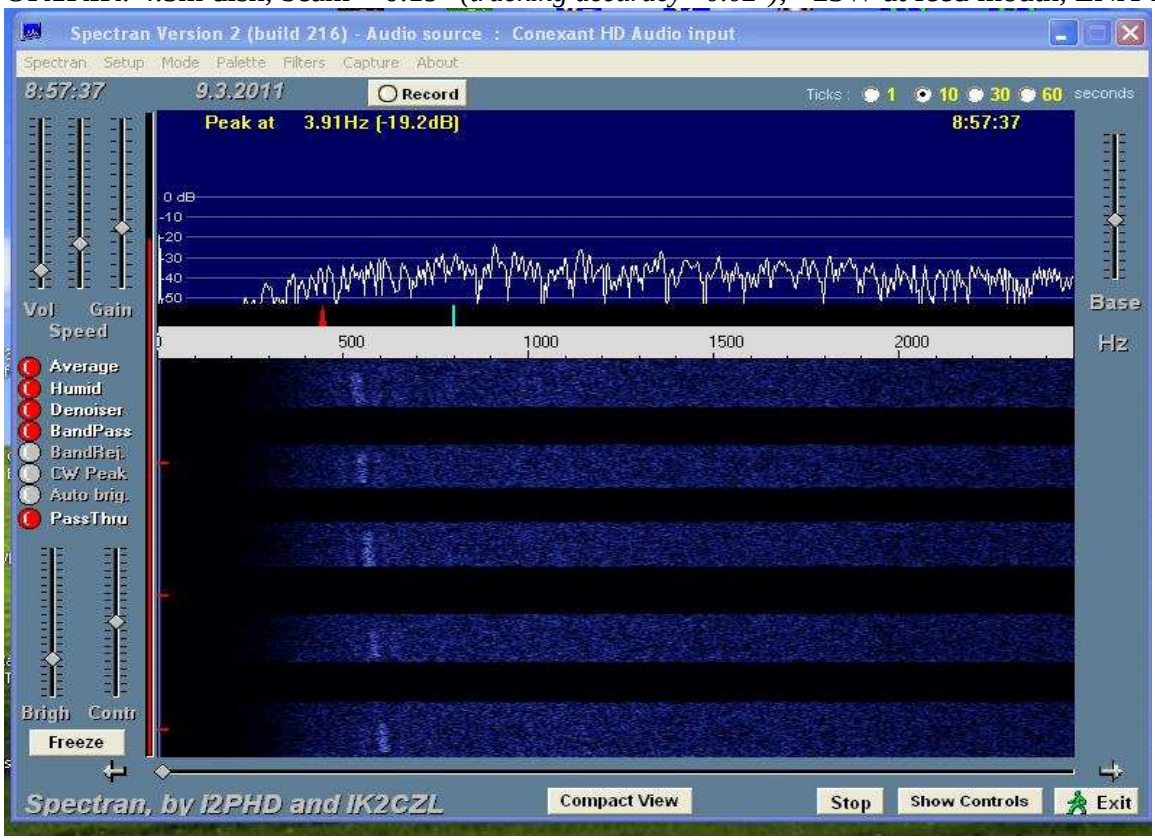
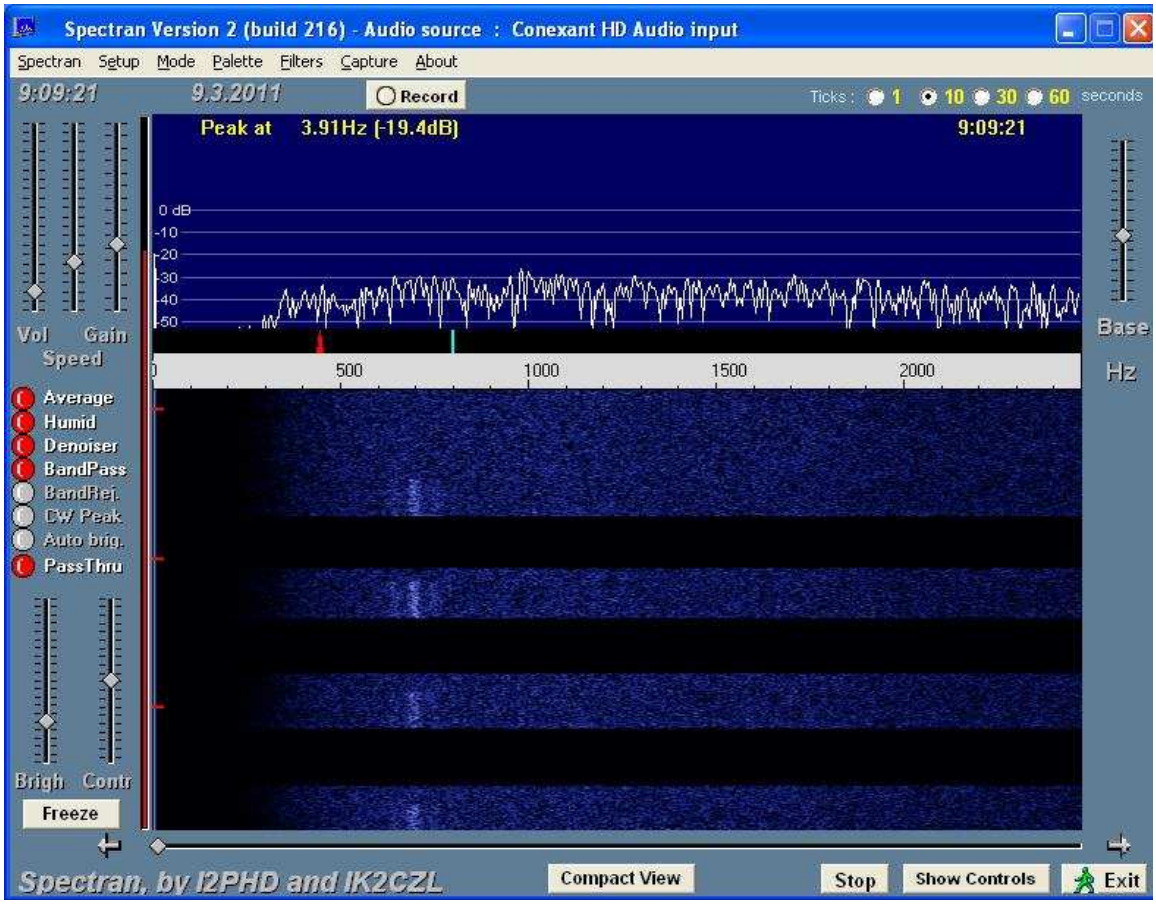
Moon own echo records (Spectran) on 24.048 MHz
at OK1KIR dish (JN79DW74OQ) during 09.03.2011

