



R3765/67 CG Network Analyzer

General

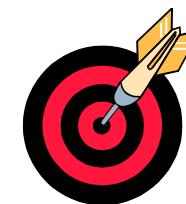
Multiport and other options

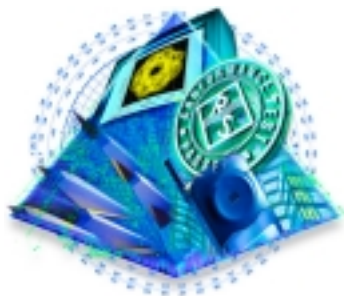
Software fixture

Summary



Unique features





R376XG Series Overview

R3765

300kHz ~ 3.8 GHz

R3767

300kHz ~ 8 GHz

General	AG	Basic model	A/R & B/R	
Multiport and other options	BG	Built-in Bridge	Transmission Reflection Trans & Reff	
Software fixture	CG	Built-in S-parameter	S11,S21,S22,S12 S11&S21 S22&S12	
Summary	CG+opt.11	Built-in 3 port test set	S11,S21,S22,S12 S11&S21,S22&S12 S11,S31,S33,S13 S11&S31,S33&S13 S22,S32,S33,S23 S22&S32,S33&S23	
	CG+opt.14	Built-in 4 port test set	S11,S21,S31,S41 S22,S12,S32,S42 S33,S13,S23,S43 S44,S14,S24,S34 (and twin traces)	



Four independent display channels ...with eight traces on one screen

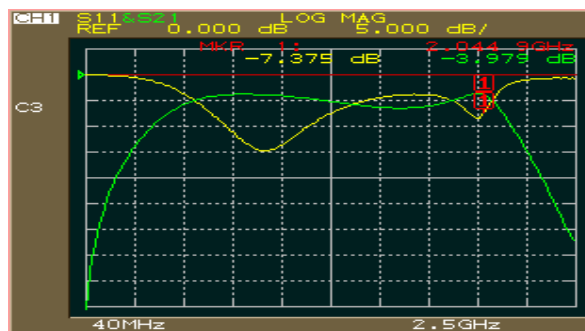
General

Multiport and
other options

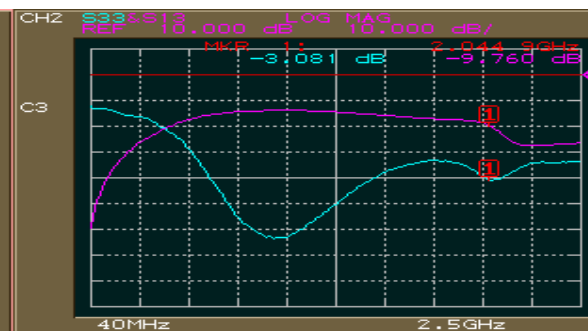
Software fixture

Summary

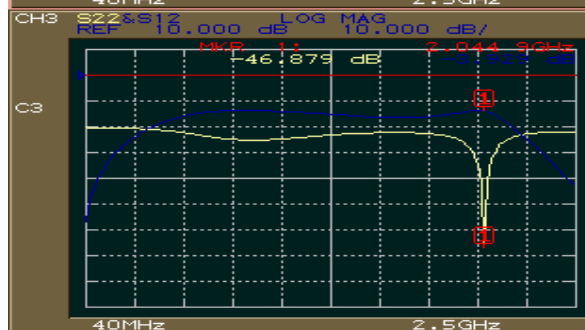
S11
&
S21



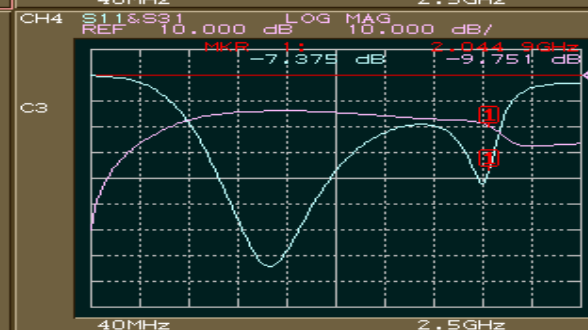
S33
&
S13

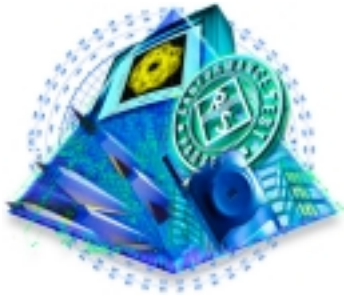


S22
&
S12



S11
&
S31





Automatic calibration kit

General

**R17050 : Automatic Calibration Kit (optional),
controlled via RS232 from network analyzer**

Multiport and
other options



Frequency range : 40MHz - 8GHz

Measuring accuracy :

+ - 0.05dB(Typical)

Software fixture

Option :

**R17050 + opt-01 female - female
(3.5 mm connector)**

**R17050 + opt-02 male - male
(3.5 mm connector)**

**R17050 + opt-03 female - male
(3.5 mm connector)**

Summary



Extended Analysis Functions

General

- *Multiport device measurements*

- **Built-in 3 port /4 port Test Set** (Option 11, 14)
- **5 port & 6 port multiport adapter** (R3967+10,11,12)
- **Four independent display channels** (8 Traces on one screen)
- **3 port Full Calibration & 4 port Full Calibration**

Multiport and other options

- *TDR Analysis ,CDMA Filter Analysis*

- **Time Domain Analysis Function** (Option 70)
- **Joint use of Time Domain Analysis and GATE Function**
- **CDMA IF Filter Analysis Function**

Software fixture

Summary

- *Electrical Step Attenuator* (Option 10)



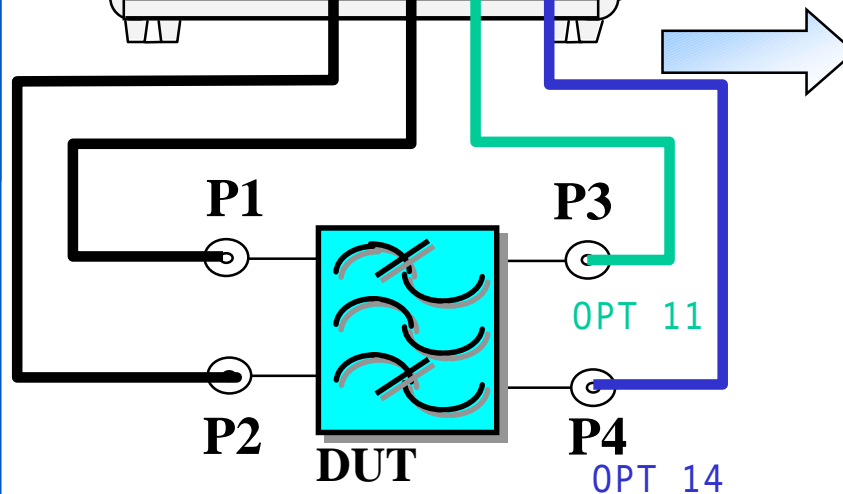
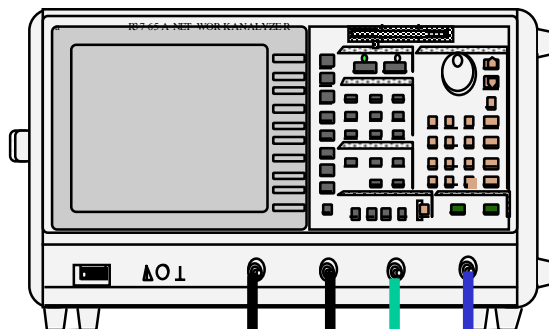
Built-in 3-port and 4-port test set (Opt 11/14)

General

Multiport and other options

Software fixture

Summary



S_{11}, S_{12}, S_{13}

S_{21}, S_{22}, S_{23}

S_{31}, S_{32}, S_{33}

3 paths, 9 parameters (opt 11)

$S_{11} S_{12} S_{13} S_{14}$

$S_{21} S_{22} S_{23} S_{24}$

$S_{31} S_{32} S_{33} S_{34}$

$S_{41} S_{42} S_{43} S_{44}$

6 paths, 16 parameters (opt 14)



