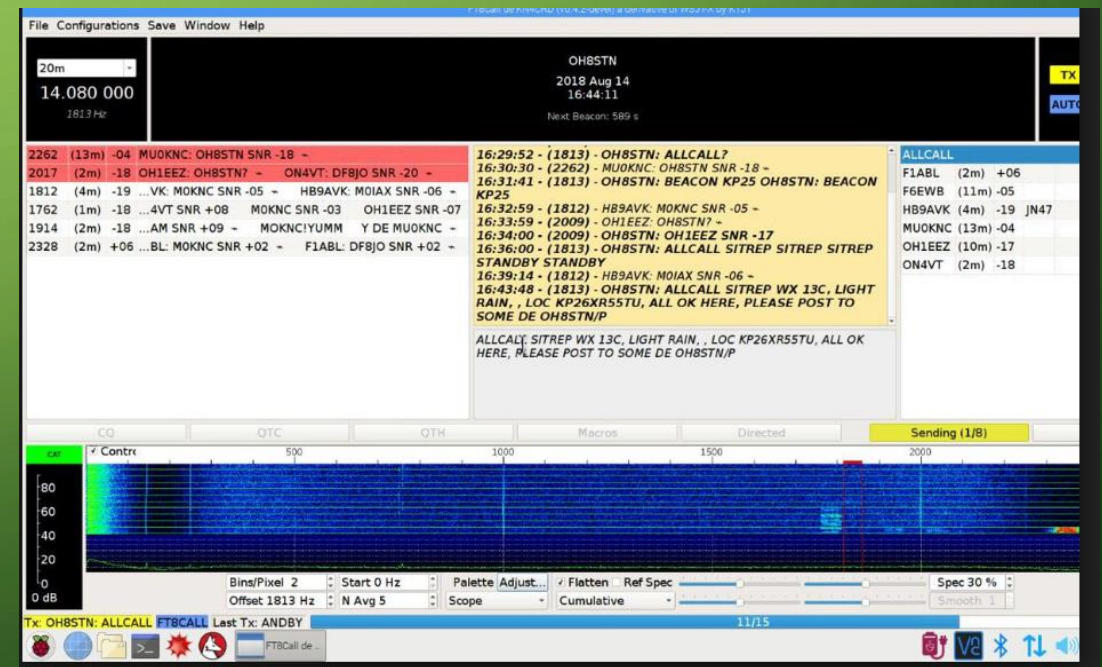


FT8CALL NOVO MODO DIGITAL PARA ONDAS CURTAS

COLIN BUCKUP

N5GG

SETEMBRO 2018



Link – Design Document

<https://github.com/jsherer/ft8call>

O QUE É?

FT8CALL é um novo modo de comunicação digital desenvolvido a partir do modo FT8, visando especificamente o QSO teclado-a-teclado em HF – Ondas Curtas

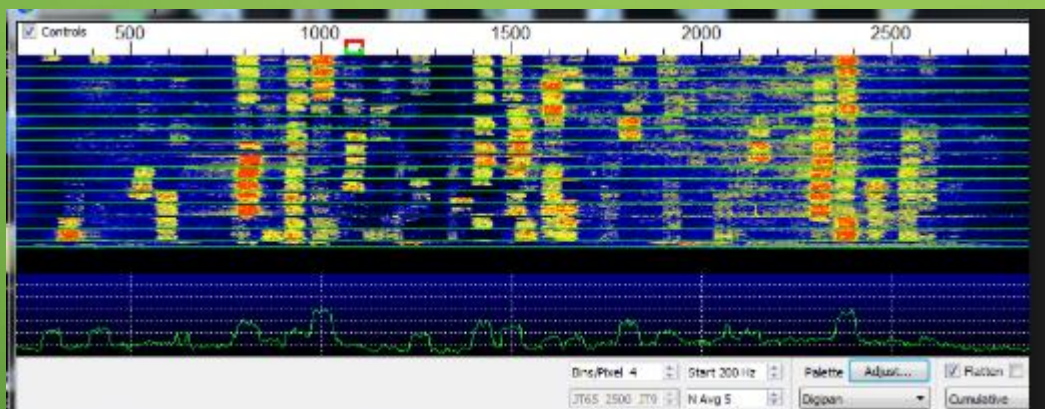
Criado por Jordan Sherer KN4CRD em março de 2018