OK1KIR: 4.5m dish, beam ≈ 0.19° *(tracking accuracy ≈0.02°)*, ≈23W at feed mouth, LNA 1.5dB

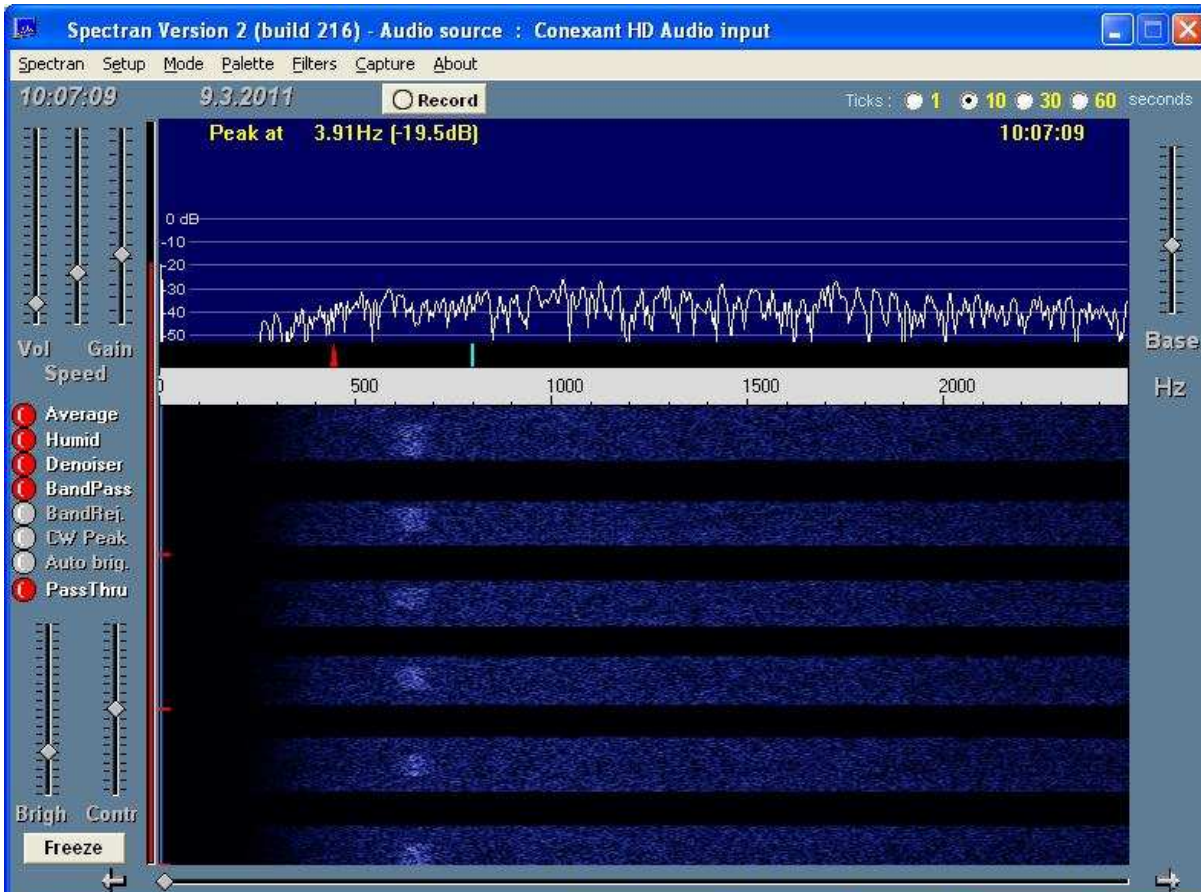


09.03.2011_07.57 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 66 Hz (->25 Hz)