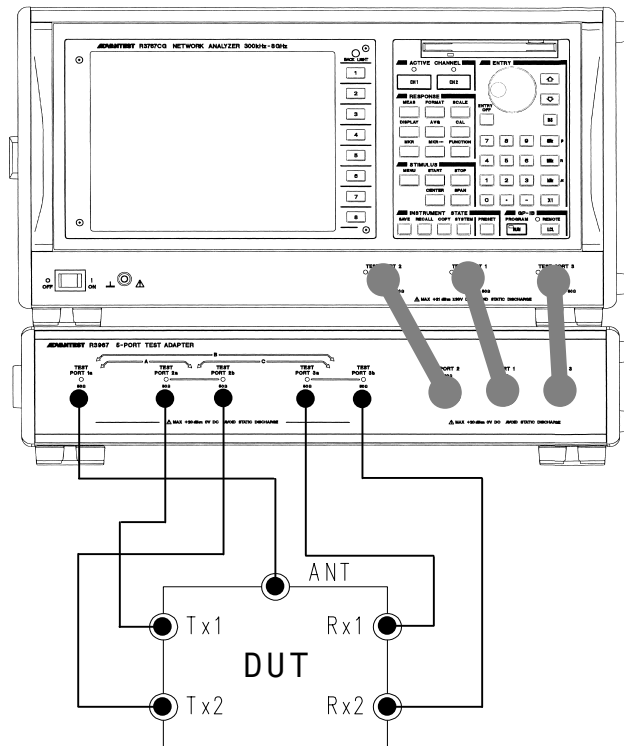
External multiport adapter R3967

General

Multiport and other options

Software fixture

Summary



R3967 + opt 10 : 5 port test adapter

(Transmission , Reflection for 5 port applications)

R3967 + opt 11 : 6 port test adapter

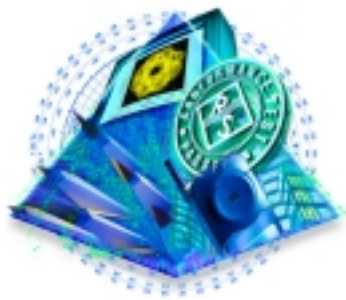
(Transmission , Reflection for 6 port applications)

R3967 + opt 12 : 6 port test adapter

(Transmission , Reflection, Isolation for 6 port applications)

Example : R3767CG+ opt11& R3967+ opt10

The test adapter has to be connected to R3765/7 CG + opt 11



TDR Analysis (Opt 70)

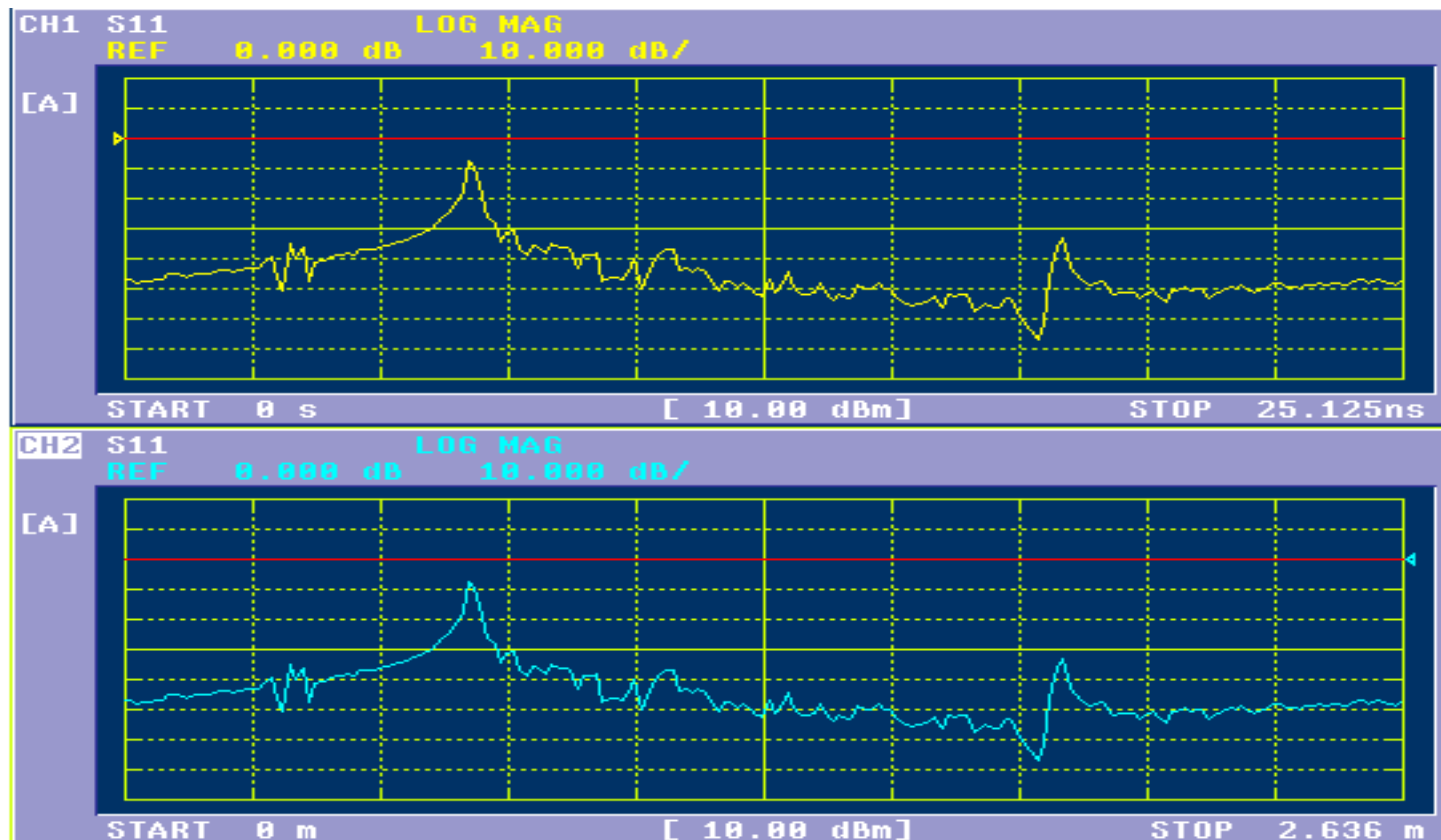
Time and distance scaling

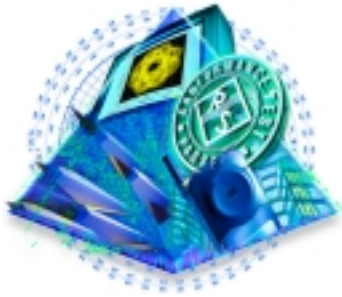
General

Multipoint and other options

Software fixture

Summary





Electrical step attenuator (Opt 10)

Specifications

- Attenuation step :

20dB, 40dB, 60dB (Set by each port)

- Output signal level :

- C model + 5 to -75 dBm (opt 10 + 11, ATT Auto)

+ 3 to -75 dBm (opt 10 + 14, ATT Auto)

{+10 to -10 dBm (Standard,opt 11), +8 to -10dBm(opt14)}

- B model + 2 to -78 dBm (ATT Auto) {+ 7 to -13 dBm}

- A model +12 to -68 dBm (ATT Auto) {+17 to - 3 dBm}

{ } :Standard output signal level

- Attenuation Accuracy:

Attenuation 20 dB: +/- 3 dB

Attenuation 40 dB: +/- 4 dB

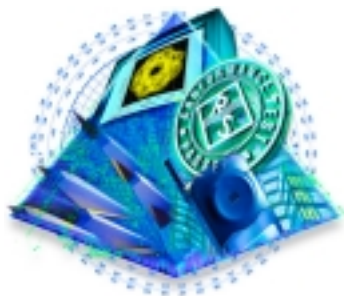
Attenuation 60 dB: +/- 5 dB

General

Multiport and
other options

Software fixture

Summary



Software Fixture (opt 71/72)

