot displays a radio software interface with two main signal lists and a control panel. The left list shows received signals with call signs and locations like 'Spain'. The right list shows transmitted signals with call signs and locations like 'Spain'. The control panel includes a frequency display at 14.074 000, a signal strength indicator at -80 dB, and a transmit queue with messages like 'UX1BZ S52D JN76' and 'UX1BZ S52D -13'. The status bar at the bottom shows 'Tx: UX1BZ S52D RRR' and 'Last Tx: UX1BZ S52D -13'.

Received Signal	Transmitted Signal
171645 -10 -0.3 2152 ~ WA2HIP KJ4FZ +01	171115 Tx 1179 ~ N5JJH S52D -13
171645 -15 0.1 2210 ~ N6ARY K2KXK EM96	171130 -13 0.1 1176 ~ CQ CT1FIU IN50
171645 -4 -0.3 552 ~ G1IPU EA7IEZ RRR	171145 Tx 1179 ~ N5JJH S52D -13
171645 -14 0.6 920 ~ CQ EA5XY IM99 Spain	171300 -16 1.1 1178 ~ VA2ZC N5JJH RRR
171645 -16 0.2 1003 ~ IZ8CKY K4AKK -15	171330 -16 1.1 1179 ~ VA2ZC N5JJH 73
171715 -13 0.2 1896 ~ S52D UX1BZ R-06	171349 Tx 1179 ~ N5JJH S52D -13
171715 -20 0.2 388 ~ G0JUR KAIYQC -11	171415 Tx 1179 ~ N5JJH S52D -13
171715 -17 0.2 727 ~ A92AA W8MRL EM79	171445 -17 0.1 1003 ~ CQ DX K4AKK EM55
171715 14 1.2 847 ~ C31KC CU7AA 73	171501 Tx 1003 ~ K4AKK S52D -17
171715 -21 0.2 1027 ~ WB4HAL DF1SD JN48	171530 Tx 1003 ~ K4AKK S52D -17
171715 -9 0.2 1299 ~ S55G K1CA RRR	171600 Tx 1003 ~ K4AKK S52D -17
171715 -5 0.2 1401 ~ 4X1RU WA5ZFP -24	171615 -15 0.5 1003 ~ A92AA K4AKK EM55
171715 -12 0.1 1805 ~ AA7G IU8PRE JN70	171615 -13 0.1 1896 ~ CQ UX1BZ KN29
171715 -13 0.2 1942 ~ IK8SDA KN9C -13	171634 Tx 1896 ~ UX1BZ S52D -13
171715 -7 -0.1 2152 ~ WA2HIP KJ4FZ R-03	171700 Tx 1896 ~ UX1BZ S52D -13
171715 -7 0.3 2284 ~ DM2DMI AA7G -19	171715 -13 0.2 1896 ~ S52D UX1BZ R-06
171715 -13 0.6 932 ~ CQ EA5XY IM99 Spain	171730 Tx 1896 ~ UX1BZ S52D RRR

Control Panel:

- Log QSO Stop Monitor Erase Decode **Enable Tx** Halt Tx Tune Menu
- 20m **14.074 000**
- DX Call: UX1BZ, DX Grid: KN29, Az: 62, 816 km
- 2018 Feb 18 17:17:38
- Report -13, Auto Seq, Call 1st
- TX Queue: UX1BZ S52D JN76, UX1BZ S52D -13, UX1BZ S52D R-13, UX1BZ S52D RRR, UX1BZ S52D 73, CQ S52D JN76
- Tx: UX1BZ S52D RRR, rocno FT8, Last Tx: UX1BZ S52D -13, 8/15, WD:5m

73

73, klik na "Log QSO" in zveza je končana

The screenshot displays a radio software interface with a log window at the top and a control panel below. The log window is split into two columns. The left column shows a list of QSOs with columns for time, signal strength, distance, call sign, and location. The right column shows a list of QSOs with columns for call sign, mode, time, distance, and call sign. The control panel includes buttons for Log QSO, Stop, Monitor, Erase, Decode, Enable Tx, Halt Tx, and Tune. A frequency display shows 14.074 000 MHz. A call sign display shows UX1BZ and KN29. A date and time display shows 2018 Feb 18 17:18:09. A list of messages is shown on the right side of the control panel.

