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LENTUS EASY WITH MULTIPSK (4.21.1)

Introduction
In this document it will be found several snapshots of Multipsk screen with indications to the « how to operate », which shows the basic functions of the LENTUS (slow, indolent, nonchalant, quiet… in latin) mode.

This mode is used for QRP transmissions (down to a minimum S/N ratio of -34 dB, with first decoding at -36.5 dB) either in LF, MF and HF (14 MHz maximum) but not beyond.

For questions about Lentus, ask them on the Multipsk Yahoo group (http://groups.yahoo.com/group/multipsk/).
There is a Yahoo group only dedicated to Lentus: (http://groups.yahoo.com/group/MULTIPSK-LENTUS/).
For Lentus skeds, there is a good address: http://www.obriensweb.com/sked

Note 1: Lentus use is not very different from JT65 use (on Multipsk).

Note 2: due to some bugs existing in the Multipsk 4.21 version (first release of this mode), this version must not be used for Lentus QSO. Instead, it must be used Multipsk version 4.21.1 or following ones.

Recommended frequencies

The recommended frequencies (on the XCVR) are the following (with an AF frequency of 1000 Hz, in USB): 136.3, 1837.0, 3589.0, 7037.5, 10138.7, 14074.0, **14095.6** KHz. In all cases, the frequencies chosen (HF+AF) must coincide with a 100 Hz division (900, **1000**, 1100 Hz…on the waterfall)..

About the help in Multipsk:

* for the contextual help, click on the right button of the mouse, with the focus over the mode button ("LENTUS" in this case).
* use also the button hints (wait a fraction of second over a button).

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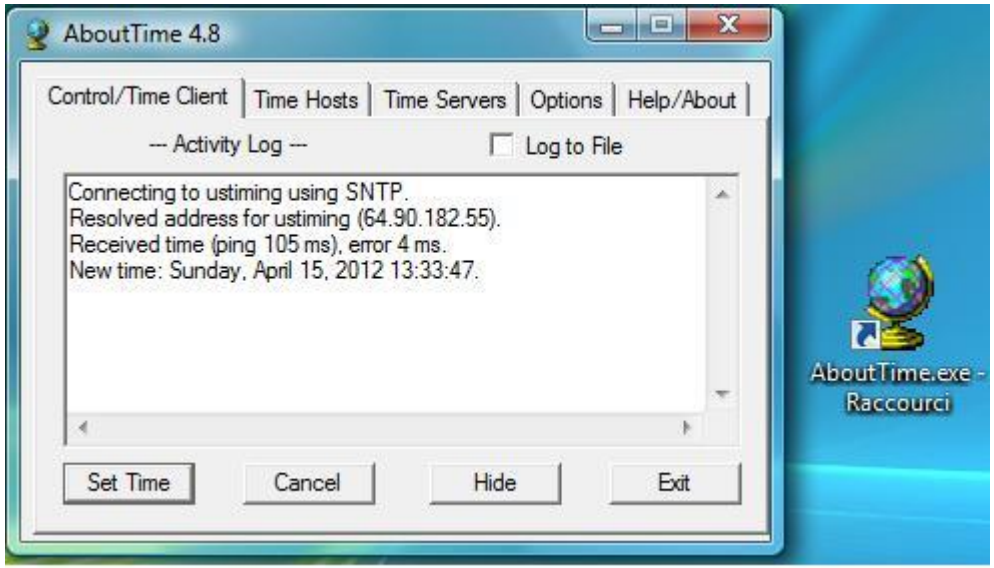
PC time adjustment

The transmission of a LENTUS frame must begin theoritically at the fourth second of the minutes 0, 5, 10,...,50, 55 with a tolerance of +/-0.1 sec on the PC clock. So it will be necessary before beginning to do LENTUS, to set your PC clock to the right time through Internet.
For this, it must be used the very accurate time from an Internet Time Service as the NSIT, through a SNTP or NTP protocol (but not through the RFC-868 Time Protocol) so to have an accuracy widely better than 50 ms. The use of the "AboutTime" freeware (http://www.arachnoid.com/abouttime/) is widely encouraged as the PC time error is determined by the soft, simply by setting time twice, the second time (and the followings) will give the PC time error (4 ms below).



The time service "**nist1-ny.ustiming.org**" works well (to add in the page "Time Hosts", function "Add"). Also see http://tf.nist.gov/tf-cgi/servers.cgi.
It is recommended to, automatically, set time each 30 minutes (page "Options", check "Set time at" 30 minutes intervals).