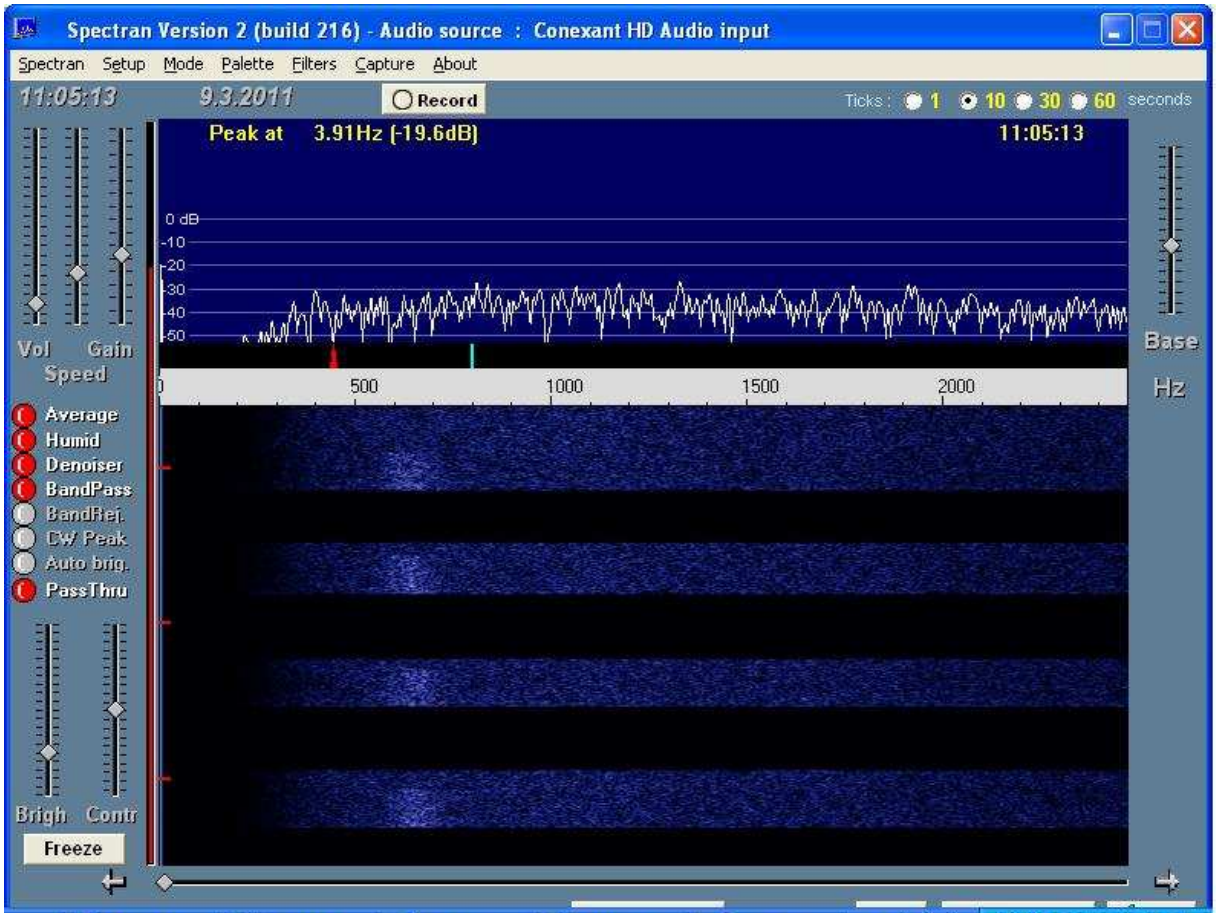
Note: Two light sidebands around the echo are produced by signal from HP8660C synthesizer, used as oscillator



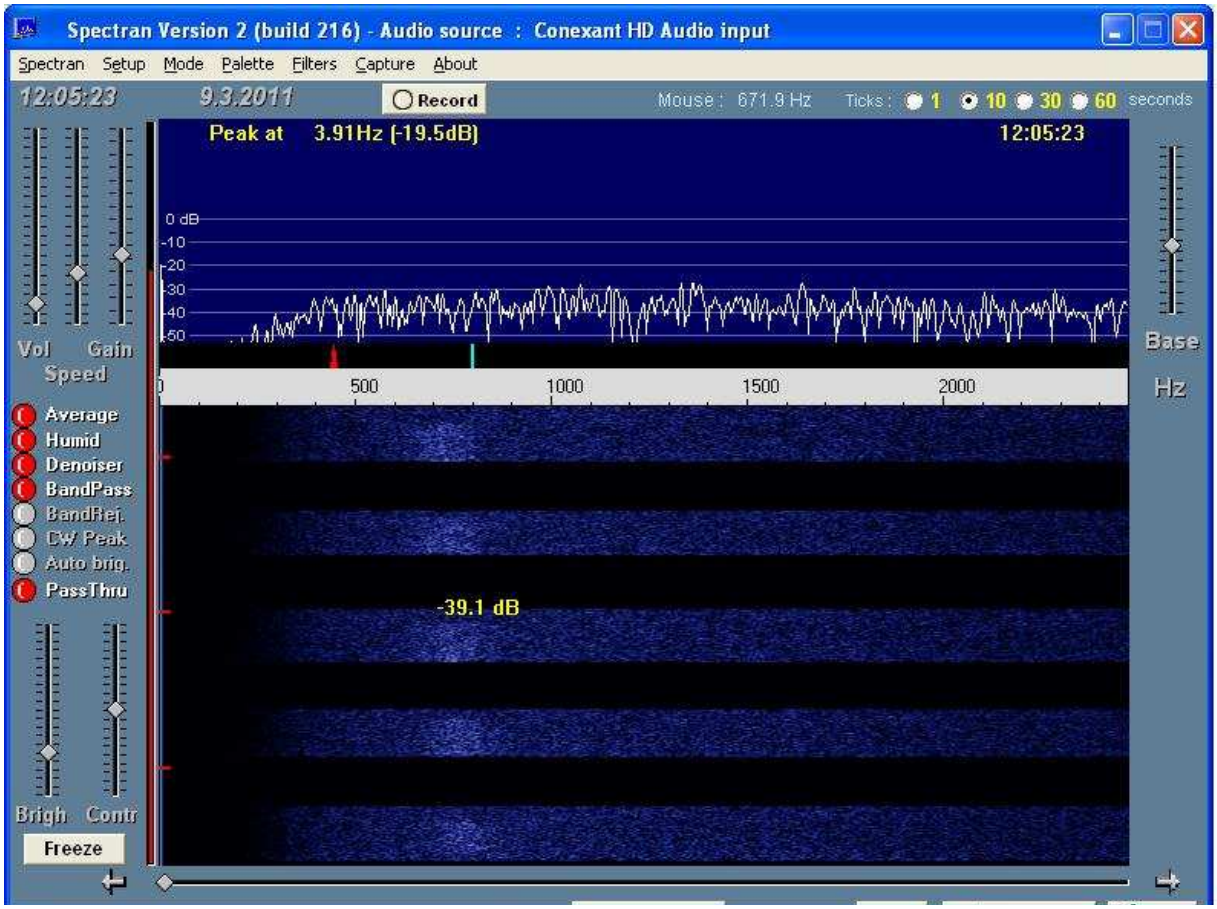
09.03.2011_08.09 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 85 Hz (->32 Hz)