Time	Signal	Distance	Call Sign	Location
171745	-13	0.2	1896	~ S52D UX1BZ 73
171745	-13	0.2	388	~ G0JUR K1YQC -11
171745	11	0.1	508	~ CQ EB5GC IM97 Spain
171745	3	0.1	799	~ VU3UPZ EA3VM JN01
171745	-8	0.0	848	~ N9TC EA8HB RRR
171745	-13	0.6	932	~ I3QDK EA5XY -12
171745	-16	0.1	1003	~ IZ8CKY K4AKK -15
171745	-7	0.2	1299	~ S55G K1CA RRR
171745	-5	0.2	1401	~ 4X1RU WA5ZFP -24
171745	-9	1.4	1575	~ VU3UPZ K4TXX R-10
171745	-8	0.1	1805	~ AA7G IU8FRE JN70
171745	-7	-0.3	2152	~ WA2HIP KJ4FZ 73
171745	-5	0.3	2284	~ DM2DMI AA7G RRR
171745	-1	0.2	549	~ C31KC NC2V EL98
171745	-5	0.2	752	~ IT9OPR K9EKP R-04
171745	-16	0.3	1427	~ NN4S W8NET EN91
171745	-11	0.2	1942	~ IK8SDA KN9C RRR

Call Sign	Mode	Time	Distance	Call Sign
171145	Tx	1179	~	N5JJH S52D -13
171300	-16	1.1	1178	~ VA2ZC N5JJH RRR
171330	-16	1.1	1179	~ VA2ZC N5JJH 73
171349	Tx	1179	~	N5JJH S52D -13
171415	Tx	1179	~	N5JJH S52D -13
171445	-17	0.1	1003	~ CQ DX K4AKK EM55
171501	Tx	1003	~	K4AKK S52D -17
171530	Tx	1003	~	K4AKK S52D -17
171600	Tx	1003	~	K4AKK S52D -17
171615	-15	0.5	1003	~ A92AA K4AKK EM55
171615	-13	0.1	1896	~ CQ UX1BZ KN29
171634	Tx	1896	~	UX1BZ S52D -13
171700	Tx	1896	~	UX1BZ S52D -13
171715	-13	0.2	1896	~ S52D UX1BZ R-06
171730	Tx	1896	~	UX1BZ S52D RRR
171745	-13	0.2	1896	~ S52D UX1BZ 73
171800	Tx	1896	~	UX1BZ S52D 73

Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menu

20m 14.074 000

DX Call UX1BZ DX Grid KN29

Az: 62 816 km

Lookup Add

2018 Feb 18 17:18:09

Report -13

Auto Seq Call 1st

Generate Std Msgs

Next Now

UX1BZ S52D JN76 Tx 1

UX1BZ S52D -13 Tx 2

UX1BZ S52D R-13 Tx 3

UX1BZ S52D RRR Tx 4

UX1BZ S52D 73 Tx 5

CQ S52D JN76 Tx 6

Tx: UX1BZ S52D 73 rocn FT8 Last Tx: UX1BZ S52D RRR 9/15 WD:4m

QSO

bz: CQ UX1BZ KN29

2d: UX1BZ S52D -13 (namesto UX1BZ S52D JN76)

bz: S52D UX1BZ R-06

2d: UX1BZ S52D RRR

bz: S52D UX1BZ 73

2d: UX1BZ S52D 73

DXanje

Če ima DX avtomatiko in posluša cel pas:

- prvo na svoji frekvenci
- potem od spodaj navzgor, prvo dekodiranje
- potem od spodaj navzgor drugo dekodiranje

Prednost: 270, 330, 390 Hz na začetku

Ali ima filter (ponavadi ne), ali je na avtomatiki, kje ima VFO?

