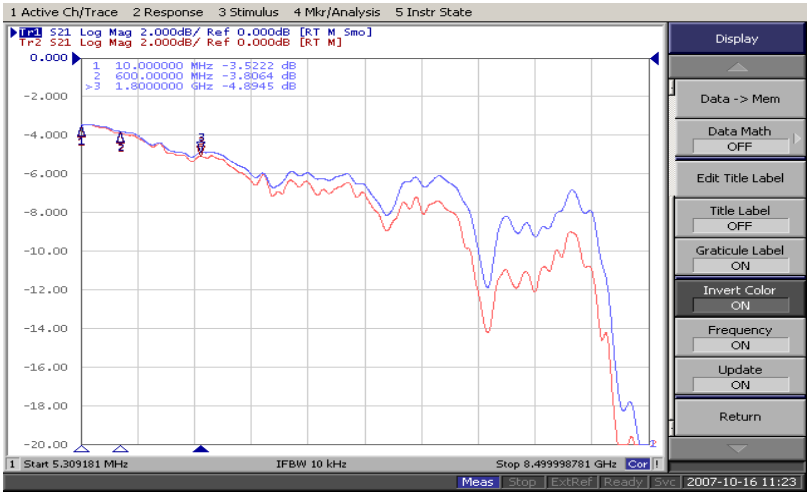
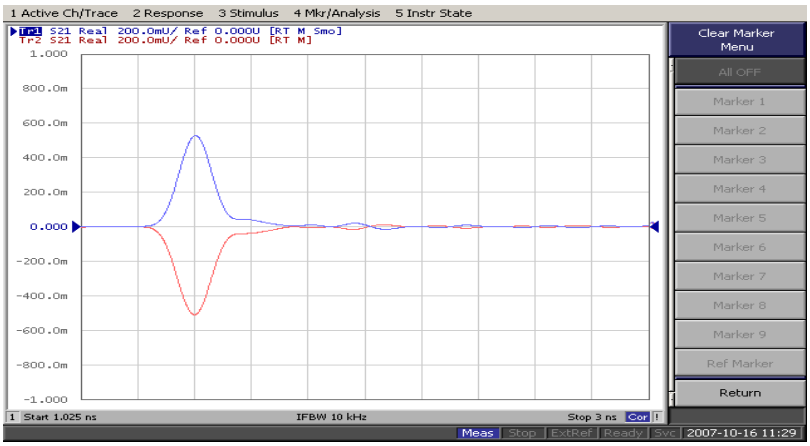
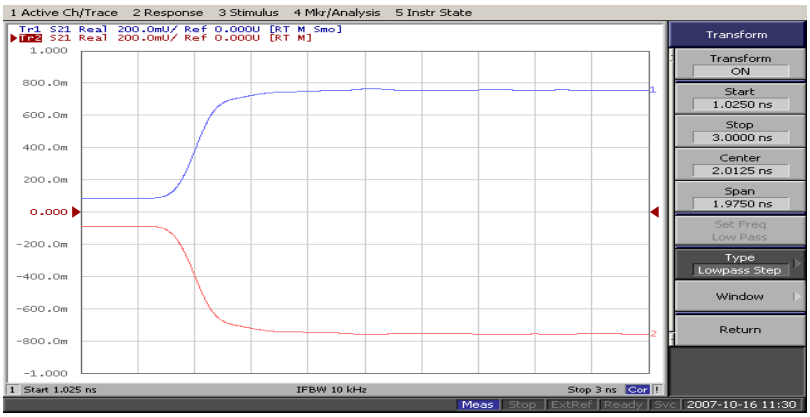
1. A Phase Shifter 980-3K (or Phase Adjustable SMA MDC-1089-1(2)) on each input of the Hybrid Junction H-9.
2. A Network Analyser E5071B.