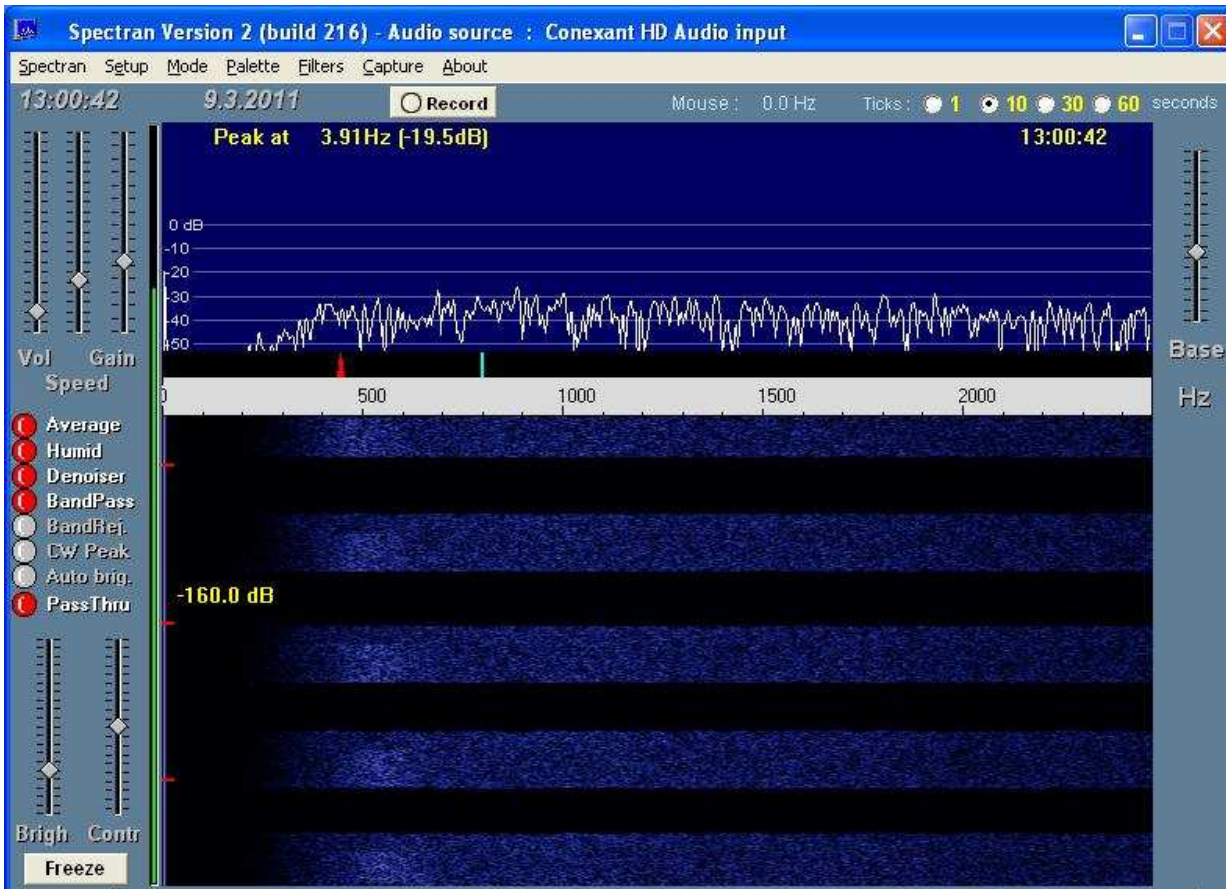
09.03.2011_09.07 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 187 Hz (->71 Hz)