Simulation functions

General

Impedance conversion function

Multiport and
other options

Add Matching Network function

Delete Matching Network function

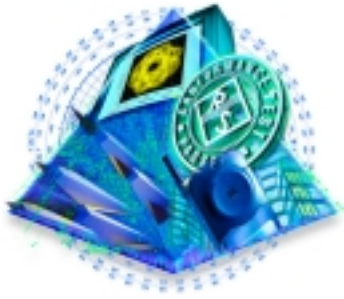
Software fixture

Balance Degree measurement function

Balance conversion function

Summary

Mixed mode analysis



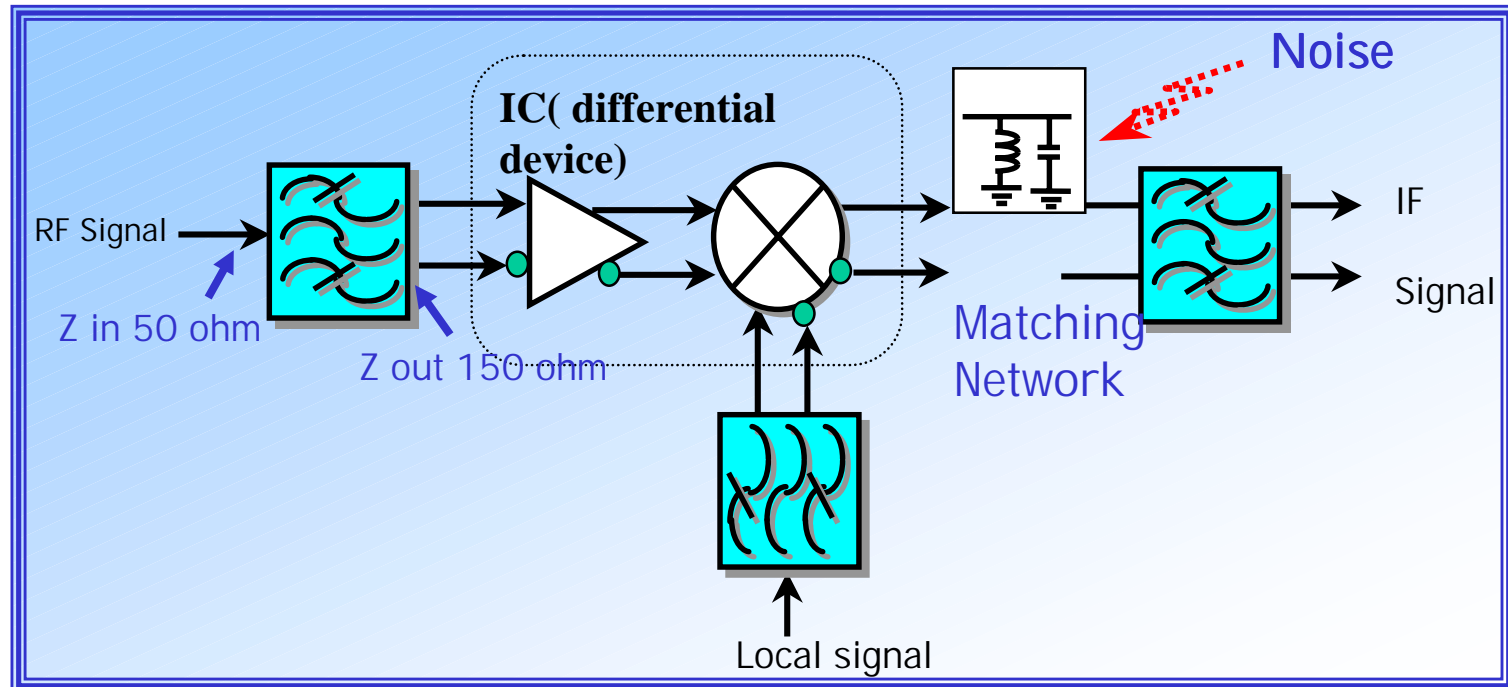
Trend of High Frequency Filters

General

Multiport and other options

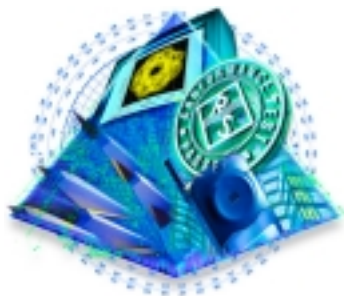
Software fixture

Summary



The characteristics of differential devices :

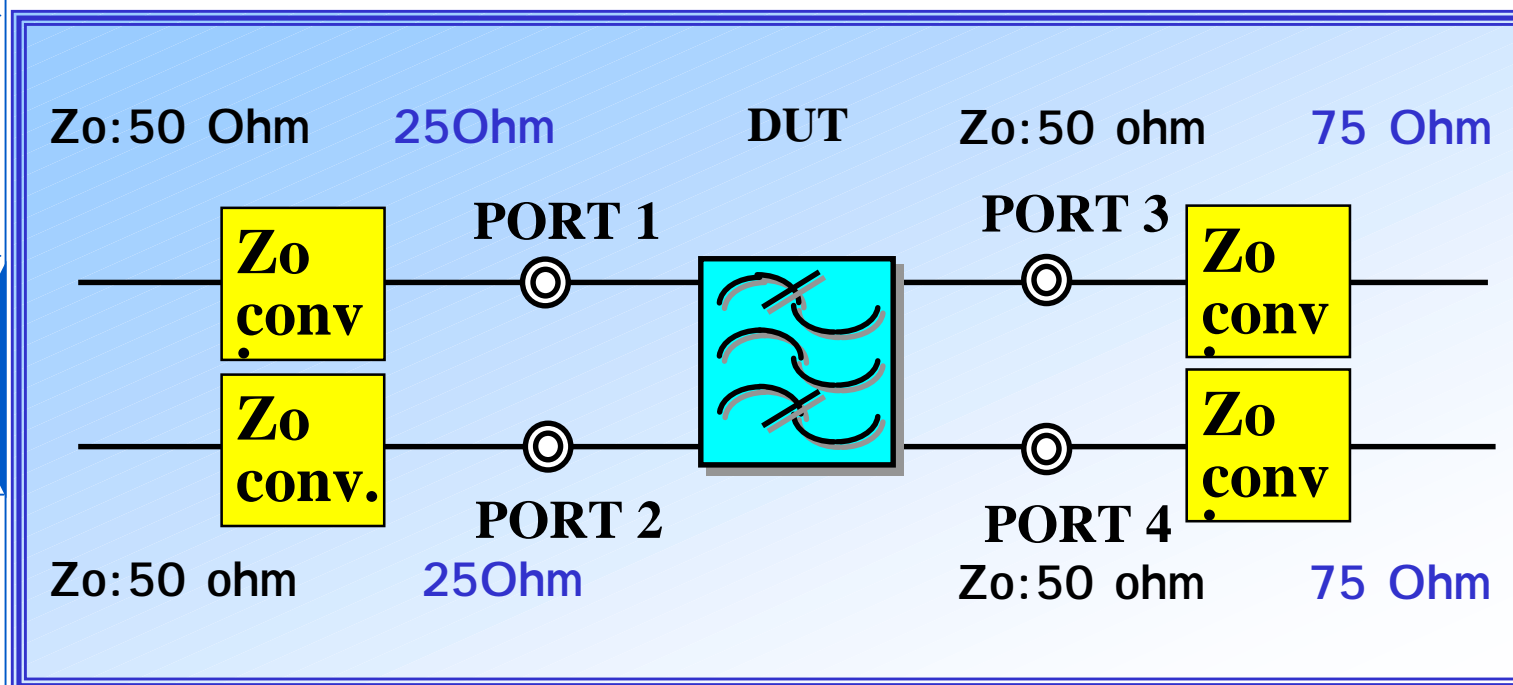
- Good for Endurance Noise characteristic
- Direct connection to IC (differential device)
- 3 or 4 port device
- Each port has a different impedance
- A Matching Network is required



Impedance conversion function (Opt 71/72)

Example

Possibility to set a different impedance
at each port (10 Ohm to 1K Ohm)