As metas principais do FT8CALL são:

- Possibilitar a criação de uma rede de estações operadas manual ou remotamente comunicando-se embasado no padrão do FT8
- Oferecer comandos curtos e intuitivos para trafegar mensagens na rede
- Utilizar uma maneira extremamente compacta para envio de mensagens, utilizando o menor espaço de tempo possível (rapidez)
- Possibilitar comunicação teclado-a-teclado, re-introduzindo o fator “humano” ao QSO
- Possivelmente oferecer retransmissão automática de mensagens perdidas

FT8

NO MOMENTO: O REI DOS MODOS DIGITAIS EM HF



PERGUNTA: Se FT8 é tão bom, então porque introduzir mais um modo e diluir os usuários?

RESPOSTA: FT8 é tão compacto que serve bem para troca de reportagem de sinais em condições precárias, automatizando o QSO, mas impossibilitando o QSO teclado-a-teclado como outros modos ofereciam (RTTY; PSK31; Olivia; etc)

PARA OS APRESSADINHOS... (ONDE ESTÃO OS ARQUIVOS DO PROGRAMA?)

Como FT8CALL ainda se encontra em desenvolvimento (hoje, 4/Set/18 a versão fresquinha é v0.5.2) para obter-se os arquivos de instalação do programa é necessário participar do grupo ft8call no portal groups.io (antigo Yahoo groups)

<https://groups.io/>

É só pedir para ser incluído ao grup **ft8call** e a liberação é imediata!

<https://groups.io/g/ft8call>

DOWNLOAD DOS ARQUIVOS DE INSTALAÇÃO

Aí é só ir na Wiki do grupo e baixar o arquivo necessário

The screenshot shows the Groups.io interface for the group 'ft8call@groups.io'. The main content area is titled 'Wiki / FT8Call Latest Release Download Links'. It contains the following text and links:

Read the latest release announcements here: <https://groups.io/g/ft8call/search?q=%23release&ct=1>

Make sure to read the latest documentation here: <https://docs.google.com/document/d/159S4wqMUVdMA7qBgaSWmU-iDI4C9wd4CuWnetN68O9U/edit?usp=sharing>

The latest builds of FT8Call are version 0.5.2:

- Desktop Linux (64-bit x86_64, Ubuntu 18.04 Appliance): [\[download\]](#)
- Desktop Linux (64-bit x86_64, Ubuntu 16.04 Appliance): [\[download\]](#)
- Desktop Linux (64-bit x86_64, 18.04 deb): [\[download\]](#)
- Desktop Linux (64-bit x86_64, 16.04 deb): [\[download\]](#)
- Desktop Linux (32-bit i386): [\[download\]](#)
- Raspbian Stretch (armv7, Appliance): [\[download\]](#)
- Raspbian Stretch (armv7, deb): [\[download\]](#)
- Windows 7-10 (win32_64): [\[download\]](#)
- Mac OS 10.11+ (64-bit x86_64): [\[download\]](#)

The 'Wiki' menu item in the left sidebar is circled in black, and a yellow arrow points from it to the download links. A yellow box highlights the text 'The latest builds of FT8Call are version 0.5.2:'.