Attention: it must not be used GPS time because the accuracy by these means is not sufficient (+/- 1 sec for +/- 0.1 sec required). Clock (the companion of Multipsk) can, possibly, be used only if the PC is powerful and if the time station is very well received (as Allouis in France for example).

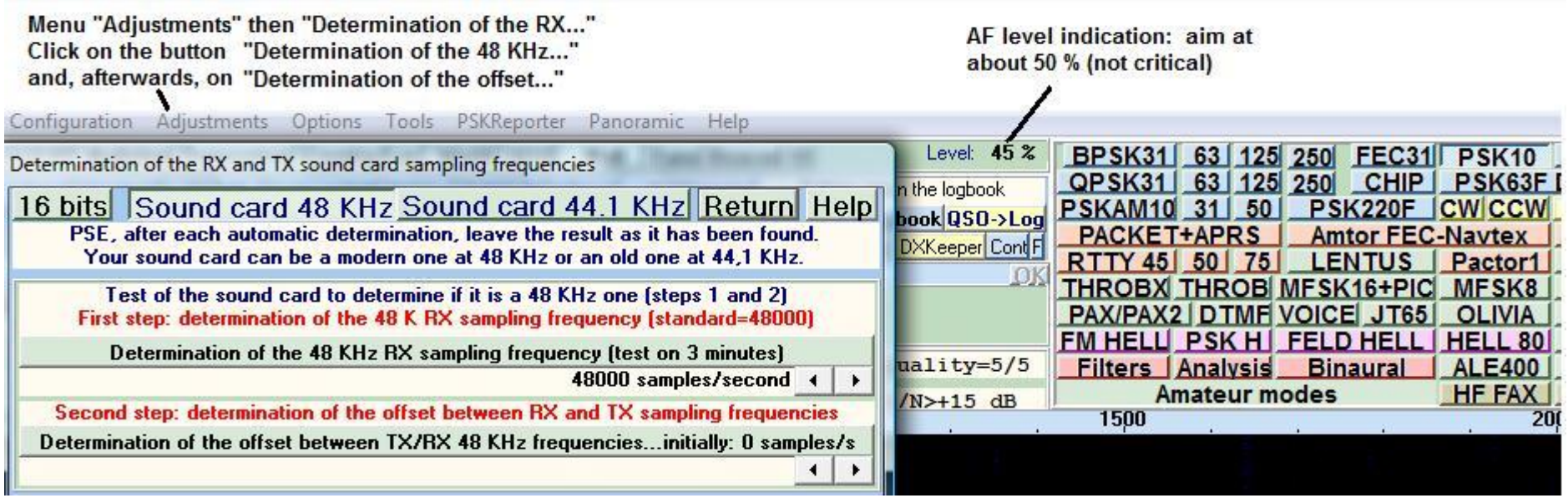
Other adjustments

- **HF frequency accuracy**
  Due to the very low S/N ratio, it is possible neither to hear the Lentus signal nor to see it on the waterfall. So the transceiver must be very precisely tuned, to be sure to be on the right frequency. For this:
  - first make work the transceiver (in reception) at least one half an hour, for temperature stabilization,
  - if not residual (<10 Hz), determine the offset of the transceiver for a given HF frequency using a fixed WWV carrier (see help for details).