- težko, če ne slišimo srečnejev, ki so ga naredili pred nami

QSO z J28PJ

Pile up, oddajal na 690 Hz, avtomatika, brez sit.

Iztok: VFO na 14073.1 (900 Hz nižje)

RX: 1590 Hz, 500 Hz filter (najmanj za FT-450D)

TX: 1180, dejanski 280 Hz, začetek pasu

Nova država na FT8.

ICOM-7610: kar 3.4 kHz stalno, RX 200 Hz nižje.

J28PJ

The screenshot displays a radio software interface with several key components:

- Waterfall Plot:** A spectral display showing signal activity across a frequency range from 1500 to 3000 kHz. A prominent signal is visible around 1700 kHz, with a green trace below it.
- Log Window:** A text-based log showing call signs and frequencies. The current entry is `14 0.4 1622 ~ SV0RNG RW9UB N035 TRUE FALSE P`. Other entries include `731 band: 20 FT8 B J28PJ S52D RRR` and `14 0.4 1727 ~ CQ DX LU2XP FD66 TRUE TRUE LU`.
- Frequency List:** A table of frequencies and call signs. The current entry is `073100 Tx 1180 - J28PJ S52D-73`. Other entries include `073115 3 C.9 15C7 - RA3DAP J28PJ RRR` and `073145 3 C.6 15C0 - R03ZAC JALQ04 75`.
- Control Panel:** A central control area with a frequency display showing `14.073 100` and a time display showing `2018 Feb 16 07:38:28`. It includes buttons for `Log QSO`, `Stop`, `Monitor`, `Erase`, `Decode`, `Enable Tx`, `Net Tx`, and `Tune`. There are also checkboxes for `Tx evenList`, `Lock Tx=Rx`, `Report S`, `Auto Seq`, and `Call List`.
- System Settings:** A sidebar on the right with various settings, including `System Settings`, `NVIDIA X Server Settings`, and `User: itok on ris`.

Kje klicati?

FT4 je bolj občutljiv na QRM kot FT8.

Kje nas bo DX, ki kliče CQ, sprejel?

- kar je čisto tu, ni nujno tam.

Ponavadi je CQ frekvenca prava za odgovor: če smo edini.

- S52D: +/- 90 Hz FT4, +/- 60 Hz FT8. Kar XIT

CQ QRG izbrati tako, da poslušamo tudi višje in nižje.

- seveda lahko kličemo kjerkoli, glavno je, da nas sliši

Fox and Hound mode

Nastavitev

FT8 DXpedition mode (Advanced):

- brez izbire za običajno
- Fox izbere DXpedicija
- Hound izberemo klicoči

QRG: drugje kot običajni QSO

FH

Lisica oddaja do 5 signalov istočasno na začetku pasu

- dva QSO hkrati v enem FT8 okvirju (10 QSO istočasno?)

Skrajšan protokol:

- Psi lovci kličemo nad 1 kHz in čakamo raport
- ko sprejmemo raport, oddajamo raport pod 1 KHz
- Ko sprejmemo RR73, nehamo klicati. QSO je v LOGu

Primer

Zakaj DL1DTL ne bo naredil QSO?

The screenshot displays a radio software interface with a log window at the top and a control panel below. The log window shows a list of contacts with columns for frequency, mode, power, distance, and call sign. The control panel includes buttons for 'Log QSO', 'Stop', 'Monitor', 'Erase', 'Decode', 'Enable Tx', 'Halt Tx', and 'Tune'. A frequency display shows 21.090 800 MHz. A 'Generate Std Msgs' window is open, showing a list of messages to be transmitted, including 'KG4HF S52D JN76', 'KG4HF S52D +06', 'KG4HF S52D R+06', 'KG4HF S52D RRR', 'KG4HF S52D 73', and 'CQ S52D JN76'. A digital readout shows the date and time: 2018 Oct 11 15:42:55. A signal strength indicator shows 61 dB. The call sign 'KG4HF' and grid 'FK29' are displayed. The text 'DXpedition: Hound' is visible at the bottom.