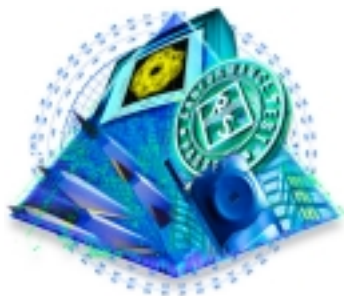


General

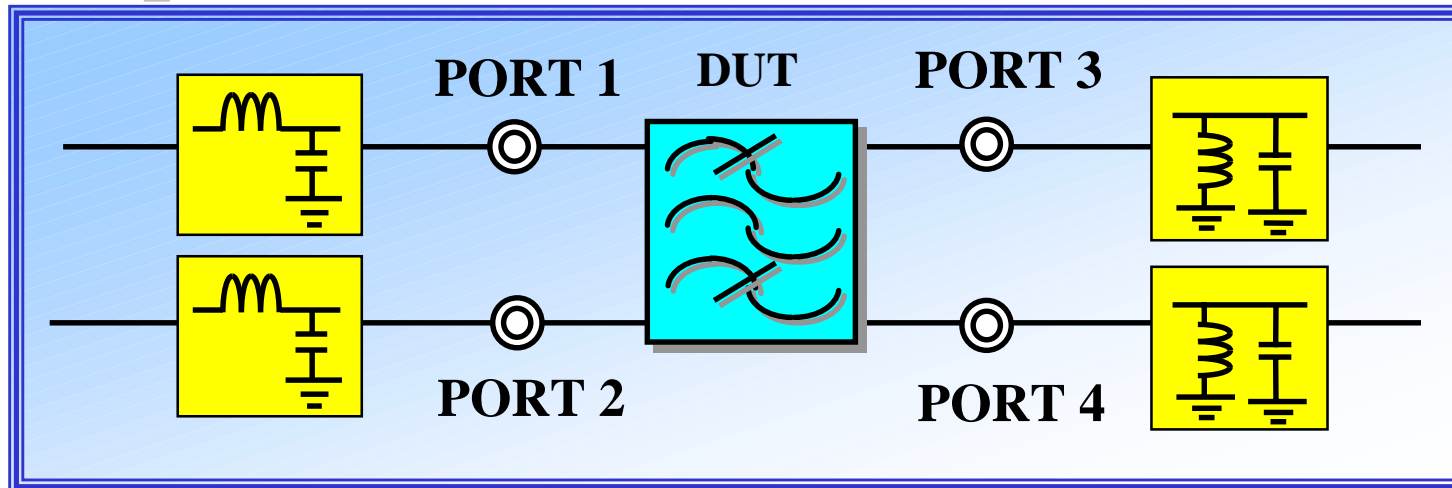
Multiport and
other options

Software fixture

Summary



Add Matching Network function (Opt 71/72)



General

Multiport and other options

Software fixture

Summary

Built-in circuits

C(P)-L(S)-P

Capacitance(Parallel)-Inductance(Series)-Device Port

L(P)-C(S)-P

Inductance(Parallel)-Capacitance(Series)-Device Port

C(S)-L(P)-P

Capacitance(Series)-Inductance(Parallel)-Device Port

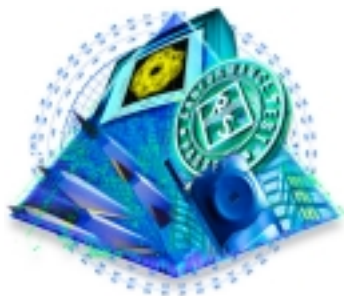
L(S)-C(P)-P

Inductance(Series)-Capacitance(Parallel)-Device Port

L(P)-C(P)-P

Inductance(Parallel)-Capacitance(Parallel)-Device Port

Other circuits can be simulated by simulation software (Touchstone format)



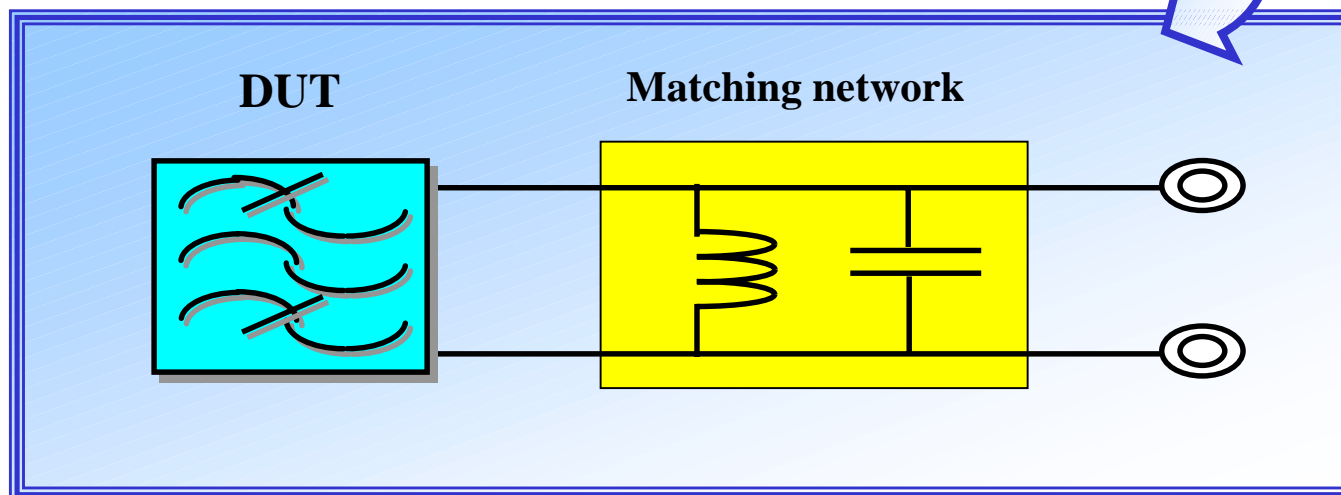
Add Matching Network function (2) (Opt 71)

General

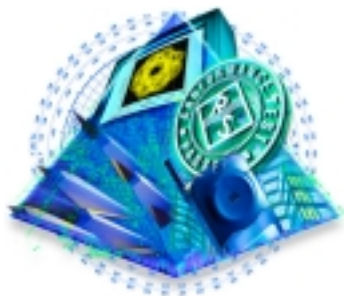
A matching network (LC) can be added
between ports (P1 to P2 & P3 to P4)

Multiport and
other options

Software fixture



Summary



Delete Matching network function (Opt 71/72)

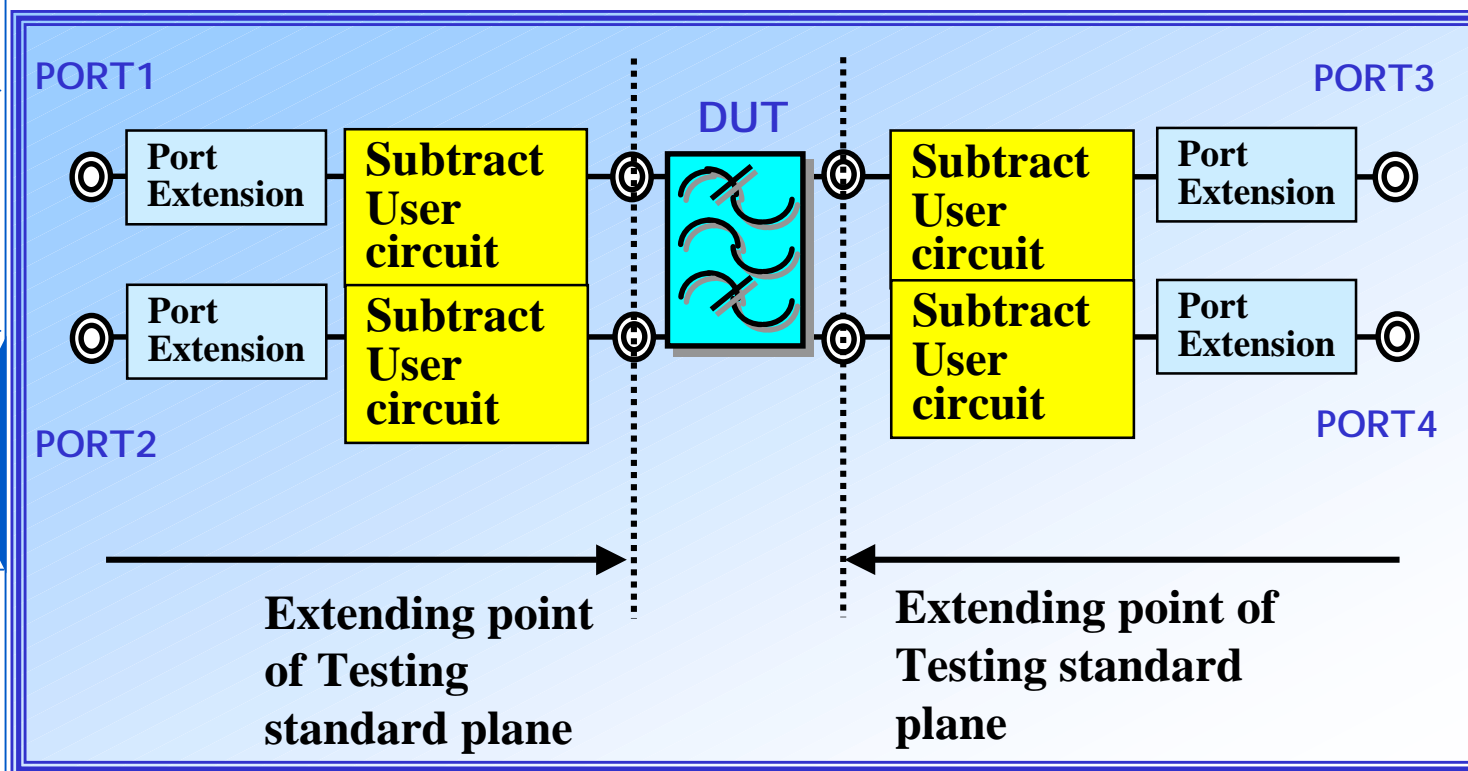
Delete a hardware matching circuit by using S parameter file in Touchstone format