- **Sampling frequency and AF level**

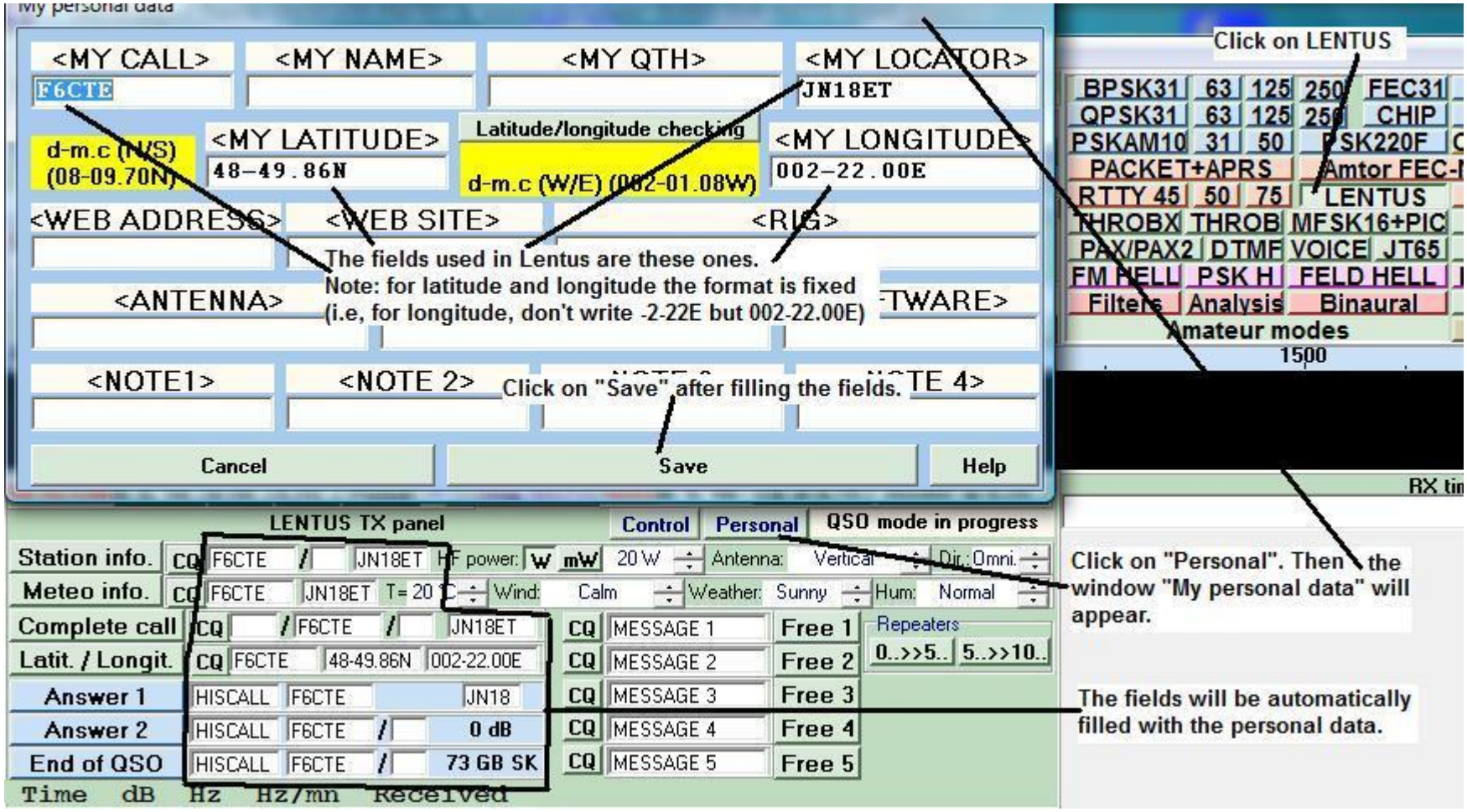
  It is strongly recommended to calibrate the sound-card: click on the "Adjustments" menu button, then select the "Determination of the RX/TX sound-card sampling frequencies" option.

  If the AF level is not sufficient, modify the adjustments on the mixer (sound card input).