Frequency	Mode	Power	Distance	Call Sign
153745	1	0.5	293	~ KG4HF DL1DTL JO61
153830	-4	0.5	2294	~ SP3JGI KG4HF -12
153930	4	0.5	493	~ SP3JGI KG4HF RR73
154000	4	0.5	493	~ CQ KG4HF FK29
154030	5	0.4	493	~ S52D KG4HF -07
154100	6	0.8	493	~ S52D KG4HF -07
154130	7	0.4	493	~ S52D KG4HF RR73
154145	-7	0.4	555	~ KG4HF DL1DTL JO61
154200	7	0.4	494	~ CQ KG4HF FK29
154215	-9	0.4	556	~ KG4HF DL1DTL JO61
154230	3	0.4	494	~ CQ KG4HF FK29

Frequency	Mode	Power	Distance	Call Sign
153830	-4	0.5	2294	~ SP3JGI KG4HF -12
153946	Tx	1400	~	KG4HF S52D JN76
154015	Tx	1400	~	KG4HF S52D JN76
154000	4	0.5	493	~ CQ KG4HF FK29
154016	Tx	1400	~	KG4HF S52D JN76
154030	5	0.4	493	~ S52D KG4HF -07
154045	Tx	493	~	KG4HF S52D R+05
154100	6	0.8	493	~ S52D KG4HF -07
154115	Tx	493	~	KG4HF S52D R+06
154130	7	0.4	493	~ S52D KG4HF RR73

Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune Menu

15m 21.090 800 Tx even/1st Tx 807 Hz Rx 1411 Hz Report 6 Tx ← Rx Rx ← Tx

DX Call: KG4HF DX Grid: FK29 Az: 284 8428 km Report 6

Lookup Add Rx All Freqs Auto Seq

2018 Oct 11 15:42:55 DXpedition: Hound

Generate Std Msgs Next Now Pwr

Message	Next	Now
KG4HF S52D JN76	<input type="radio"/>	Tx 1
KG4HF S52D +06	<input type="radio"/>	Tx 2
KG4HF S52D R+06	<input checked="" type="radio"/>	Tx 3
KG4HF S52D RRR	<input type="radio"/>	Tx 4
KG4HF S52D 73	<input type="radio"/>	Tx 5
CQ S52D JN76	<input type="radio"/>	Tx 6

61 dB

Več QSO istočasno

Lisica potrjuje dva QSO z eno odajo:

S52D RR73; OZ7JZ <TY7C> -17

- WSJTX si je prej zapomnil kodo za TY7C, drugače ...

Z JTDX tudi običajni FT8. Kak S01WS, 5B4 ipd
WSJTX, samo Fox, več TX hkrati, en zraven drugega:

- TX moč: ovojnica ni konstantna, -6 dB za 2 TX
- sešteva napetosti, ne moči

SW lahko malce popravlja, samo ni več konstantna amplituda.

Kontesti

FT8 počasen, FT4 zahteva dober signal.

CQ WW CW, SSB, RTTY: avgusta WW-digi (FT4/FT8).

- WWROF in SCC organizirata

Množilci: UL polja (JN), točke QRB (JN76).

- vsakih 3000 km ena pika

Dovoljene zveze tudi z običajnim načinom dela.

Contest QRG, da ne motimo ostalih. Prvič 2019.

Decembra: FT4/FT8 roundup kontest.

Bandplan

IARU: priporočilo

- joj joj, kaj z FT8? JT65? WSPR?
- ampak tam je "rezervirano" za XX27
- ni prostih kHz na KV pasovih.

Za manj uporabljane MODE napotek, kje najti sogovornika.
Ko pride CQ WW je CW/SSB povsod.