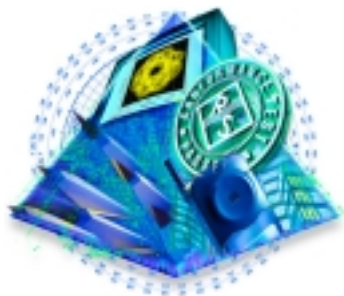
General

Multiport and other options

Software fixture

Summary





Delete Matching network function(2) (Opt 71/72)

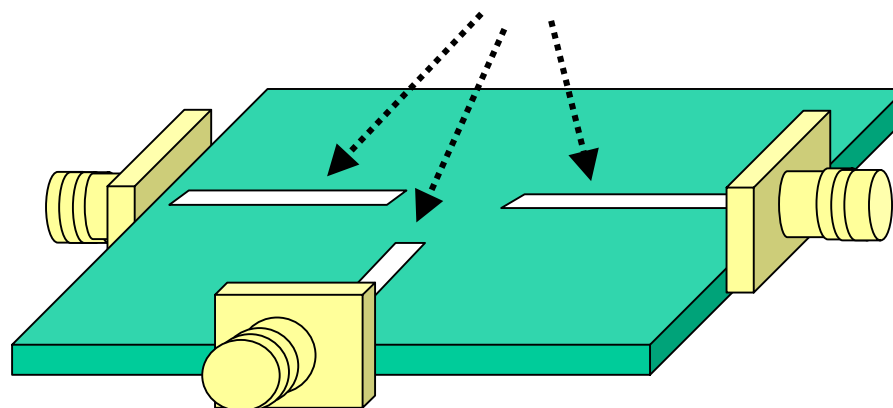
General

Multiport and
other options

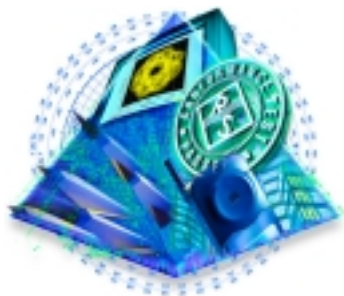
Software fixture

Summary

Possibility to measure the real device characteristics



*The DUT characteristics can be measured directly,
deleting the influence of the strip lines.*



Delete Matching network function(3) (Opt 71/72)

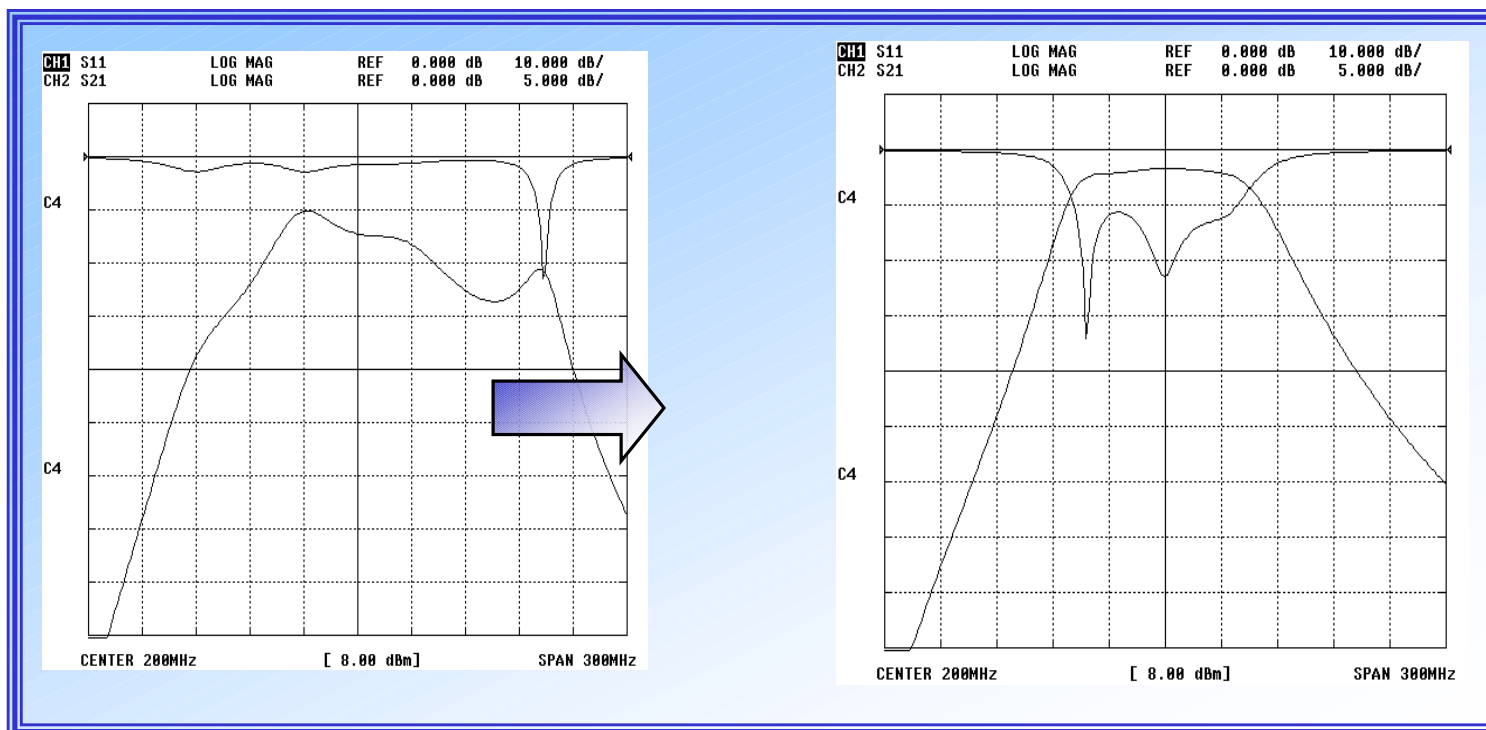
Measuring example

General

Multiport and other options

Software fixture

Summary



Including physical circuit specifications
(Circuit + DUT)

Excluding physical circuit specifications (DUT only)



Balance Degree Measurement (Opt 71)

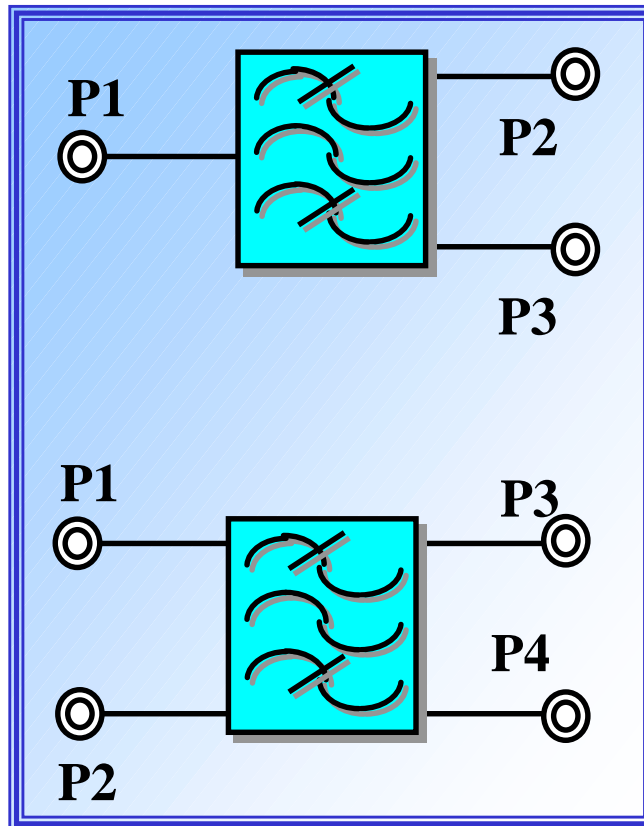
Possibility to measure Level and Phase of balance degree between the ports