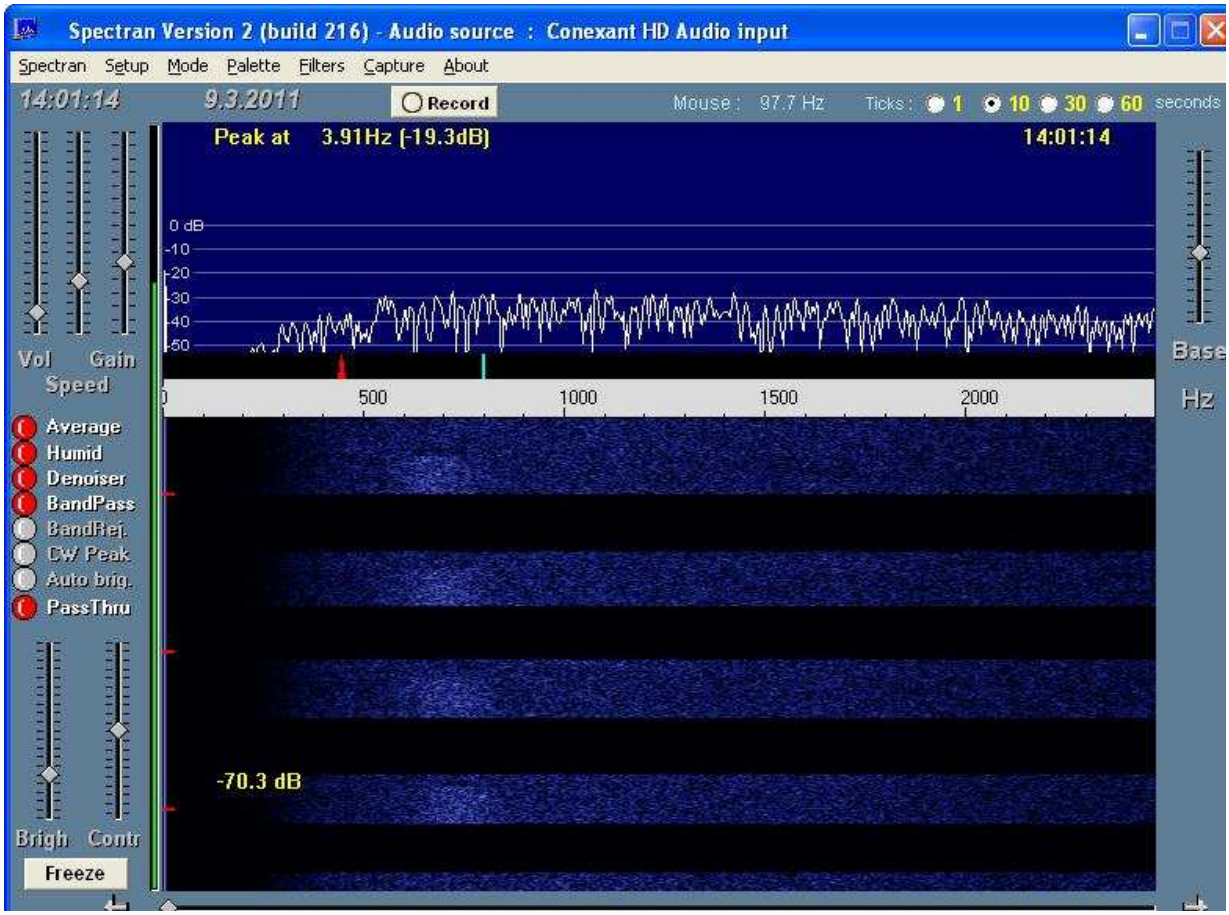
09.03.2011_10.04 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 276 Hz (->105 Hz)



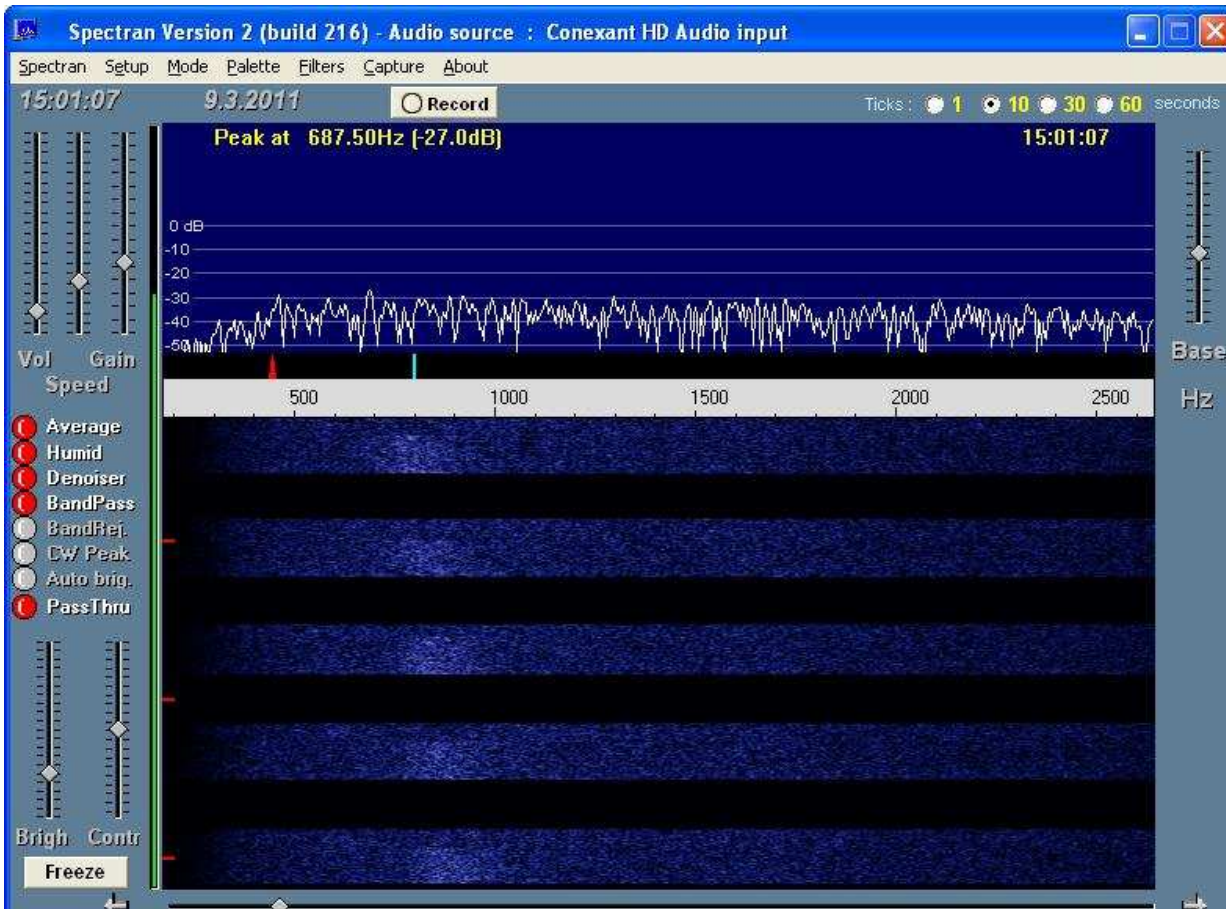
09.03.2011_11.06 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 365 Hz (->139 Hz)



