# Interfacing dBBC

- Input signals IF: 0-500, 500-1000MHz.... at -30dBm

- Also 10MHz, 1PPS at 2V in 50 Ohm

- Has 8-bit DAC, out-of band rejection 35dB

- Example: 8MHz BBC bandwidth, 500MHz input BW, this gives SNR 35-18=17dB only. So input band must be very flat

- dBBC  makes 80Hz signal to drive cal diode for noise-adding radiometry

- We look at  interfacing problems, where dBBC is in a new location at Effelsberg, not near existing VLBI terminal

# 1PPS
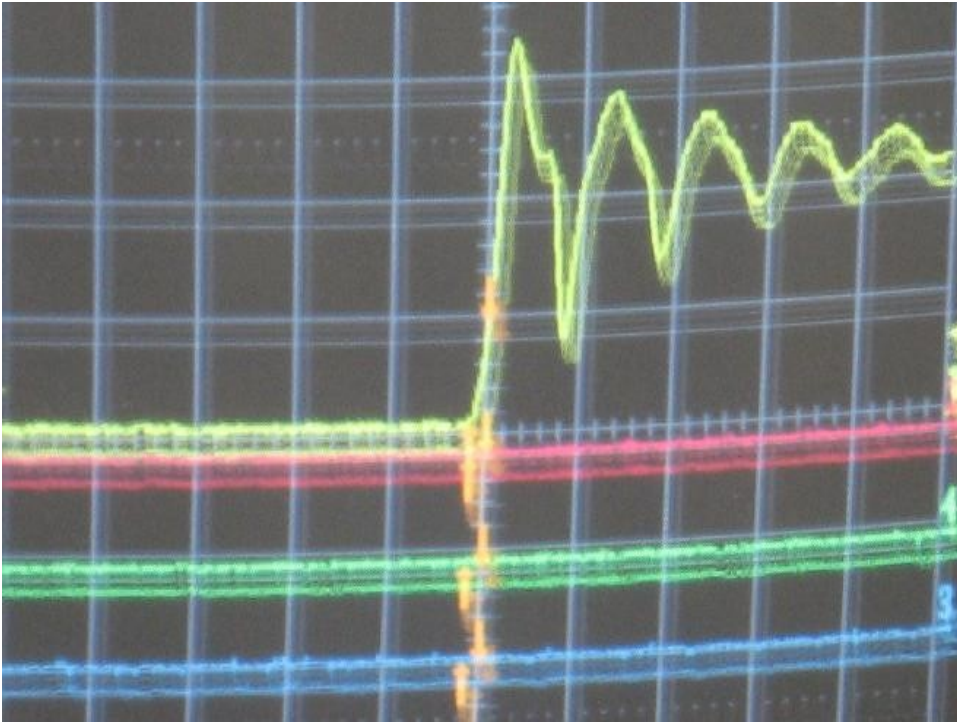


- Shock: the 1PPS is 10V peak, with ringing caused by 40-year-old clock unit

- This could destroy the input stage, and also give multiple sync

- Mk5B unit will need clean 1PPS with defined time relation to 10MHz

# 1PPS conditioning
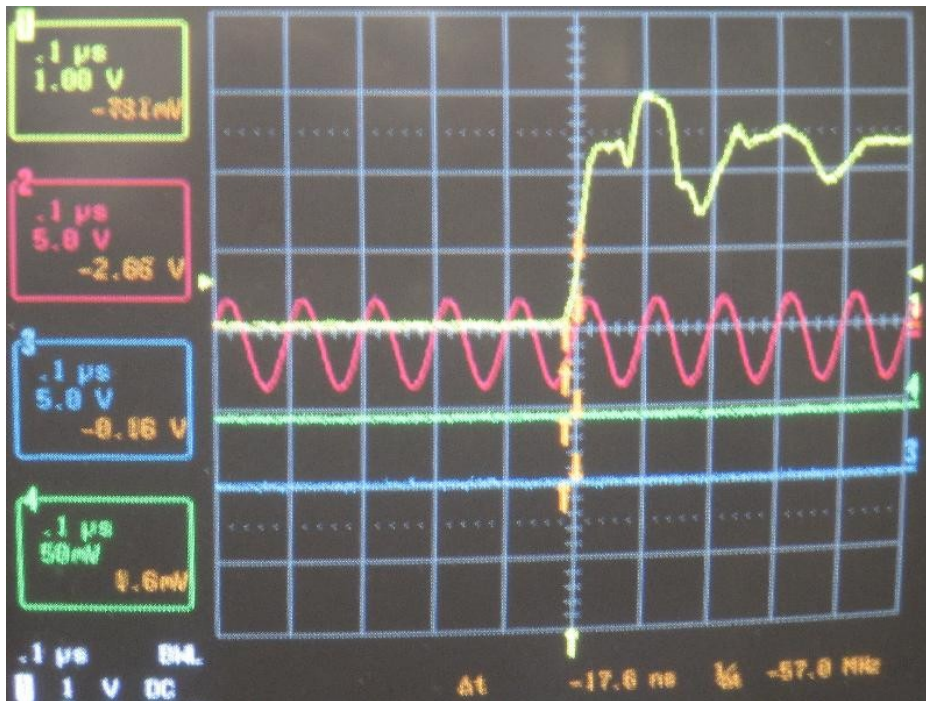


- Add open-ended cable for simple pulse shaping

- We will add an extra unit, like VLBA station sync