General

Multiport and other options

Software fixture

Summary



Balance degree :

Between P1 and P2 : $B_{12} = -(S_{13}-S_{14})/(S_{23}-S_{24})$

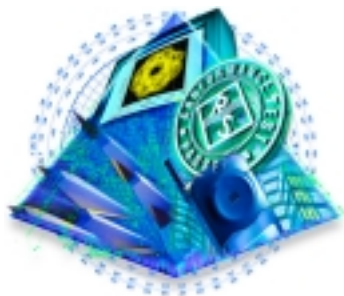
Between P2 and P1: $B_{21} = -(S_{23}-S_{24})/(S_{13}-S_{14})$

Between P2 and P3 : $B_{23} = -(S_{21}/S_{31})$

Between P3 and P2 : $B_{32} = -(S_{31}/S_{21})$

Between P3 and P4 : $B_{34} = -(S_{31}-S_{32})/(S_{41}-S_{42})$

Between P4 and P3 : $B_{43} = -(S_{41}-S_{42})/(S_{31}-S_{32})$

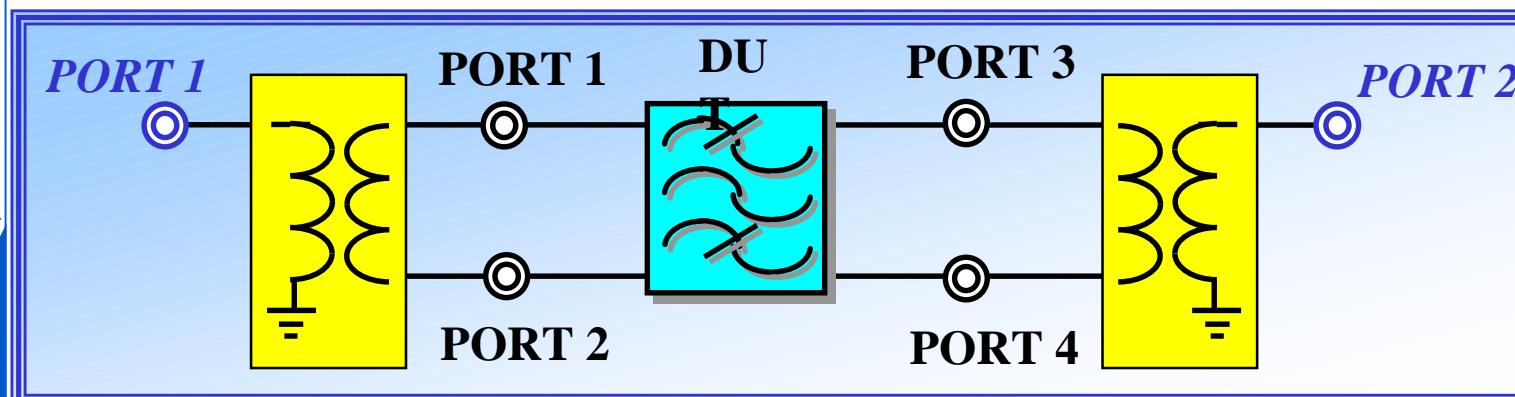


Balance Conversion function (Opt 71)

General

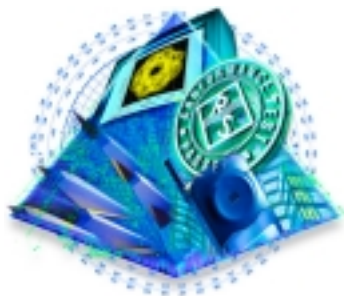
Possibility to measure a 4-port device as
two-port device by using a balun

Multiport and
other options



Software fixture

Summary



Balance Conversion function (2) (Opt 71)

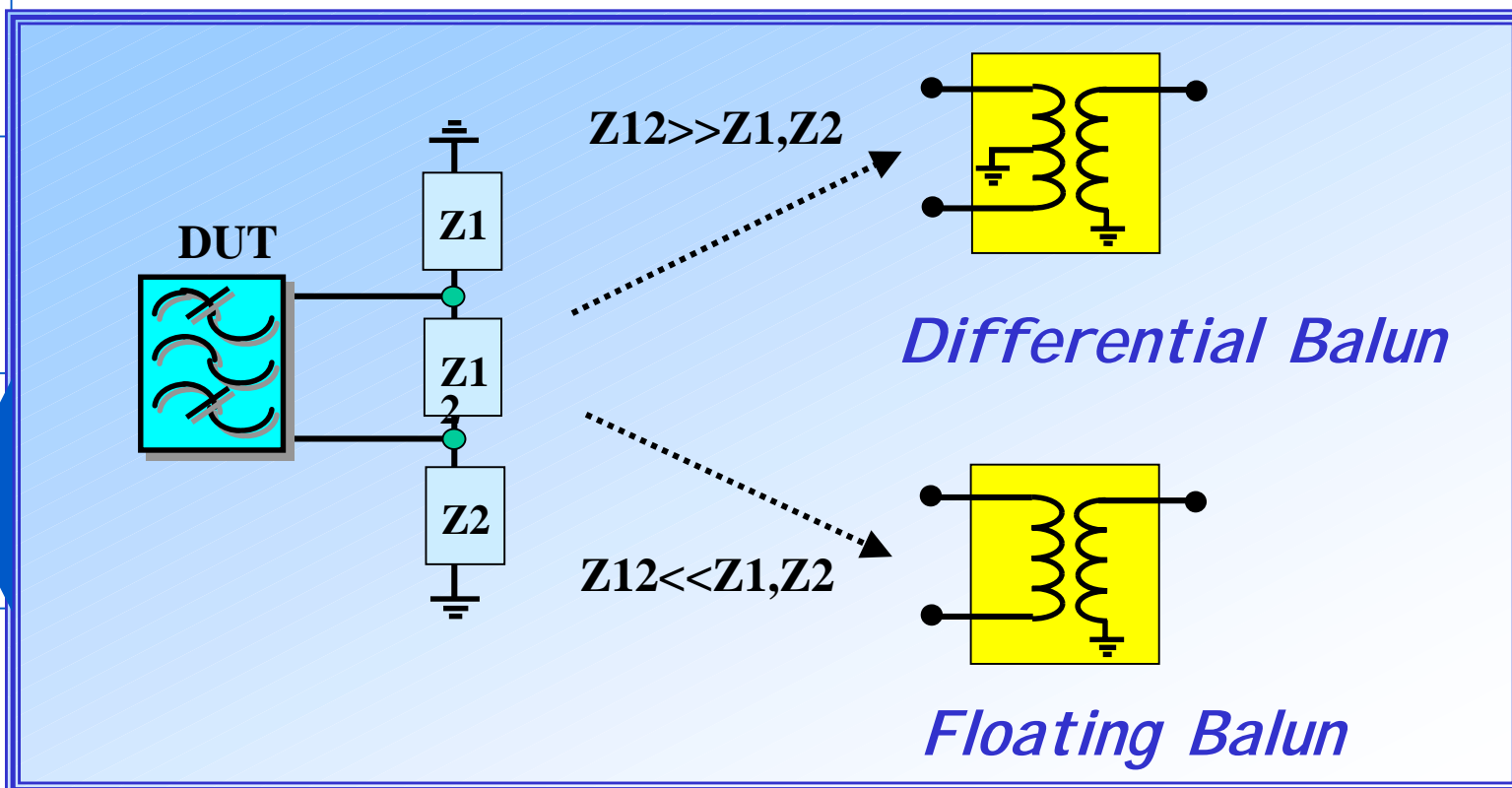
Two types of Baluns
(Differential & Floating Balun)