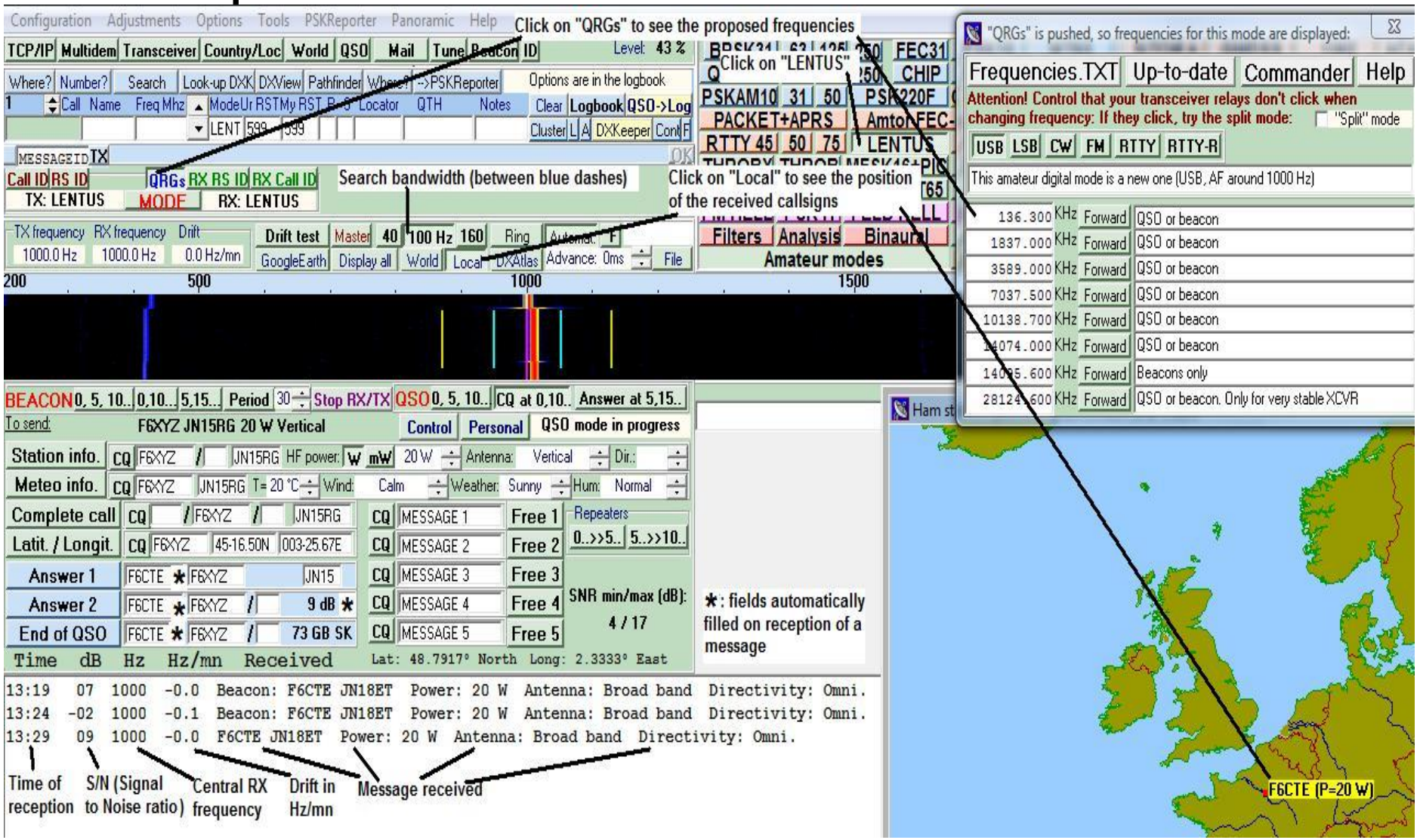


Personal data useful for Lentus

Click on LENTUS then on the Personal button.

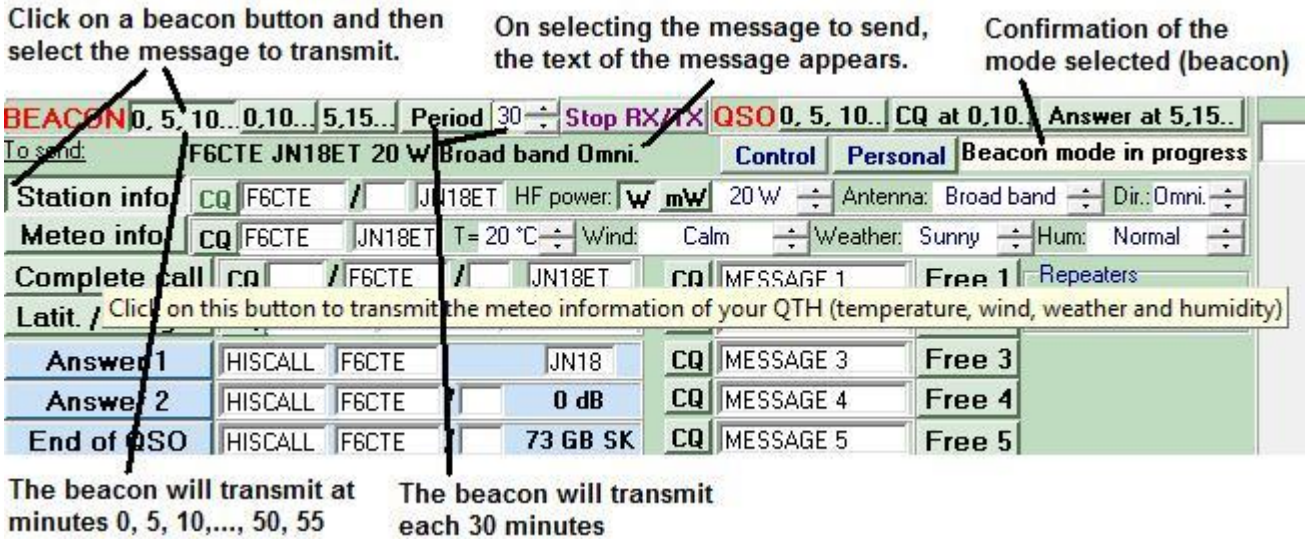


Lentus reception



Note: Lentus receptions can automatically be reported to PSKReporter (menu “PSKReporter” on the top of the RX/TX window).

