

Minutes

of the visit of Mrs. Yan Yin to CERN , 19 - 26. 5. 1994.

During the stay of Mrs. Yan Yin different tasks have been foreseen:

1. Measurement of a vacuum-tight monitor with one button (conical shape, Kaman feedthrough) using a 6 GHz network analyser with time domain capability.
2. Simulation of this monitor using MAFIA.
3. Mapping of a monitor with 8 SMA connectors on a xy-table.
4. Evaluate performance of the vacuum-tight monitor with beam if space and the time for mounting it into CTF is available.

The following results have been obtained:

1. The monitor mounted between two 50 cm long pieces of vacuum chamber was tested with a 250 ps (FWHH) synthetic pulse in the max. window, low pass impulse mode. The response (Fig. 1) is satisfactory; very little ringing.
2. With the help of W. Remmer, A. Millich and E. Jensen MAFIA 3.1 could be run on the IBM RISC machine under UNIX. The mesh (structure) has been successfully generated. However, it became not clear if the rest of the simulation could be solved with the current version of MAFIA. Version 3.2 is being installed at CERN but is not yet operational and there was no documentation available. It is well known that non trivial problems take weeks to be solved with this program.
3. The access to the CLIC xy-table was not available. A small mechanical unit (W. Wuensch) had an insufficient travel range of ± 4 mm. We decided to adapt the PS Booster installation with the help of G. Henchoz and M. Le Gras. The measurement could not be done due to lack of time.
4. The monitor could be mounted in a small space near to the 3 GHz accelerating section (LAS) (J.-C. Godot). The signal was sent to the klystron gallery through 10 m of low loss cable (CK50) and observed by a wide bandwidth (50 GHz) sampling scope (HP 54124). The 10 Hz trigger was derived from a vacuum diode looking at the LASER beam (S. Schreiber). Fig. 2 shows the button signal for a single bunch spread over 150 ps due to the slewing through the cable. The signal is

followed by an oscillation of about 10 GHz which damps down to about 10% in a little less than 100 ns (Fig. 3). Candidates for this high Q resonator are the higher order modes existing in LAS which can easily escape from the cavity and propagate through the vacuum chamber. A counter-measure against this signal has to be found as it is incompatible with the measurement of a train of bunches.

Elmar Schulte.

Distribution :

Prof. T. Ekelof, D. Reistad, Y. Yin (Uppsala University)

Persons mentionned

H. Braun, F. Caspers, J.P. Delahaye, H. Koziol, J.H.B. Madsen,
W. Schnell, G. Suberlucq.

May 19, 1994
 Kaman feed thru.
 power 20 dbm
 801 points
 window = max
 Looper's impulse
 feed thru to MWA, same as
 plot #5