Bandwidths, Pulse Responses and Step Responses

Diffrence Output blue, Sum Output red



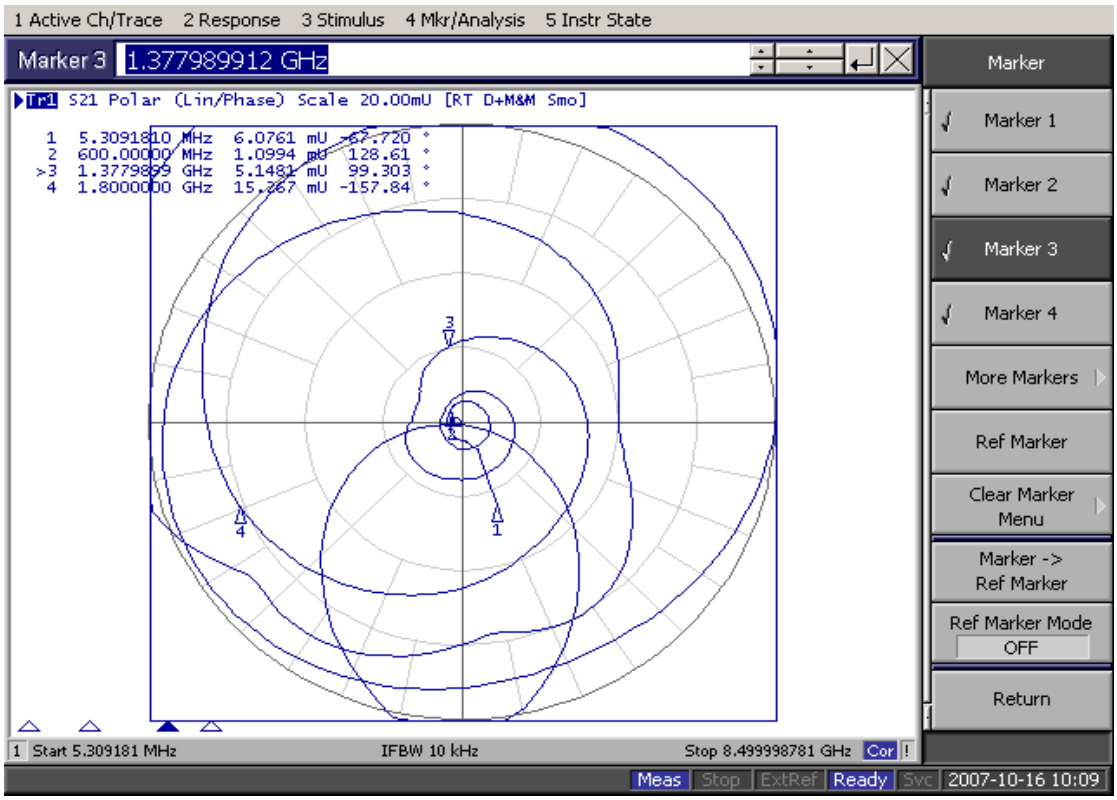




	10MHz	600MHz	1800MHz
Diff gain, dB	–3.5	–3.8	–4.9

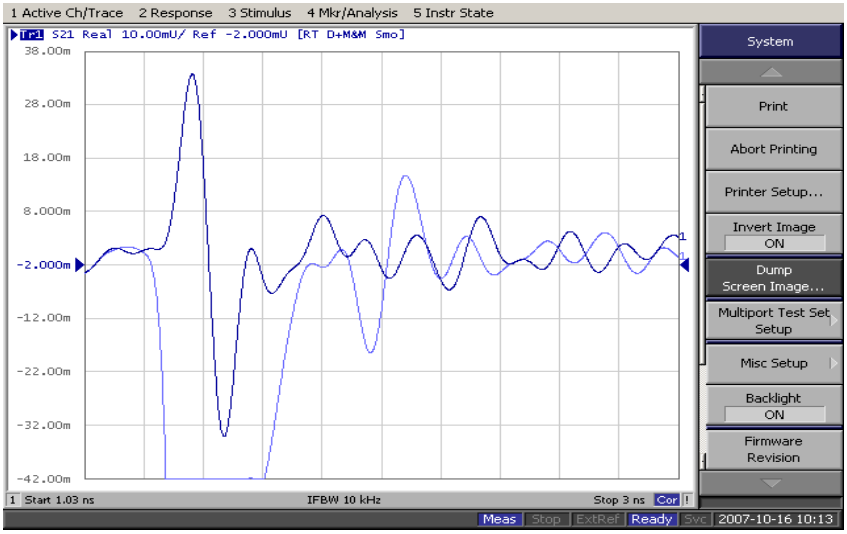
The rise times are <0.2ns.

