

New release of MULTIPSK (4.49)

RX/TX: PSK10 / BPSK31-63-125-250 / QPSK31-63-125-250 / CHIP (64/128) / PSKFEC31 / PSKAM10-31-50 / PSK63F - PSK220F + DIGISSTV "Run" / DTMF / CW / NDB / CCW / CCW-FSK / QRSS / THROB / THROBX / DTMF / MFSK8 / MFSK16/32/64 (+ SSTV) / MIL-STD-188-141A / ARQ FAE / MIL-STD-188-110A / ALE400 / OLIVIA / CONTESTIA / RTTYM / VOICE / JT65 / DominoF DF / DominoEX / THOR / MT63 / RTTY 45 / 75 / RTTY 50+SYNOP+SHIP / ASCII / AMTOR FEC / PACKET FSK 110-300-1200 + APRS+ DIGISSTV "Run" / PACKET BPSK1200-250-63 / PACTOR 1-FEC / PAX+PAX2 + APRS / FELD HELL / PSK HELL / FM HELL (105-245) / HELL 80 / HF-FAX / SSTV (+ QR Code) / LENTUS / AUTEX / RS ID / CALL ID / EM / DSTAR / PSK125R/250R/500R / WSPR

RX only: AMTOR ARQ / NAVTEX / RTTY 100 to 200 / 1382 / GMDSS DSC / ATIS / ACARS (VHF) / DGPS / SELCAL / COQUELET / NWR SAME / STANAG 4285 / HFDL / IEC 870-5 / ARQ-E / ARQ-E3 / POC SAG / BIIS / AIS / RDS / EPIRB-ELT-PLB beacons / Packet 9600 bauds (G3RUH) / VDL2 / ARGOS / Mode S (ADS-B) / ORBCOMM / AERO / EGC / M10/M20 / RS41 / DFM06-09 / LMS6 / C4FM / DMR / P25 / LRPT / FT8 / FT4 / IMET4

DSP: Filters + CW binaural reception

Identifiers: Video ID, RS ID, Call ID

PSK Panoramic (BPSK31/BPSK63/PSKFEC31): RX 23 or 36 channels simultaneously

CW Panoramic: RX 8, 23 or 36 channels simultaneously

RTTY Panoramic: RX 8 or 12 RTTY QSO decoded simultaneously on 22 or 35 channels

Programming of Multipsk reception

Satellites tracking

TCP/IP digital modem

Included SDR demodulator/modulator

SDR TCP/IP interface

SDR spectrum

CLOCK 1.11.12 (FLE (ex FRANCE-INTER), DCF77, MSF, WWVB, WWV, WWVH, CHU, JJY, RAI, BBC, GPS, Internet)

OMMAP 1.3 mapping program interfaced with Multipsk

Pour les francophones: la version en français de ce message se trouve sur mon site (<http://f6cte.free.fr>). Il suffit de cliquer sur le lien "Principales modifications (courriel avertissant de la sortie de la nouvelle version)".

Hello to all Ham and SWL,

The new releases of **MultiPSK (V.4.49)** and **OMMap (V.1.3)** are on my Web site (http://f6cte.free.fr/index_anglais.htm).

The mirror site is Earl's, W8BR: https://www.paazig.net/f6cte/MULTIPSK_setup.exe

The MD5 signature of the downloaded MULTIPSK_setup.exe file permitting checking (with WinMD5 for example), that the downloading was without error, is equal to:
ad9bfad54d8eb285a01e94350ab22869

While installing Multipsk, an error message about the "C:\MULTIPSK\HFDL_System_Table.txt" file can appear. In this case, click on the "Recommencer" button.

Multipsk and associated to Clock and OMMMap are freeware programs but with functions (mainly professional modes decoding for Multipsk) submitted to a licence (by user key).

The improvements of OMMap 1.3 are described below.

- **Night/day - day/night lines**

By clicking on the "**Night/day - day/night lines**" button, the two night/day and day/night lines are displayed in fuchsia on the map. Moreover, the "**Night**" or "**Day**" state is indicated at the map center.

- **Automatic pointing**

By clicking on the "**Automatic pointing**" button, the 150 last received and stored positions, included the GPS positions, are displayed on the smallest possible map, with some margin. This permits to have more details on the regions where the positions are located. Note that if all the 150 last received positions cannot be displayed on the current map, the "Automatic pointing" button changes to red.