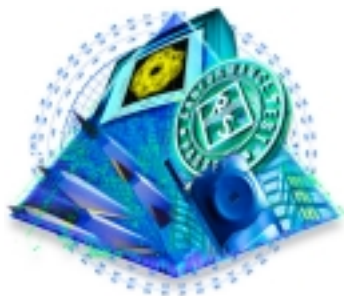
General

Multiport and
other options

Software fixture

Summary





Balance Conversion function (3) (Opt 71)

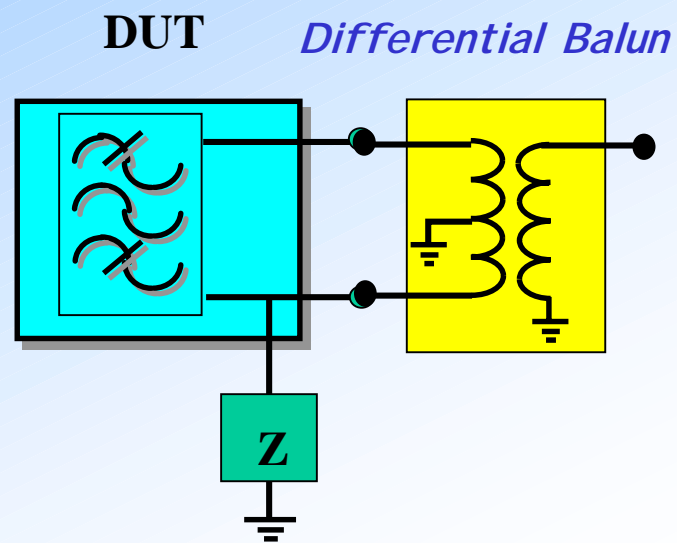
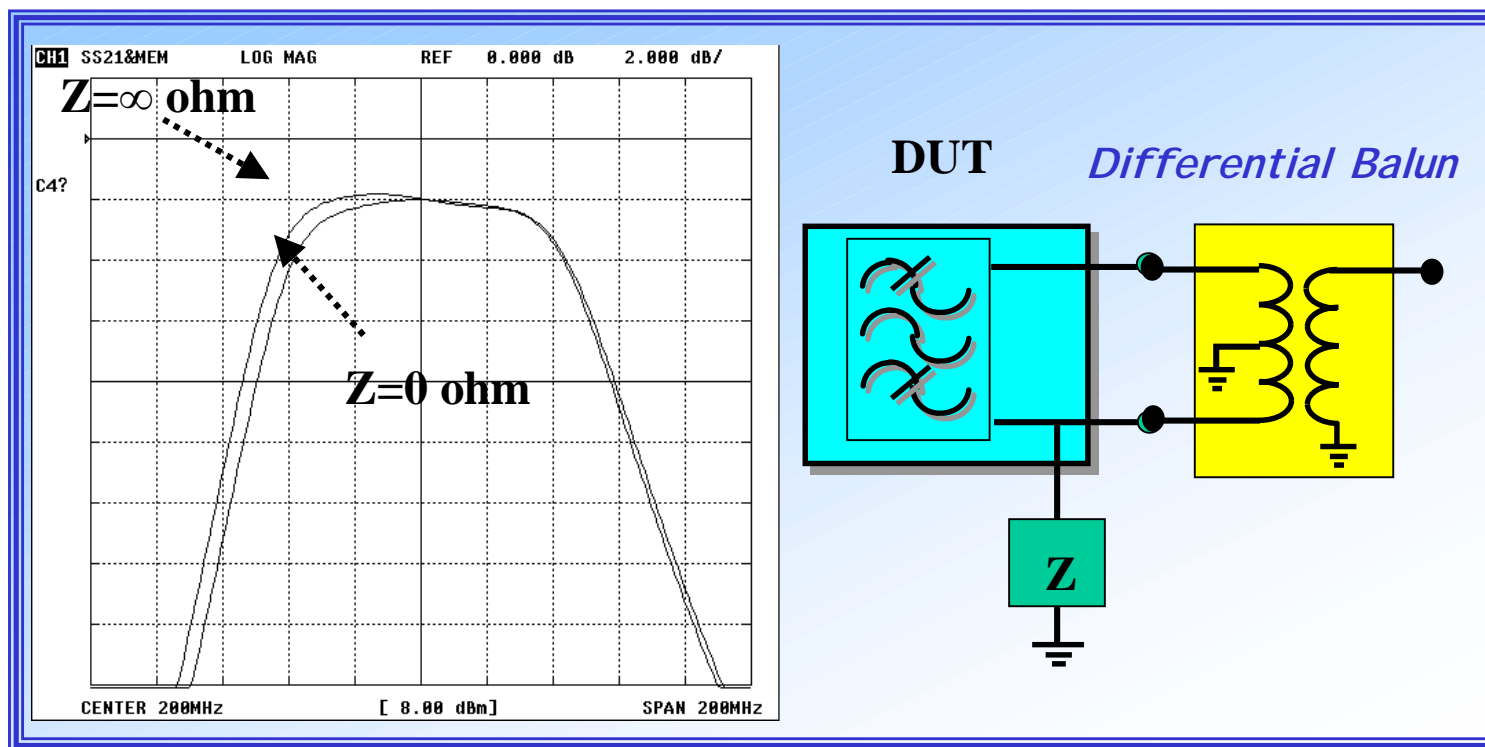
Measurement result with Differential Balun

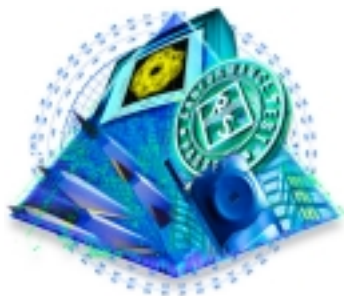
General

Multiport and other options

Software fixture

Summary





Balance Conversion function (4) (Opt 71)

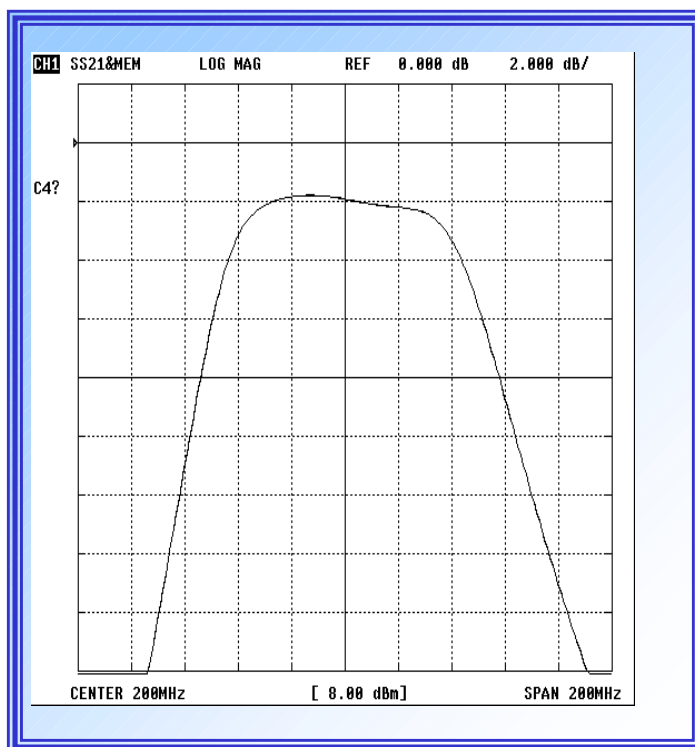
Measurement result with Floating Balun

General

Multiport and other options

Software fixture

Summary

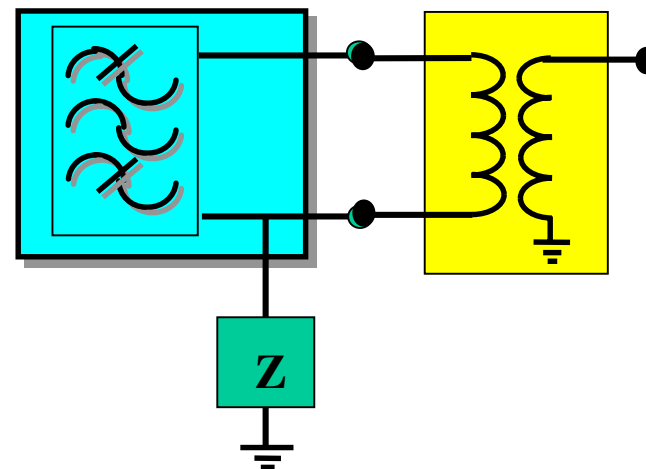


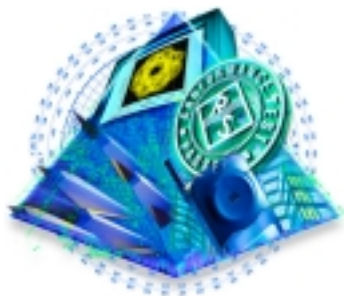
No change in characteristics between

$$Z = \infty \text{ to } 0 \text{ ohm}$$

DUT

Floating Balun





Mixed Mode Analysis (Opt 71)