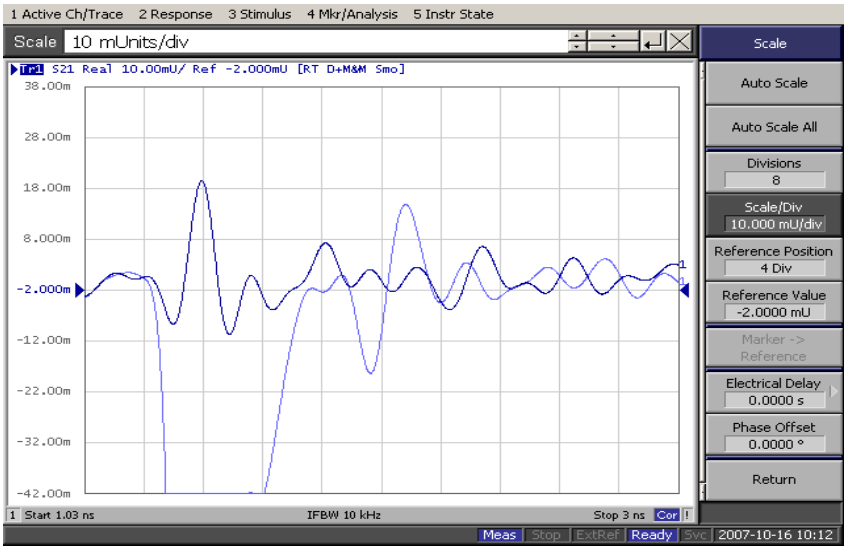
Balanced Circuit Differential Vector

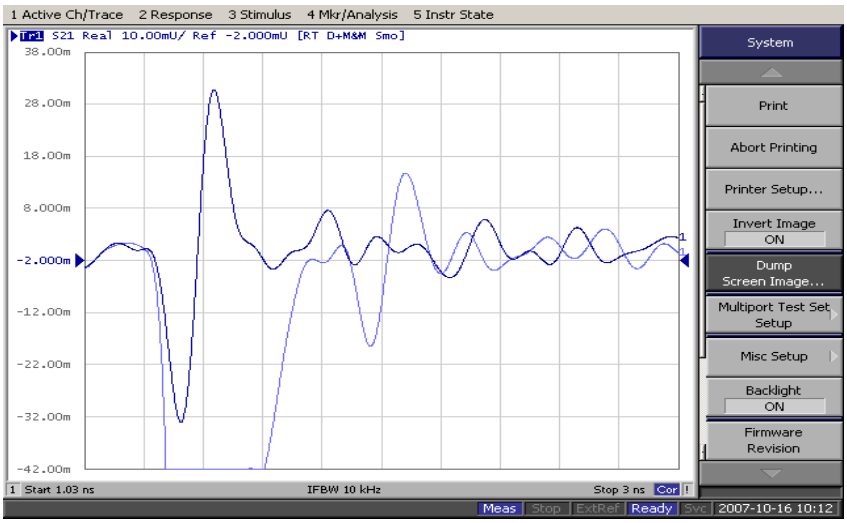


With eye, follow the markers.
The radius is (–30)dB, or 1/32 of the input signal.
In the range 10MHz to 1300MHz, <(–42)dB, or <1/130. At 1800MHz, <(–32)dB.