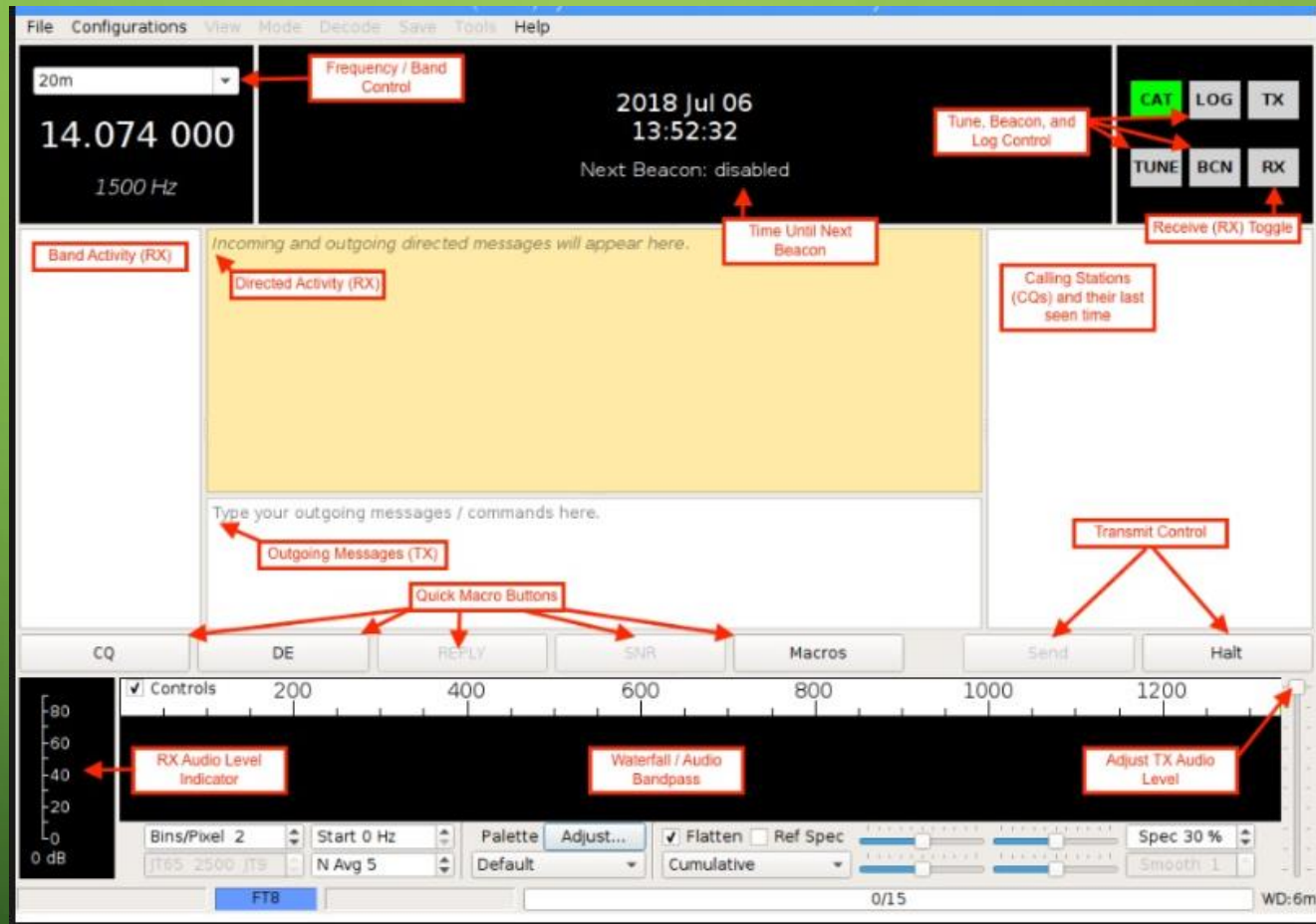
INSTALE O PROGRAMA DE ACORDO COM A SUA PREFERÊNCIA

Download & Install

FT8Call currently comes in a variety of builds.