- **Light yellow background color**

Positions can be displayed under a white (default option) , light yellow or yellow background color, if not displayed in transparency. This function is available by clicking on the "**General configuration**" button.

The improvements of MULTIPSK 4.49 are described below.

- **iMet-4 and IMet1-RS radiosondes decoding (UHF around 403 MHz)**

The iMet-4 radiosonde is in service since about 2020. The IMet1-RS radiosonde is much older (issued before 2010). They equip the weather balloons used in meteorology, mainly in Israel, Belgium (Beauvechain), USA and South-Africa. The iMet-4 model is a small box of 120 g, equipped with sensors, a GPS receiver (for its position) and a transmitter for data transmission. It is possible to monitor these radiosondes up to a range of 600 km, according to the reception equipment, whereas the weather balloons can travel up to 300 km, in general. It has to be noted that the balloons launches are generally done at fixed time. One or two launches are done each day.

For Hams and SWL, the signal of these iMet radiosondes can be received:

- either from the discriminator output of a classical UHF FM receiver via a direct connection to the PC sound card. Note that the use of the AF output of a classical FM receiver can, perhaps, work, depending of the receiver AF bandwidth.
- or with a SdR receiver (FunCube Dongle, RTL SDR,...) and directly demodulated by Multipsk. It is the most simple solution.

Note: Multipsk decodes the position and the telemetry (temperatures, pressure) of the radiosonde.

Example of decoding:

```
<11:00:38>
Latitude: 50.30772°N Longitude: 4.85943°E Altitude: 21732 m Satellites number=16
<5987> Pressure= 39.70 mbar T atmosphere= -57.93 °C Humidity= 0.70 % Battery voltage= 4.5 V T interior=
-0.69 °C T pressure sensor= -0.69 °C T humidity sensor= -56.15 °C
```

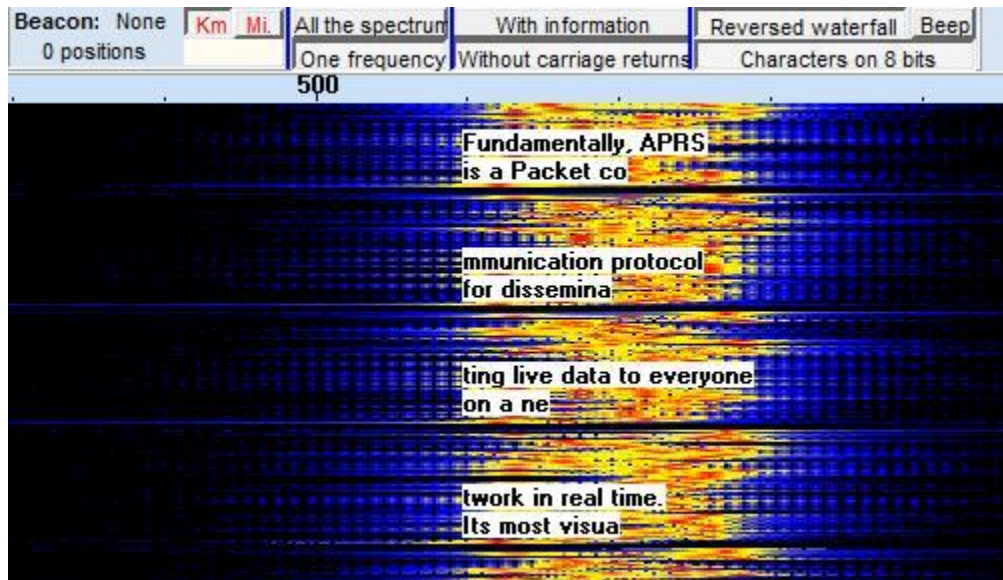
This mode is available for licenced copies, only (otherwise, the decoding is stopped after 5 minutes).

See general specifications further on.

QSOs using a 8 bits charset in "EM" mode

With this option (started if the "**Characters on 8 bits**" button is pushed), two Hams using the same Windows charset, will be able to chat in languages as Polish, Russian, French, Greek, Turkish, Estonian, Vietnamese, etc.

Below is given an example in English. It is reminded that the decoding is done on all the bandwidth (as in FT8 or in FT4), the sensitivity and the speed being similar to PSK31.