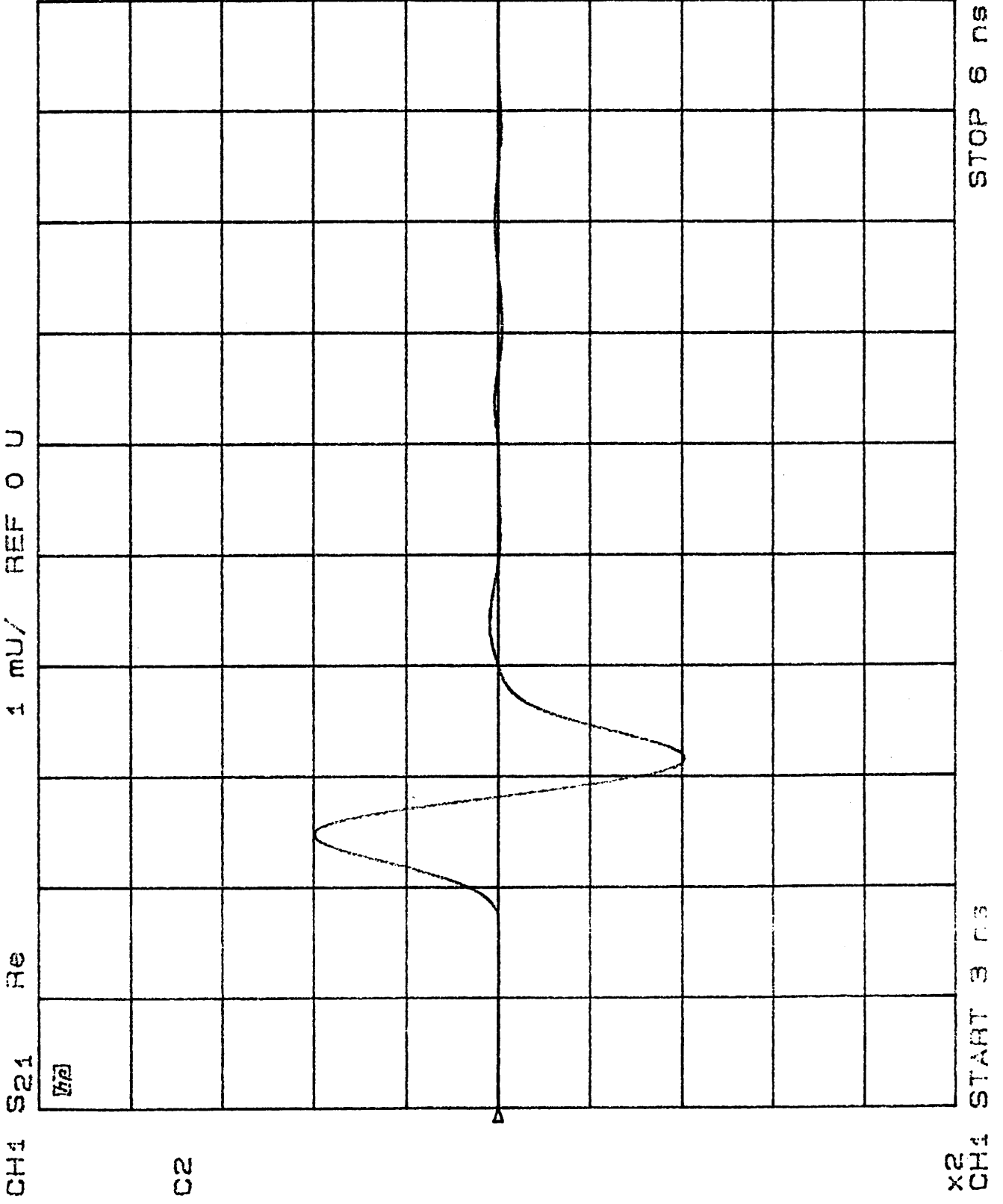


Fig. 1

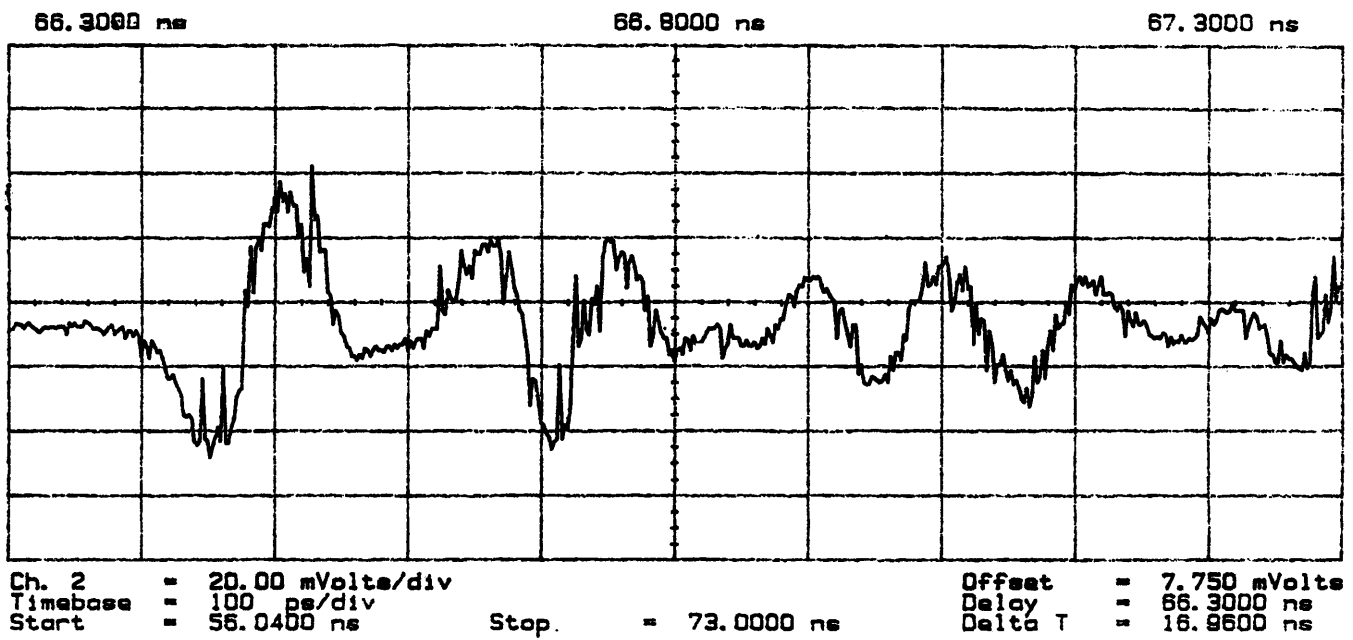