- This picture also shows 10MHz from maser, a 2-3 Volt sinewave

# IF input
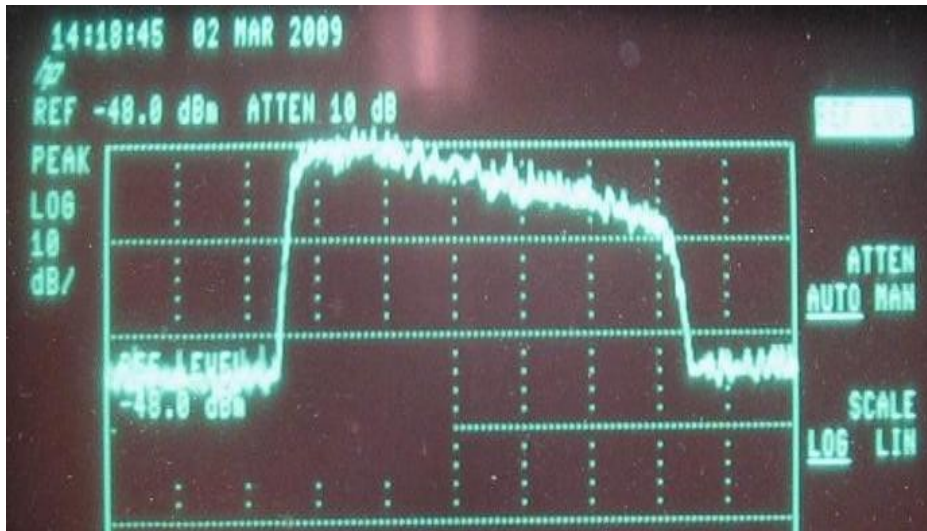


- IF inputs currently used : 100-500MHz and 500-1000MHz

- This shows 500-1000, slope of 6dB from 30m of cable from receiver room to Faraday room

- This could cause problems with SNR

- Level (-48dBm) is also about 20dB too low

# Interface unit requirements

- 10MHz: square with comparator and distribute

- 1PPS: limit to TTL level, make local 1PPS from 10MHz, resync this with house 1PPS when a button is pressed, like VLBA station sync unit

- 20-30dB amplifier for IF. Cable compensation needed, but commercial compensation units usually 75 Ohm

- For narrow-band dBBC operation, may need extra band-limiting filters (128 or 256 MHz wide), also to  avoid RFI

- For 4Gbps wideband, analog fiber input needed (Miteq)

- For more details, see:

http://www.mpifr-bonn.mpg.de/div/vlbicor/tog_chair/togreps09/dbbc_installation.pdf