Difference Pulse Response

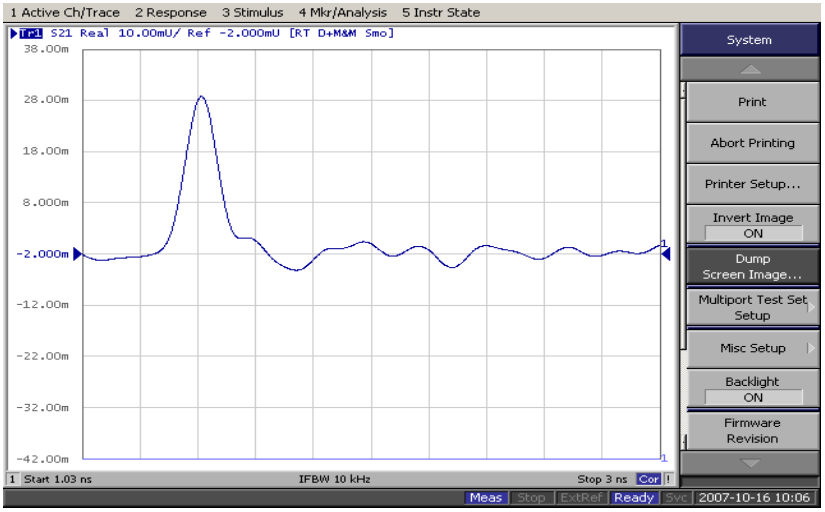


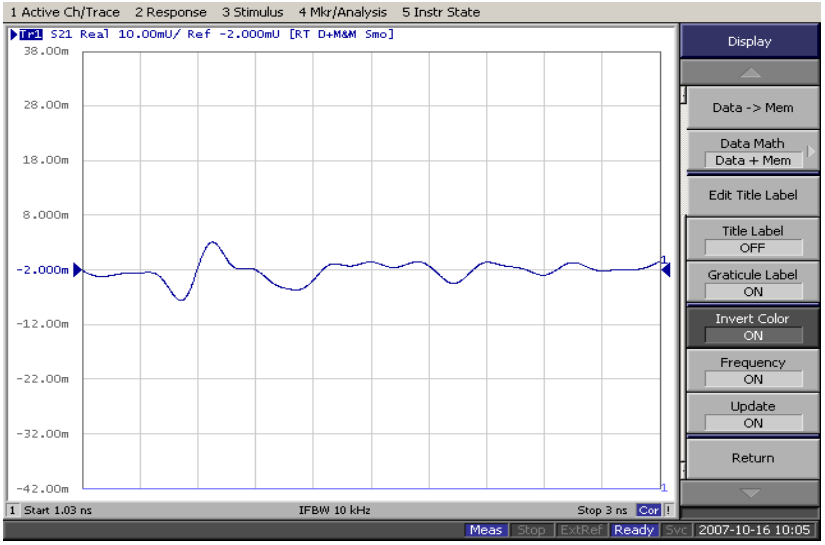


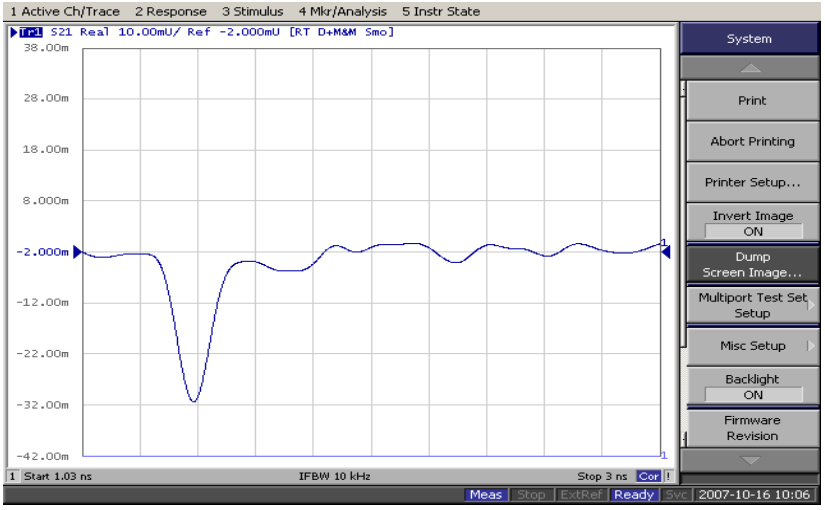


Unbalanced (–), balanced, unbalanced (+). The residue is the derivative. When balanced, the full bandwidth p-t-p residue is <1/17.

Difference Step Response



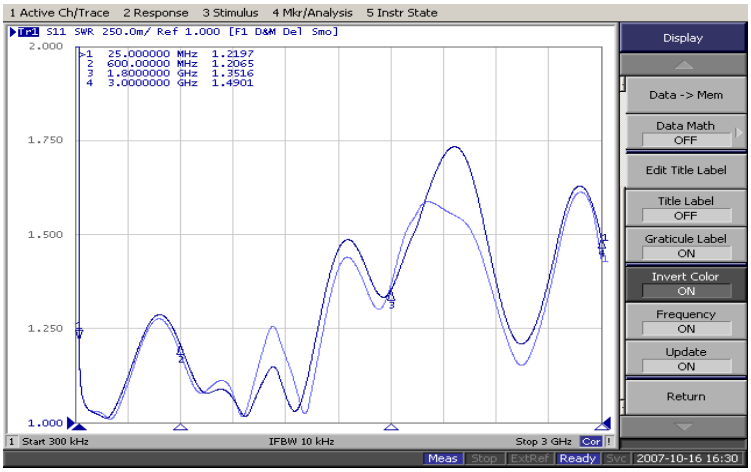




Unbalanced (–), balanced, unbalanced (+). The residue is the derivative. When balanced, the full bandwidth p-t-p residue is <1/70.

For the 600MHz three period square wave signal, just this residue matters.

Input SWRs



In the range 25MHz to 1100MHz, SWR<1.3. Up to1800MHz, <1.5.

Difference (thick) and Sum (thin) Output SWRs for a reflected wave

In the range 25MHz to 1100MHz, SWR<1.4. Up to1800MHz, <1.8.