

MODIFICATION RECOMMENDED

E5071C-23

S E R V I C E N O T E

Supersedes:
None

E5071C ENA Series Network Analyzer, 9 kHz to 20 GHz

Serial Numbers: See the list at the end of this service note

The measurement data is unstable due to a Receiver Port degradation, though a user performs calibration.

Parts Required:

P/N	Description	Qty.
E5071-62282	TESTED RECEIVER MODULE (WITHOUT BIAS TEE)	1
or		
E5071-62292	TESTED RECEIVER MODULE (WITH BIAS TEE)	1
or		
E5071-62097	TESTED RECEIVER MODULE	1

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:			
MODIFICATION RECOMMENDED			
ACTION CATEGORY:	☒ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS LABOR: 3.6 Hours	
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☒ ON-SITE ☒ SERVICE CENTER ☐ CHANNEL PARTNER	SERVICE INVENTORY: ☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS: ☒ RETURN ☐ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE NO CHARGE AVAILABLE UNTIL: Oct, 2015		
☒ Calibration Required ☐ Calibration NOT Required		PRODUCT LINE: WN AUTHOR: jm	
ADDITIONAL INFORMATION:			

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October 31, 2012

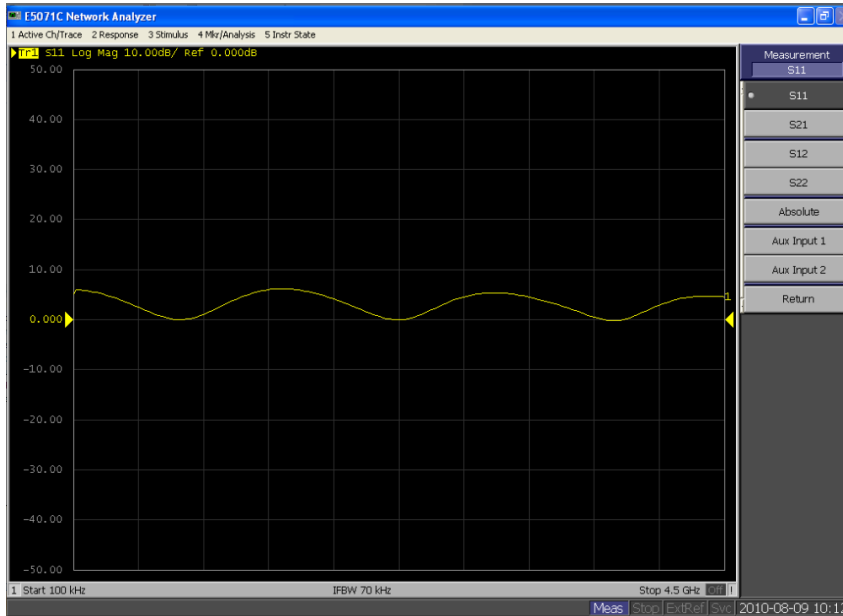
Rev. 20



Situation:

(1) Customer complains about the measurement data is not stable shortly after user calibration is performed.

(2) Port-1 S11, Port-2 S22, Port-3 S33 or Port-4 S44 has trace distortion as shown as in below picture due to Mixer-IC infant transistor failure, though there is no cable or adapter connected to the port.

**Solution/Action:**

When the above symptom can be identified without connecting a cable or adapter to a port, then run the attached Mixer-IC diagnostic Test **before performing Adjustment** and if a Port results in FAIL, then replace the receiver board with the FAIL result.

The Mixer-IC diagnostic Test program can be retrieved from the below URL, too.

(Agilent Internal) http://kobemktg.jp/agilent.com/field_eng/service/faq/e5071c.htm

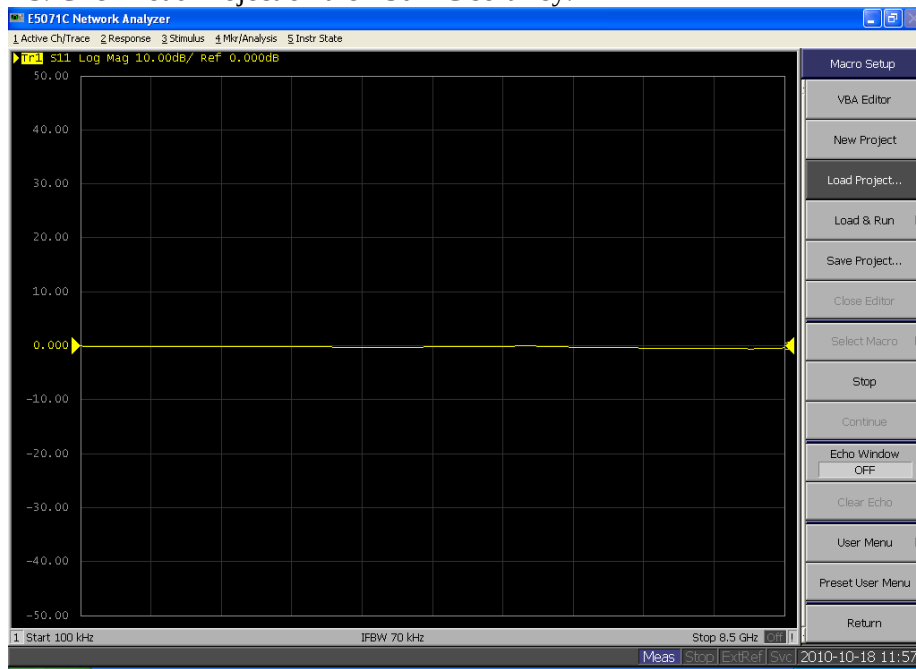
4. Use [the Mixer-ic diagnostic program](#).