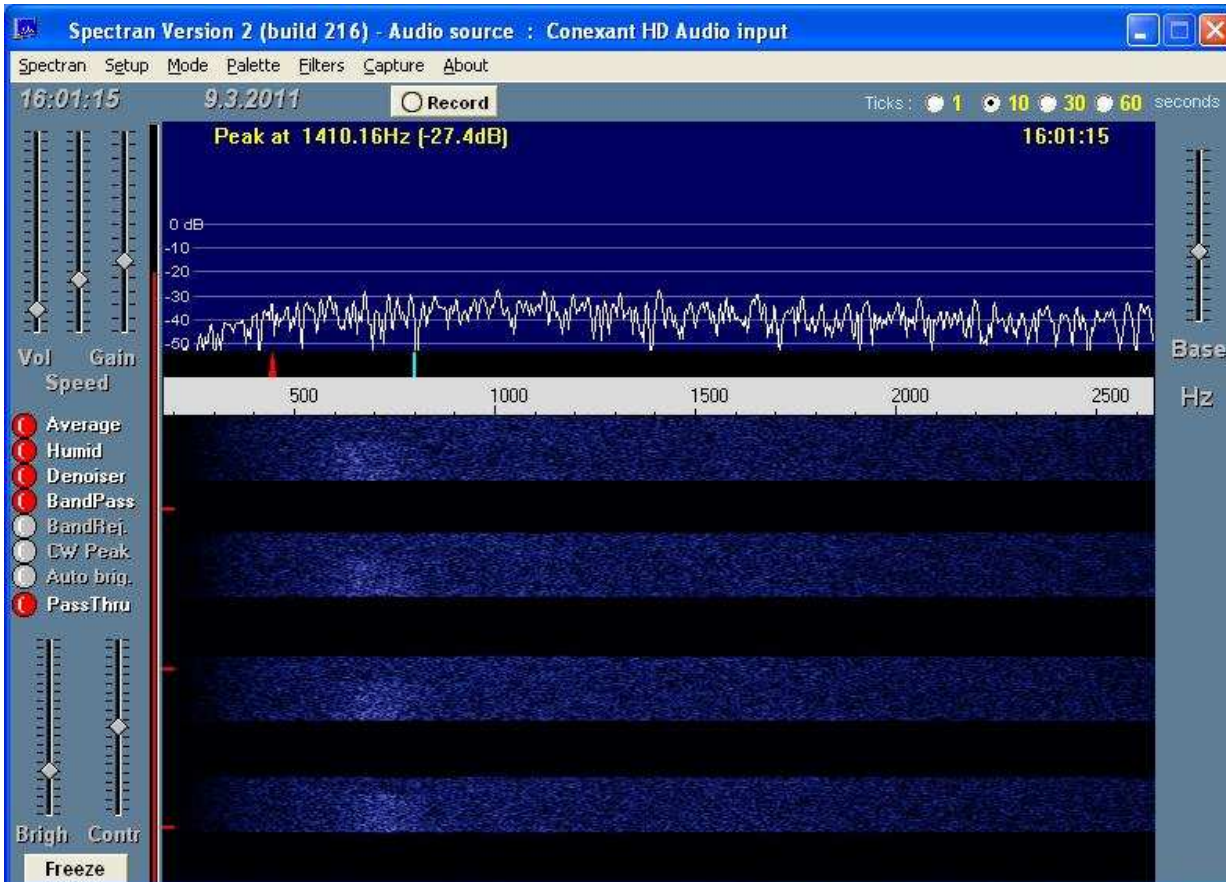
09.03.2011_12.00 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 430 Hz (->164 Hz)