Fig. 2

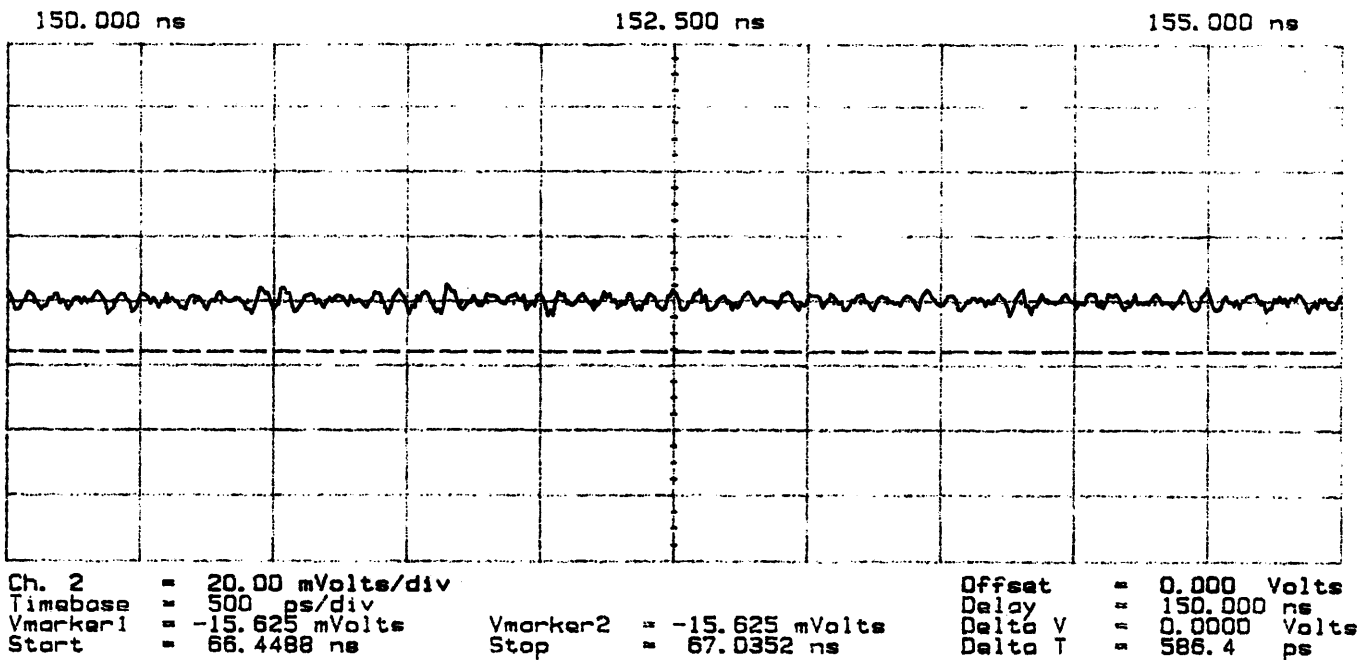


Fig. 3