- Desktop Linux (64-bit x86_64, Ubuntu 18.04 Appliance)
- Desktop Linux (64-bit x86_64, deb)
- Desktop Linux (32-bit i386)
- Raspbian Stretch (armv7, Appliance)
- Raspbian Stretch (armv7, deb)
- Windows 10 (win32_64)
 - Windows 10 is the only officially supported Windows build at this time, even though the application works all the way back to Windows XP.
- Mac OSX (x86_64)

ESTRUTURA DA TELA PRINCIPAL – FT8CALL



FT8CALL EM USO

The screenshot shows the FT8CALL software interface. At the top, the menu bar includes "File", "Configurations", "Save", "Window", and "Help". The main display area is divided into several sections:

- Top Left:** A dropdown menu set to "20m" and a frequency display showing "14.080 000" with "1813 Hz" below it.
- Top Center:** The call sign "OH8STN", the date "2018 Aug 14", the time "16:44:11", and "Next Beacon: 589 s".
- Top Right:** "TX" and "AUTO" buttons.
- Log Area:** A list of messages with columns for time, duration, signal strength, and content. The content column shows various messages including "ALLCALL?", "BEACON KP25", and "ALLCALL SITREP WX 13C, LIGHT RAIN, , LOC KP26XR55TU, ALL OK HERE, PLEASE POST TO SOME DE OH8STN/P".
- Waterfall Display:** A spectrogram showing frequency over time. The x-axis is labeled "CG", "QTC", "QTH", "Macros", "Directed", and "Sending (1/8)". The y-axis is labeled "dB" and ranges from 0 to 80. The display shows a dense pattern of blue and green lines representing signals.
- Bottom Panel:** A status bar showing "Tx: OH8STN: ALLCALL FT8CALL Last Tx: ANDBY" and "11/15". Below this is a taskbar with various icons, including a Raspberry Pi logo, a folder, a terminal, a red star, a mouse cursor, and a "FT8Call de ..." window.

EU INSTALEI! E AGORA?

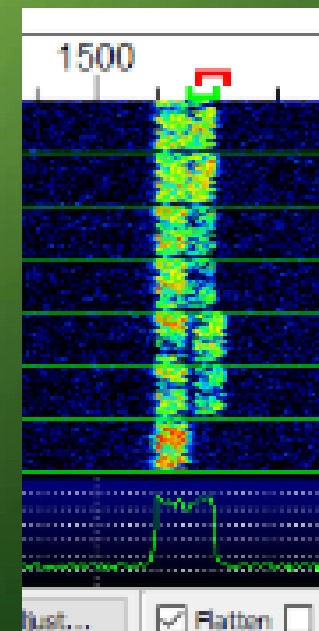
Em Primeiro Lugar: O FT8 e o FT8CALL são iguais?

FT8CALL e FT8 NÃO SÃO COMPATÍVEIS, isto é: não é possível decodificar mensagens FT8 com FT8CALL ou vice-versa. Não adianta nem tentar que não vai funcionar!

Em Segundo Lugar: O QUE MUDOU do FT8 para o FT8CALL?

Como vimos no início da apresentação, o FT8CALL traz de volta o QSO teclado-a-teclado. Para conseguir isso usando os métodos de compressão e modulação do FT8, que são excelentes, o autor precisou modificar a estrutura das mensagens para o FT8CALL.

O FT8CALL permite o envio de mensagens genéricas cobrindo todos os caracteres ASCII maiúsculas, minúsculas e pontuação. Essas mensagens serão enviadas em blocos de 15s seguindo o padrão do FT8, dependendo do comprimento da mensagem, vários blocos de 15s serão enviados em sequência.



EU INSTALEI! E AGORA?

Em Terceiro Lugar: É recomendável ler no detalhe a documentação do FT8CALL para entender qual a idéia, como funciona e como melhor operar o modo. Aqui vai o link:

<https://docs.google.com/document/d/159S4wqMUVdMA7qBgaSWmU-iDI4C9wd4CuWnetN68O9U/edit?usp=sharing>

FT8Call de KN4CRD

2018-09-2 - v0.5.2 - Pre-Release

FT8 has taken over the airwaves as *the* digital communication mode for making QSOs over HF/VHF/UHF. The mode has been widely popular as the latest offering in K1JT's WSJT-X application. FT8 is based on the same foundation as JT65, JT9, and WSPR modes for weak signal communication, but transmits much faster with only slightly reduced sensitivity.

