CLAIMS

1. A reflectometer for allowing a test of a device, the reflectometer comprising:

a source of pulsed radiation;

a first photoconductive element configured to output a pulse in response to irradiation from said pulsed source;

a second photoconductive element configured to receive a pulse;

a transmission line arrangement configured to direct the pulse from the first photoconductive element to the device under test and to direct the pulse reflected from the device under test to the second photoconductive element; and

a photoconductive substrate, wherein at least one of the first photoconductive element and the second photoconductive element is formed on a first surface of the photoconductive substrate;

wherein an RF or microwave absorbing sheet or coating is provided over at least one of:

at least part of the first surface of the photoconductive substrate;

at least part of a connector connected to the first photoconductive element;

at least part of a connector connected to the second photoconductive element; and

at least part of the transmission line arrangement; and

wherein the absorbing sheet or coating suppresses ringing.

2. A reflectometer according to claim 1, said transmission line having a three terminal arrangement with the first and second elements provided at separate terminals and an input to the device provided at the third terminal.

3. A reflectometer according to claim 1,

wherein at least one photoconductive element comprises a pair of electrodes provided on the first surface of a first substrate and said transmission line arrangement is provided on a second surface of a second substrate,

the first and second surfaces being provided facing one another such that there is communication of a pulse between the said element and the transmission line arrangement.

4. A reflectometer according to claim 2, wherein the three point transmission line arrangement is in the form of a Y or a V.

5. A reflectometer according to claim 2, wherein the three point transmission line comprises a Wye or Delta splitter.

6. A reflectometer according to claim 1, further comprising a termination resistance provided for said transmission line configured to match the impedance of the transmission line, wherein the terminating resistor is separated from the photoconductive element via a further transmission line.

7. A reflectometer according to any preceding claim, wherein at least some parts of the system which carry no signals or low frequency signals are covered by the RF or microwave absorbing sheet or coating, the low frequency signal being signals in the system other than the said pulse produced by the first photoconductive element and received by the second photoconductive element.

8. A reflectometer according to claim 1, the RF or microwave absorbing sheet or coating is a composite polymer sheet loaded with magnetically permeable particles.

9. A reflectometer according to claim 3, wherein there is hole in the second substrate to allow illumination of the photoconductive element on the first substrate.

10. A reflectometer according to any preceding claim, wherein the first photoconductive element is a generator which receives a pump beam of radiation and the second photoconductive element is a receiver which receives a probe beam of radiation, the pump beam and probe beam being emitted from the same source, the reflectometer further comprising a delay line configured to vary the path length of the pump beam is varied relative to that of the probe beam or vice versa.

11. A reflectometer according to claim 10, wherein the delay line comprises a fast scanning delay section and a slow scanning delay section, wherein said fast scanning delay section is provided by an oscillating rhomboid and said slow scanning delay section comprises a linear delay line.

12. A reflectometer according to any preceding claim, wherein the first photoconductive element is configured as a generator and the second photoconductive element is configured as a receiver, the reflectometer further comprising an AC bias unit to provide an AC bias to said generator and a phase sensitive detection unit configured to perform phase-sensitive detection on the signal measured directly from the receiver device.

13. A reflectometer according to either of claims 1 or 2, wherein photoconductive elements are coupled to the transmission line arrangement by wire bonds or ribbon bonds.

14. A reflectometer according to any preceding claim, wherein the photoconductive elements comprise GaAs, InP, GalnAs or another III-V alloys.

15. A reflectometer according to claim 3 wherein the electrodes of the photoconductive elements are coupled to the transmission line by a flip-chip bonding methods chosen from, solder ball bumps, conductive epoxy, indium ball bumps or wire ball bumps.

16. A reflectometer system comprising a plurality of reflectometers according to claim 3, wherein a single common first substrate is provided for the plurality of reflectometers such that the photoconductive elements for a plurality of reflectometers are flip chip bonded at the same time.

17. A method of performing a reflectometry test on a device, the method comprising:

providing a source of pulsed radiation;

providing a first photoconductive element configured to output a pulse in response to irradiation from said pulsed source;

providing a second photoconductive element configured to receive a pulse; and

directing the pulse from the first photoconductive element to a device under test and directing the pulse reflected from the device under test to the second photoconductive element using a transmission line;

wherein at least one of the first photoconductive element and the second photoconductive element is formed on a first surface of the photoconductive substrate;

wherein an RF or microwave absorbing sheet or coating is provided over at least one of:

at least part of the first surface of the photoconductive substrate;

at least part of a connector connected to the first photoconductive element;

at least part of a connector connected to the second photoconductive element; and

at least part of the transmission line arrangement; and

wherein the absorbing sheet or coating suppresses ringing.

18. The method according to claim 17, wherein said transmission line has a three terminal arrangement with the first and second elements provided at separate terminals and an input to the device provided at the third terminal.

19. The method according to claim 17,

wherein at least one photoconductive element comprises a pair of electrodes provided on the first surface of a first substrate and said transmission line arrangement is provided on a second surface of a second substrate,

the first and second surfaces being provided facing one another such that there is communication of a pulse between the said element and the transmission line arrangement.