General

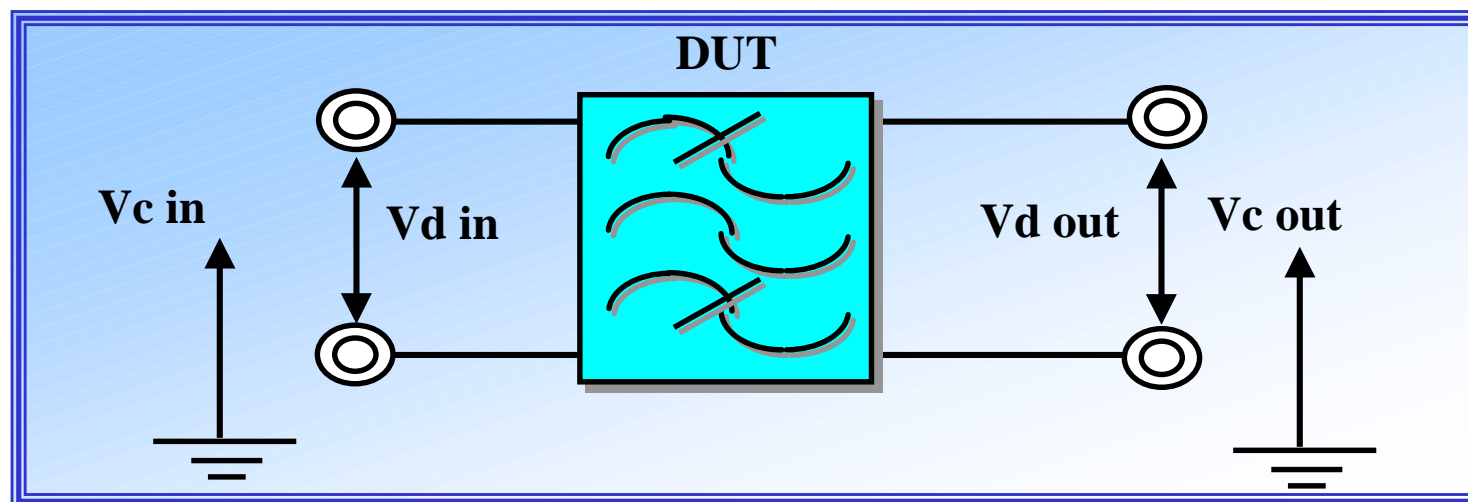
Multiport and
other options

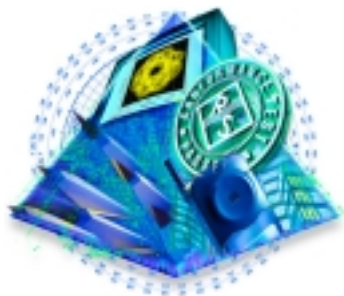
Software fixture

Summary

Common mode Analysis :

- **Differential input - Differential output Analysis** : Sdd
- **Differential input - Common output Analysis** : Scd
- **Common input - Differential output Analysis** : Sdc
- **Common input - Common output Analysis** : Scc





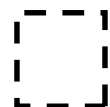
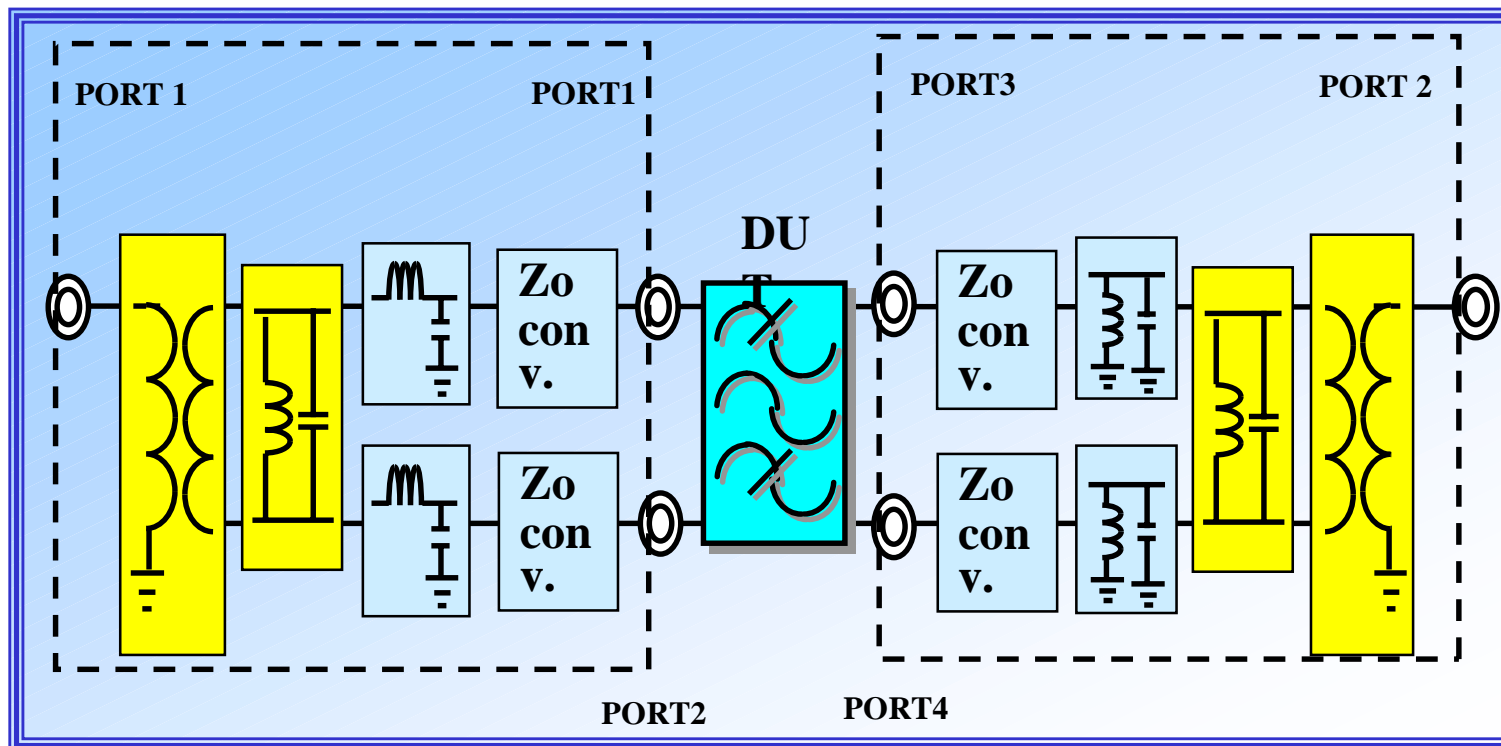
Summary of Software Fixture

General

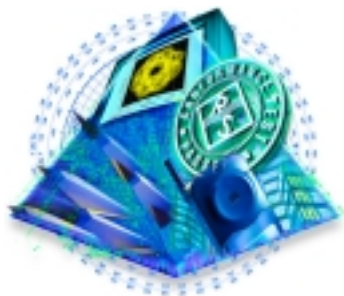
Multiport and other options

Software fixture

Summary



Simulation by Software Fixture



Customer benefits

Why should you buy this network analyzer ?

General

Multiport and other options

Software fixture

Summary

- ➔ 3/4 port test sets implemented
 - ➔ Software fixture : Unique solution
 - ➔ 3/4 port full calibration possible
 - ➔ Simulations in realtime
 - ➔ Balanced measurements possible
- 