While FT8 is an incredibly robust weak signal mode, it is designed heavily to take advantage of short band openings on HF/VHF/UHF and only offers a minimal QSO framework. However, many operators are using these weak signal qualities to make successful QSOs on the HF bands where other modes fail.

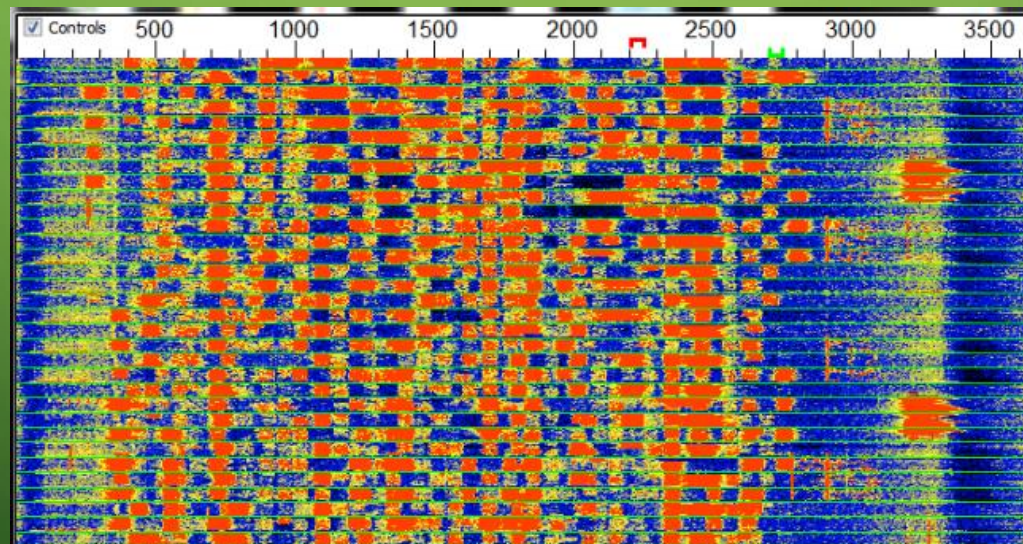
ONDE SE OPERA FT8CALL?

Aqui estão as frequências recomendadas para FT8CALL

160m: 1.842 MHz // 2kHz above FT8
80m: 3.578 MHz // 5kHz above FT8
40m: 7.078 MHz // 4kHz above FT8
30m: 10.130 MHz // 6kHz below FT8
20m: 14.078 MHz // 4kHz above FT8
17m: 18.104 MHz // 4kHz above FT8
15m: 21.078 MHz // 4kHz above FT8
12m: 24.922 MHz // 9kHz above FT8
10m: 28.078 MHz // 4kHz above FT8
6m: 50.318 MHz // 5kHz above FT8

E A TEMPORIZAÇÃO?

Como já ocorria no FT8, a base de tempo é extremamente importante já que os frames das mensagens são mandados em blocos de 15s de duração. Isso significa que todos os participantes da rede precisam estar com os relógios dos seus PCs sincronizados para começarem a transmitir ou receber no instante certo.