- CQ WW 2017: Ponedeljek ob 0005 prvi FT8 na 160 m.

FH način za DXe, FT8 kontesti so novi, rabimo dobro prakso.
IARU dela na novem usklajenem bandplanu.

- deljeni prostor se obnese na cesti.

Nastavitve in postaja

CAT povezava: QRG, VFO ipd

Sodobne postaje imajo USB povezavo (zvočna kartica v postaji).

Oddaja:

- spreminja VFO, da smo vedno okoli 1500 Hz, brez intermodulacije.
- če TX PWR ni konstantna: težave z RF v zvočnem kablu.

Linux: hamlib knjižnica za različne postaje

Seveda gre brez CAT, tudi brez kablov: zvočnik/mikrofon.

Raje ne.

General

General | Radio | Audio | Tx Macros | Reporting | Frequencies | Colors | Advanced

Station Details

My Call: My Grid: AutoGrid IARU Region: ▾

Message generation for type 2 compound callsign holders: ▾

Display

Start new period decodes at top

Blank line between decoding periods

Display distance in miles

Tx messages to Rx frequency window

Show DXCC, grid, and worked-before status Show principal prefix instead of country name

Behavior

Monitor off at startup Enable VHF/UHF/Microwave features

Monitor returns to last used frequency Allow Tx frequency changes while transmitting

Double-click on call sets Tx enable Single decode

Disable Tx after sending 73 Decode after EME delay

Alternate F1-F6 bindings Tx watchdog: ▾

CW ID after 73 Periodic CW ID Interval: ▾

Radio

Split: Fake it, samo prvi VFO za TX/RX

General | **Radio** | Audio | Tx Macros | Reporting | Frequencies | Colors | Advanced

Rig: Hamlib NET rigctl Poll Interval: 1 s

CAT Control

Network Server: []

Serial Port Parameters

Baud Rate: 4800

Data Bits

Default Seven Eight

Stop Bits

Default One Two

Handshake

Default None

XON/XOFF Hardware

Force Control Lines

DTR: [] RTS: []

PTT Method

VOX DTR

CAT RTS

Port: /dev/ttyUSB2

Transmit Audio Source

Rear/Data Front/Mic

Mode

None USB Data/Pkt

Split Operation

None Rig Fake It

Test CAT Test PTT

OK Cancel

Reporting

The screenshot shows a software dialog box titled "Reporting". It features several tabs: "General", "Radio", "Audio", "Tx Macros", "Reporting" (which is the active tab), "Frequencies", "Colors", and "Advanced".

Logging

- Prompt me to log QSO
- Log automatically (contesting only)
- Convert mode to RTTY
- dB reports to comments
- Clear DX call and grid after logging

Op Call:

Network Services

- Enable PSK Reporter Spotting

UDP Server

UDP Server: Accept UDP requests

UDP Server port number: Notify on accepted UDP request

Accepted UDP request restores window

N1MM Logger+ Broadcasts

- Enable logged contact ADIF broadcast

N1MM Server name or IP address:

N1MM Server port number:

At the bottom right, there are "OK" and "Cancel" buttons.

QRG

General | Radio | Audio | Tx Macros | Reporting | **Frequencies** | Colors | Advanced

Frequency Calibration

Slope: Intercept:

Working Frequencies

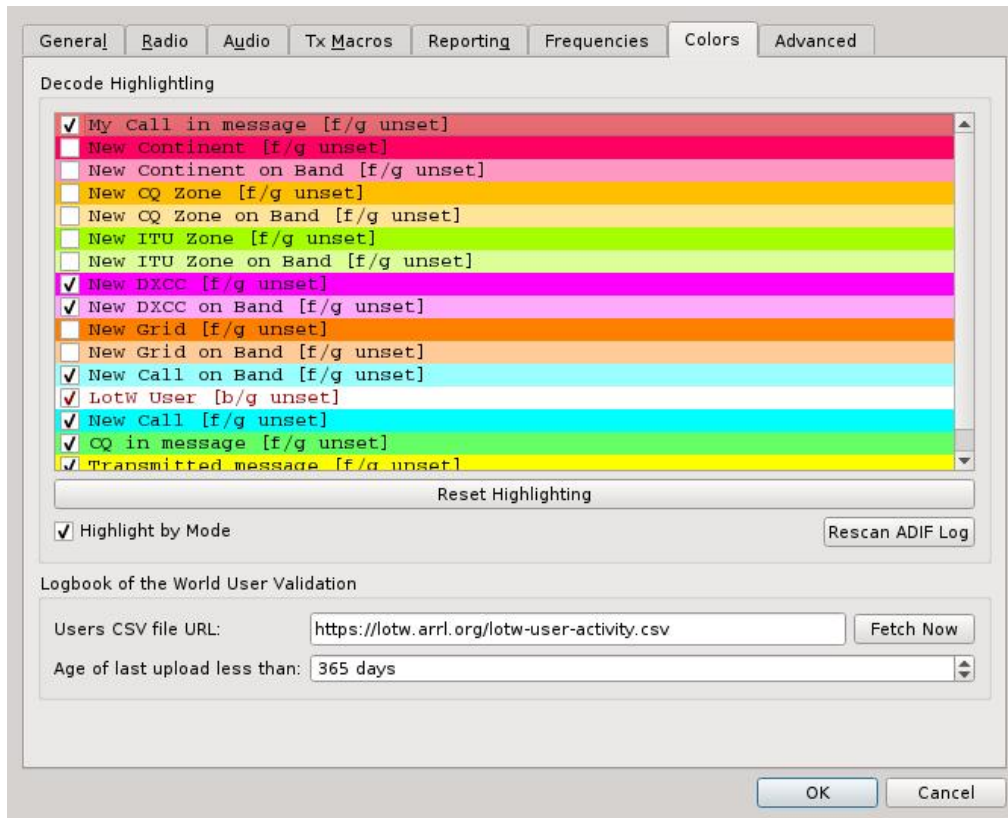
IARU Region	Mode	Frequency
All	WSPR	7.038 600 MHz (40m)
All	FT4	7.047 000 MHz (40m)
All	FT8	7.074 000 MHz (40m)
All	JT65	7.076 000 MHz (40m)
All	JT9	7.078 000 MHz (40m)
All	FreqCal	7.850 000 MHz (OOB)
Region 1	FreqCal	9.996 000 MHz (OOB)

Station Information

Band	Offset	Antenna Description
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OK Cancel

Barvice in LotW



Advanced

General | Radio | Audio | Tx Macros | Reporting | Frequencies | Colors | **Advanced**

JT65 VHF/UHF/Microwave decoding parameters

Random erasure patterns:

Aggressive decoding level:

Two-pass decoding

Miscellaneous

Degrade S/N of .wav file:

Receiver bandwidth:

Tx delay:

Tone spacing

x 2 x 4

Waterfall spectra

Low sidelobe Most sensitiv

Special operating activity: Generation of FT8 and MSK144 messages

Fox Hound

NA VHF Contest ARRL Field Day FD Exch:

EU VHF Contest RTTY Roundup messages RTTY RU Exch:

HAM spirit

Vsi si delimo 3 kHz. Kako z najmanj QRM?

- Kličem samo, ko me DX posluša. (Tudi CW)
- Ne motim zveze, ki poteka
- CQ postaja ostaja na QRG

Skratka, enako kot CW, SSB ...

Za danes konec

Odlična dokumentacija. G, DL, SM. ZL2IFB. (lea forum)
Opazujte, kaj delajo drugi.

- zelo zahteven program, enostavno delo.

NTP: ura, točna bolj kot 1 sekundo.

JTAlert, N1MM+: podporni programi za Windowse.

Kaj manjka WSJT-X 2.1?

- pustimo se presenetiti z WSJT-X 3.0.