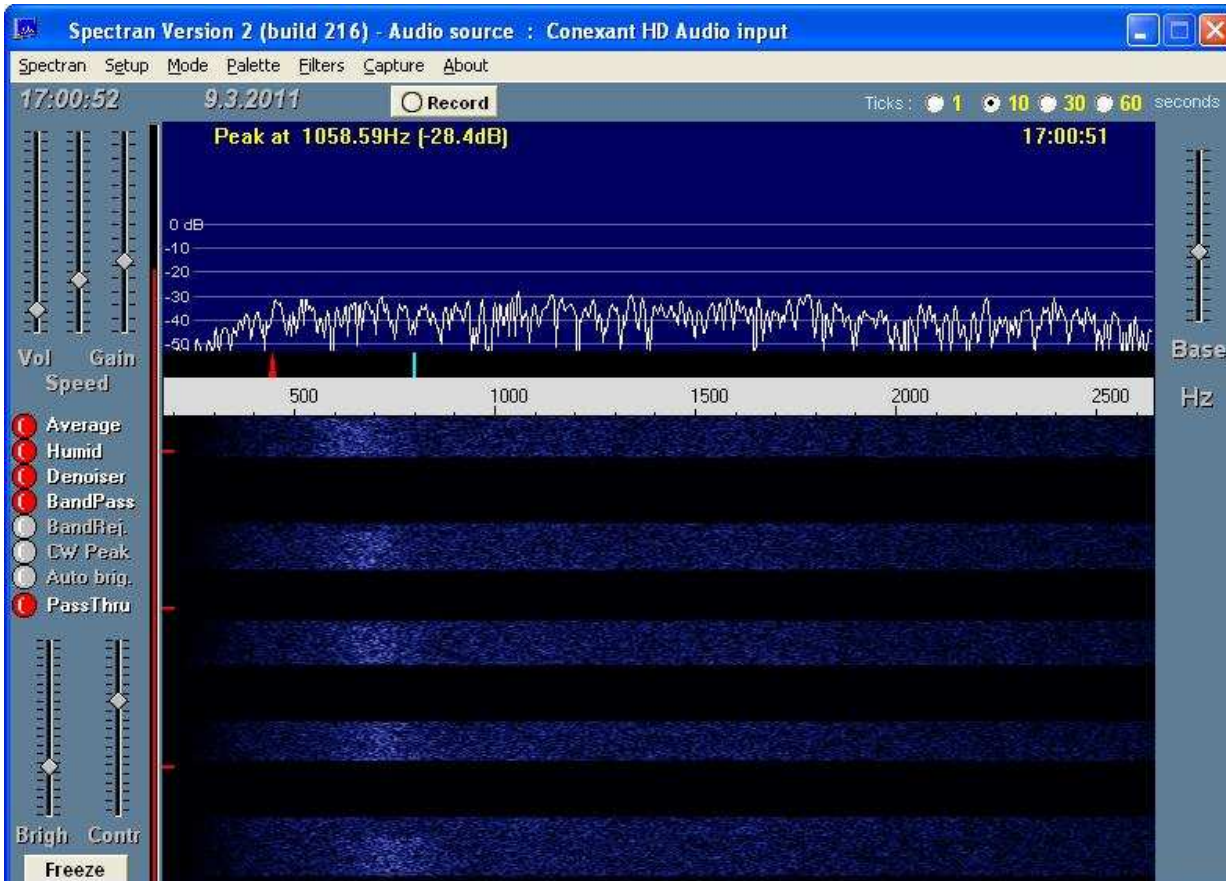
09.03.2011_13.01 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 480 Hz (->182 Hz)



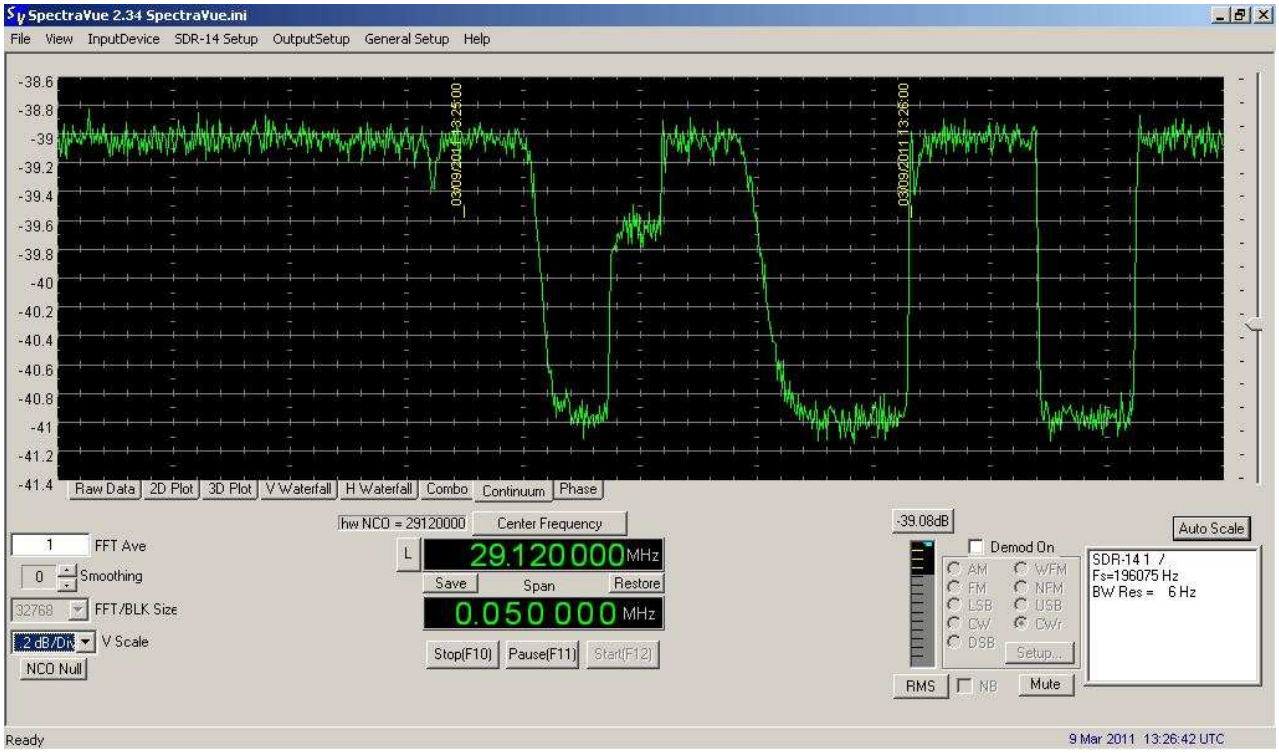
09.03.2011_14.01 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 512 Hz (->195 Hz)