EXEMPLO DE UM QSO EM FT8CALL

- An example QSO:
 - →KN4CRD: CQCQCQ EM73 ↘
 - ←DR4CNK: KN4CRD SNR +01 **GOOD SIGNAL** ↘
 - →KN4CRD: DR4CNK SNR -12 **TU 4 CALL RIG IS KX2 5W DIPOLE** ↘
 - ←DR4CNK: KN4CRD RR -22 **FB KX3 100W VERT** ↘
 - →KN4CRD: DR4CNK RR FB REALLY **ENJOYING THE CHAT MODE WITH LONG MESSAGES. BUT HEY LET'S TRY A RELAY** ↘
 - ... *(and on, and on, if you want)*
 - →KN4CRD: DR4CNK 73 ↘
 - →KN4CRD: CQCQCQ EM73 ↘

Nota: a mudança de cor é só para demonstrar que partes da mensagem são enviadas em frames de 15s distintos

MENSAGENS TIPO COMANDO

FT8CALL permite o comando automático da estação transmissora à estação receptora (se esta estiver com o modo AUTO ativo)

Available commands:

- ? - What is my SNR?
- @ - What is your QTH (station location)?
- & - What is your QTC (station message)?
- % - What is your station power?
- \$ - What stations are you hearing? (Will transmit the top 4 ranked by SNR)
- QSO [CALLSIGN]? - Can you communicate directly with CALLSIGN?
 - If the station ACKs, they will send back the SNR and the last time the callsign was heard at their station
- |message - Please ACK and retransmit the following message
 - The message is retransmitted by the receiving station verbatim with the addition of "DE [CALLSIGN]" added to the end of the message...meaning you do not need to add it to your message.
- !message - Please display this message in a alert dialog and ACK if acknowledged
- #message - Please ACK if you receive this message in its entirety
- AGN? - Have the station automatically retransmit their last message
- ---

MENSAGENS TIPO COMMANDO - EXEMPLO

Envio do comando ALLCALL? Fará com que todas as estações que copiarem o comando enviem a reportage de sinal para quem enviou ALLCALL?

The screenshot displays the FT8Call software interface. At the top, it shows the frequency 14,080,000 Hz and the date/time 2018 aug 16 19:31:57. Below this, there is a list of messages with columns for time, status, and content. A yellow highlight is placed over the message at 21:04: "04 DK4FP: ALLCALL? -> GA0TG: PE4BAS SNR -18 ->". To the right, a log window shows a series of timestamps and messages, including "19:30:15 (1130) PE4BAS: DK4FP SNR +05" and "19:30:49 (1135) PE4BAS: ALLCALL?". At the bottom, there is a control panel with buttons for "CAT/S", "Controls", "Macros", "Directed", and "Send".

Time	Status	Message
17:58	(now)	+12 F1ABL: PE4BAS SNR -02 ->
21:04	(now)	+04 DK4FP: ALLCALL? -> GA0TG: PE4BAS SNR -18 ->
11:55	(now)	-02 CN4VT: PE4BAS SNR -20 ->
14:07	(45s)	-18 WA2NDV: SL1YXJ? ->

Log messages (right side):

- 19:30:08 - (800) - PE4BAS: BEACON 3033 PE4BAS: BEACON 3033
- 19:30:27 - (800) - PE4BAS: CQ CQ CQ 3033
- 19:24:00 - (1124) - CN4VT: ALLCALL? ->
- 19:24:01 - (1226) - PE4BAS: CN4VT SNR +03
- 19:26:30 - (1130) - PB7TT: PD7BCN DE PB7TT TEST ->
- 19:27:14 - (1130) - PB7TT: PD7BCN TEST ->
- 19:28:29 - (1130) - PB7TT ->
- 19:29:14 - (1135) - CN4VT: BEACON 3021
- 19:29:29 - (1135) - TEST -> PB7TT -> CN4VT: BEACON 3021 CN4VT: BEACON 3021 ->
- 19:30:14 - (2100) - DK4FP: ALLCALL? ->
- 19:30:15 - (1130) - PE4BAS: DK4FP SNR +05
- 19:30:49 - (1135) - PE4BAS: ALLCALL?
- 19:31:29 - (1135) - CN4VT: PE4BAS SNR -20 ->
- 19:31:30 - (2100) - GA4YG: PE4BAS SNR -18 ->
- 19:31:30 - (1738) - F1ABL: PE4BAS SNR -02 ->
- 19:31:30 - (2104) - GA4YG: PE4BAS SNR -18 ->

BEACON

FT8CALL permite que a estação transmissora envie um BEACON a cada 15 minutos para informar a todas as estações receptoras que se encontra no ar. Se as estações receptoras estiverem com o modo SPOT ativo, as mesmas informarão ao PKSREPORTER o recebimento to BEACON.