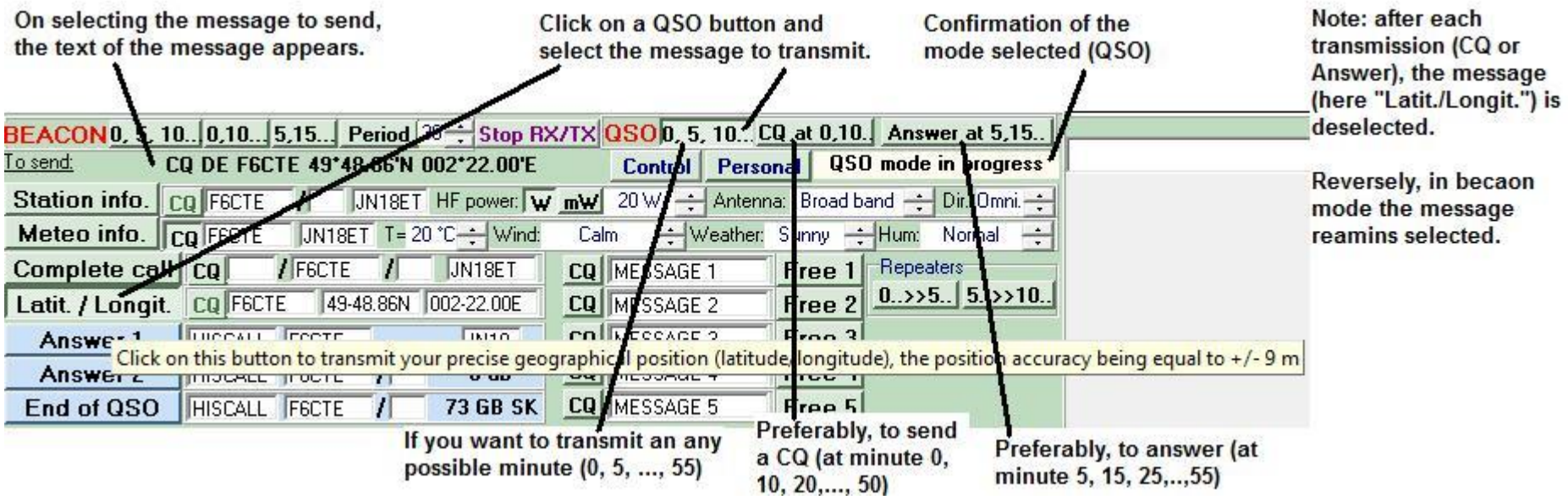
Lentus Transmission in beacon mode



It is possible to use a LENTUS beacon, transmitting at different periods:

- the "**0, 5, 10...**" (minutes) button: if this button is pushed, the selected message is repeated each 5 minutes (without any possible LENTUS reception),
- the "**0,10...**" (minutes) button: if this button is pushed, the selected message is repeated at minutes 0, 10,..., 50 (with reception of a possible answer at minutes 5, 15,..., 55).
- the "**5,15...**" (minutes) button: if this button is pushed, the selected message is repeated at minutes 5, 15,..., 55 (with reception of a possible answer at minutes 0, 10,..., 50),
- if the "**Period**" button is pushed, the selected message is going to be transmitted with the indicated period in minutes (15 to 90 mn).

Lentus Transmission in QSO mode



This is an example of minimum QSO (with formatted messages):

1) **CQ F6CTE JN18AB** ("Complete Call" message)

2) **F6CTE F9XYZ JM17** ("Answer 1" message)

3) **F9XYZ F6CTE -20 dB 1.0 Hz/mn** ("Answer 2" message)