- **Possibility to store then use the NCDXF data acquired over the last 24 hours, for example for an Excel data analysis**

To access to this function, click on the "CW"/NDB/NCDXF" mode button, then on the "NCDXF" button, then on the "Beacons state" button. In the "**Data backup over 24 hours**" panel, it will be found the 2 buttons "**Daily**" and "**One-time**", which will permit to store the acquired data over the last 24 hours.

Possibility to insert the RX SSTV image in the TX one

Thanks to the commands "<RX" and "1/16", this function permits to acknowledge the reception of a SSTV picture transmitted by another Ham. Example below in the two options: F9XYZ is received by F6CTE who prepares his answer to F9XYZ.



- **Reception Quality Indicator (RQI) in FT8**

In FT8, it is proposed to display the Reception Quality Indicator (RQI) in dB. The RQI indicator is useful to compare the user set HF “Omnidirectional antenna + Noise environment” with a reference station set “Omnidirectional antenna + Quiet noise environment” (Twente station for example).

The RQI applies to omnidirectional antennas (ground-plane, etc).

For about directional antennas (Yagi for example) the RQI is variable as it depends on the direction targeted by the antenna relatively to the propagation direction of the moment. If both directions are aligned the RQI will be very positive and reversely. However, if the propagation direction is known, the RQI can be possibly used to determine the gain of the antenna, compared to a non-directional antenna in the vicinity.

So a station, located not far away from the reference station (Twente for example), and having a good omnidirectional antenna in a rural environment will see a RQI indicator around 0 dB, and perhaps slightly positive. Reversely, a station having a reduced vertical antenna in an urban environment will see a RQI indicator strongly negative (down to -10 dB, see less). So different antennas located on the same region can be compared with each other, taking into account the estimated maximum uncertainty: +/-2 dB.

But the main RQI use is to compare, in the same time and in the same location, two antennas, one being the reference one and the other one being the antenna to test.

Note that two receivers sharing the same antenna can also be compared.

Example of result:

RQI= -3.3 dB	Save	20M	4.4276E+6
N=20652	0	24:27	Rref F(t)

Note: strictly speaking, it is the set « Antenna + Obstacles around the antenna limiting the reception + Noise environment + Receiver noise » which is evaluated by the RQI. However, in HF, the receiver noise is negligible compared to the noise from the

environment, for the quality receivers used by SWLs and HAMs. Now for a low-end receiver, the receiver noise is not negligible. Obstacles, as buildings, around the antenna will make decrease the RQI. This mainly concerns antennas on balcony or indoor antennas.

A measurement must exactly last 24 hours, so as to obtain a reliable RQI.

For more details, see the user manual and the "**Reception_Quality_Indicator.pdf**" file located here: http://f6cte.free.fr/Reception_Quality_Indicator.pdf

- **Multipsk cluster for SWL and Ham Multipsk users**

This cluster is aimed to Hams and SWLs using Multipsk. By clicking on the "Cluster" menu item, one accesses to a window which permits the exchange of messages between Multipsk users. A message is composed of the following fields: UTC date-time / Ham or SWL call sign / mode / XCVR frequency / Locator / Subject / Possible message. You will have the possibility to see the positions of the users on a map.

The specific Multipsk WEB site used for this cluster is: "http://multipsk.fr/A_CL.php". The 100 last calls sent by Multipsk users are displayed. This WEB site can be called from your WEB browser.

Note about translation of Multipsk.exe and Clock .exe: the 4.48.6 version of Multipsk has been translated to Spanish by Joaquin (EB4Z), from French.
See: http://f6cte.free.fr/Translation_files.htm.

73
Patrick

Description of the iMet-4 mode:

Baud rate: 1200.

Modulation : Bell 202 type: AFSK two tones ("mark" and "space") with a shift of 1000 Hz (fixed tones at 1200 and 2200 Hz)

Reception mode: FM

Character set : characters at the 8N1 format (1 start bit, 8 data bits, no parity bit and 1 stop bit), the LSB bit being transmitted in first position

Synchronization : automatic using the signal

Correction code: no

Convolution code: no

Interleaving : no

Check-sum: yes (modified CRC16-CCITT)

The data transmission is done through "packets" described here:
<https://gml.noaa.gov/aftp/user/fritz/iMet%20Radiosonde%20Protocol.pdf>

Note that Multipsk decodes only PTU and GPS packets. The GPS packet seems to always precede the PTU packet.