The screenshot shows the FT8Call software interface. The main window title is "FT8Call de KN4CRD (v0.4.2-devel) a derivative of WSJT-X by K1JT". The interface is divided into several sections:

- MOIAX Section:** Displays "MOIAX", "2018 Aug 15 09:44:41", and "Next Beacon: 739 s". This section is circled in red.
- Control Panel:** Contains buttons for "RX" (green), "TUNE" (grey), "SPOT" (green), "AUTO" (blue), "BCN" (blue), and "LOG" (grey). The "RX" and "SPOT" buttons are circled in red.
- Log Section:** A scrollable list of messages. The most recent message is "9:41:02 - (496) - MOIAX: OH8STN/P WX IS CLOUD +20C".
- ALLCALL Table:** A table listing received calls with columns for call sign, distance, frequency offset, and distance. The entry for "OH8STN/P" is highlighted in blue.

Call Sign	Distance	Offset	Distance
HB9AVK	(1m)	+07	JN47 803 km
LB9YH	(1.2m)	-18	J048 1099 km
OH1EEZ	(14m)	-06	KP10 1863 km
OH6IJ	(45s)	+00	KP12 1971 km
OH8STN/P	(1.2m)	-18	KP26 2304 km
SM5SYO	(10m)	-12	J089 1517 km
SQ8W	(now)	-01	KN09 1575 km

DETALHES TÉCNICOS

Some important characteristics of FT8CALL:

- T/R sequence length: 15 s
- Message length: 75 bits + 12-bit CRC ***nota: CRC diferente to CRC FT8
- FEC code: LDPC(174,87)
- Modulation: 8-FSK, tone spacing 6.25 Hz
- Constant-envelope waveform
- Occupied bandwidth: 50 Hz
- Synchronization: 7x7 Costas arrays at start, middle and end
- Transmission duration: $79 \cdot 1920 / 12000 = 12.64$ s
- Decoding threshold: -20 dB; several dB lower with AP decoding
- Multi-decoder finds and decodes all FT8 signals in passband

VIDEO DE OPERAÇÃO PORTÁTIL USANDO FT8CALL

Link: https://www.youtube.com/watch?v=xfH5YDEQ_18

The image is a composite of two video frames. The left frame shows a software interface for FT8Call. At the top, it says 'www.oh8stn.org' and 'OFF GRID & FIELD RADIO SURVIVAL TECH NORD'. Below that, it displays 'OH8STN/P' and the date '2018 Aug 15 09:30:41'. A chat log shows several messages, including '09:09:15 - (2050) - OH1EEZ_OH8STN/P ACK -', '09:09:55 - (1750) - OH8STN/P: LB9YH# HELLO KENNETH QWKC-7', and '09:11:13 - (1755) - LB9YH_OH8STN/P ACK -'. Below the chat log, there are various command prompts like 'CALL - Send a message to selected callsign', 'SNR - Send a signal report to the selected callsign', 'PWR - Send station power level to the selected callsign', and 'What is my signal report?'. At the bottom, there is a spectrum analyzer showing a signal at 14.111 MHz. The right frame shows a man wearing a blue jacket, a cap, and sunglasses, holding a handheld radio. He is standing in a forest with a dirt road in the background. The video player interface at the bottom shows a progress bar at 0:07 / 5:57.

FT8Call HF Digital Mode Portable Weak Signal Demonstration

OBRIGADO PELA ATENÇÃO
DIVIRTAM-SE COM FT8CALL NO AR
73 DE N5GG



Dah dah dit dit dit
Dit dit dit dah dah!