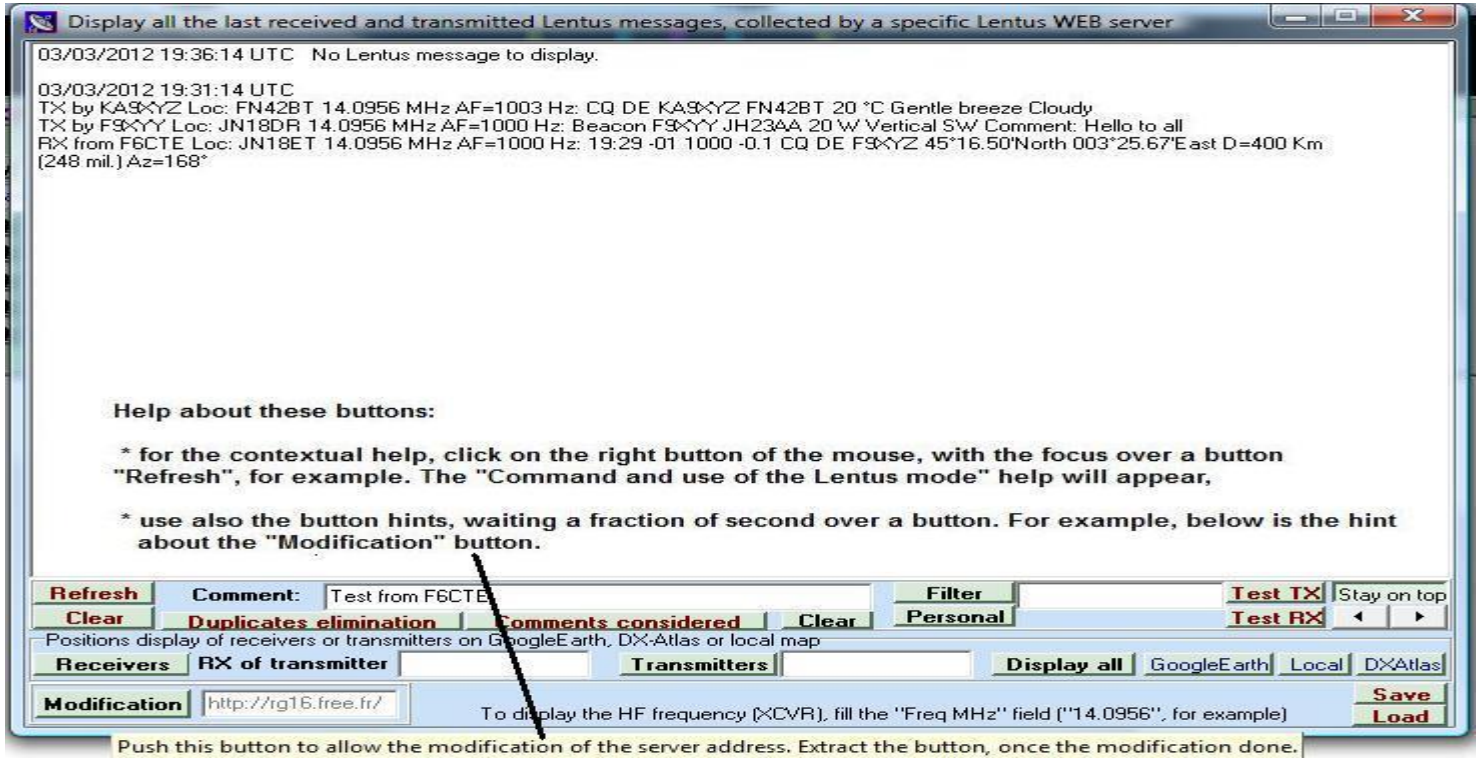
4) **F6CTE F9XYZ -34 dB 0.7 Hz/mn** ("Answer 2" message)

5) **F9XYZ F6CTE 73 GB SK** ("Answer 3" message)

6) **F6CTE F9XYZ 73 GB SK** ("Answer 3" message)

Using the Lentus traffic window

To reach the traffic window, click on the “Traffic” button and specify the frequency that you use (as SWL or Ham).
Don’t forget to fill your call sign (if you are a Ham) and, in all cases, your Locator, in your Personal data (see previous snapshot).
It will be displayed all the last received and transmitted Lentus messages, collected by a specific Lentus WEB server.



Test on a Lentus recording

LENTUS.WAV

It is proposed to test Lentus with the above Lentus recording called LENTUS.WAV:

- Start Multipsk on the Lentus mode,
- Click on the above Lentus.WAV file and stop the playback,
- As soon as the time is at 4 seconds (or a very little moment before 4 seconds) after the minute 0, 5, 10,…, 50, 55, start the playback,
- After about 4mn 35 sec, the decoded text appears. It must be seen the snapshot below (except the time).