09.03.2011_15.01 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 517 Hz (->197 Hz)



09.03.2011_16.01 UT_OK1KIR_24GHz echoes on Spectran_spread prediction 500 Hz (->190Hz)



09.03.2011_13.26UT_Moon noise ratio *(≈2 dB above close sky noise)* as recorded on SDR-14 *(in continuous mode). The curve indicates flat top when the beam floats over the Moon.*

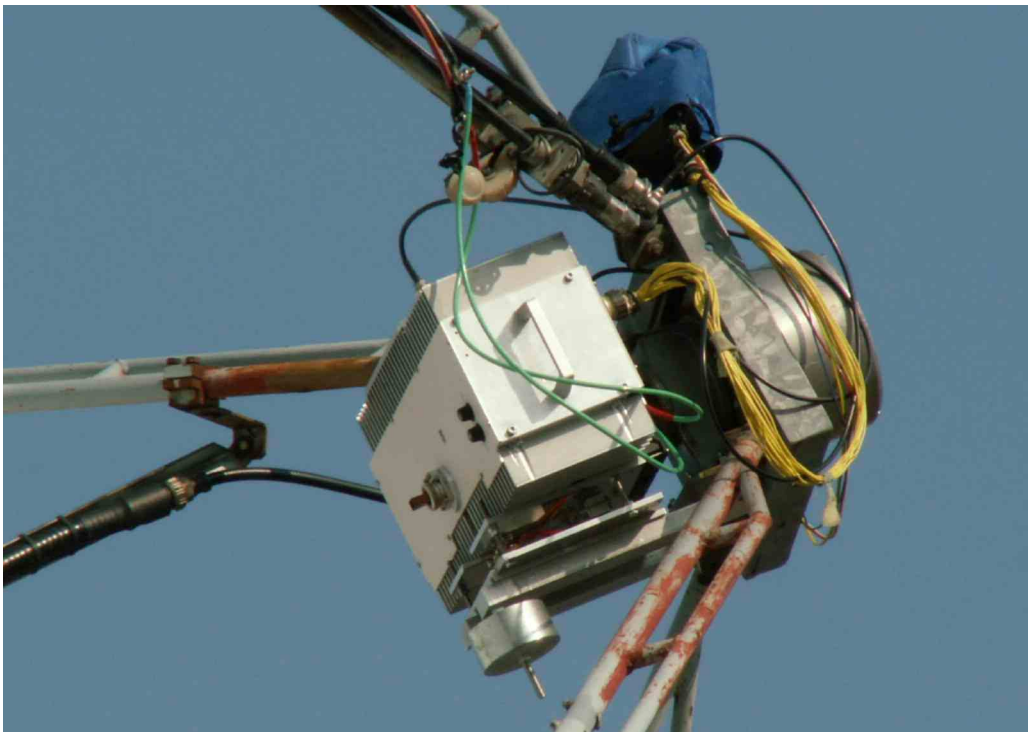
Note:

Moon distance ≈ 403 000 … ➔ ….. 402 000 km *(very close to apogee)*
Degradation ≈ 2.1 dB *(by Moonsked /GM4JJJ)*

Actual spread of Moon own echoes, displayed on Spectran snapshots shown above, indicates significantly lower values than predicted by Moonsked of GM4JJJ.
The predicted spread is reduced according to the ratio of narrow antenna beam (≈0.19°) to the much wider Moon angle (0.5°). The ratio equals to ≈ 0.5°/0.19° = 2.63. The Spectran records show good coincidence with that fact.

First echoes were received just after 07.00 UT at elevation of only 3deg (Doppler more than 48kHz !).

The weather during the tests was pretty good. Morning -6°C, low humidity and later a sunny day. Really wonderful weather. Unfortunately no audio records of own echoes have been made.



OK1KIR is back on 24GHz EME after 3 years break. Completely redesigned 24 GHz TRX (SSPA) weights itself over 16kg, produces ≈23W at the feed, NF≈1.5dB. TRX box is placed on remotely controlled rotatable 'L shape" holder in the focus of 4.5m dish. Heavy cylinder at the bottom balances the gravity centre to the axis of rotation.