For more details, see the service note E5071C-23.

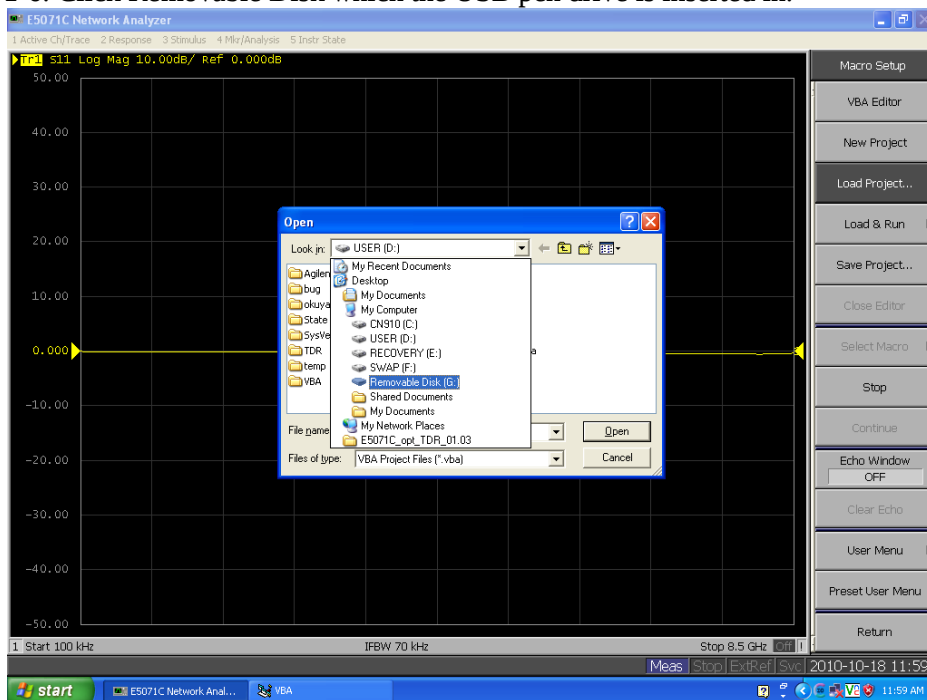
Step-1. Run the Mixer-IC diagnostic Test program, **before performing Adjustment**.

- 1-1. Store Mixer-IC diagnostic program to USB pen drive which is scanned by Anti-Virus software.
- 1-2. Power on the E5071C and perform heat-run with 90 minutes.
- 1-3. Insert USB pen drive to the E5071C.
- 1-4. Push Macro Setup on the E5071C hard-key.

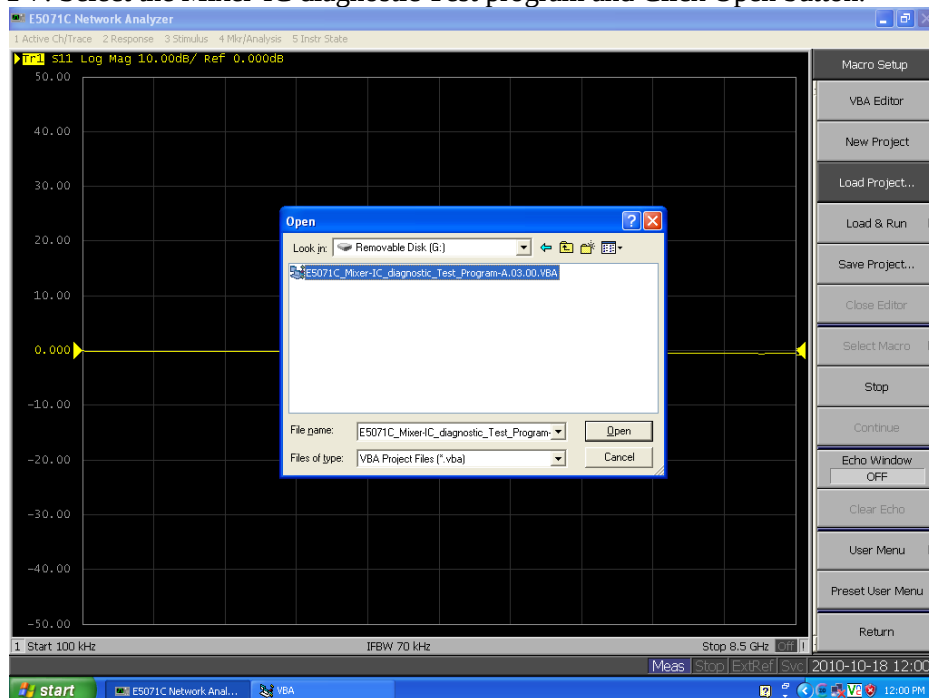
1-5. Click Load Project on the E5071C soft-key.



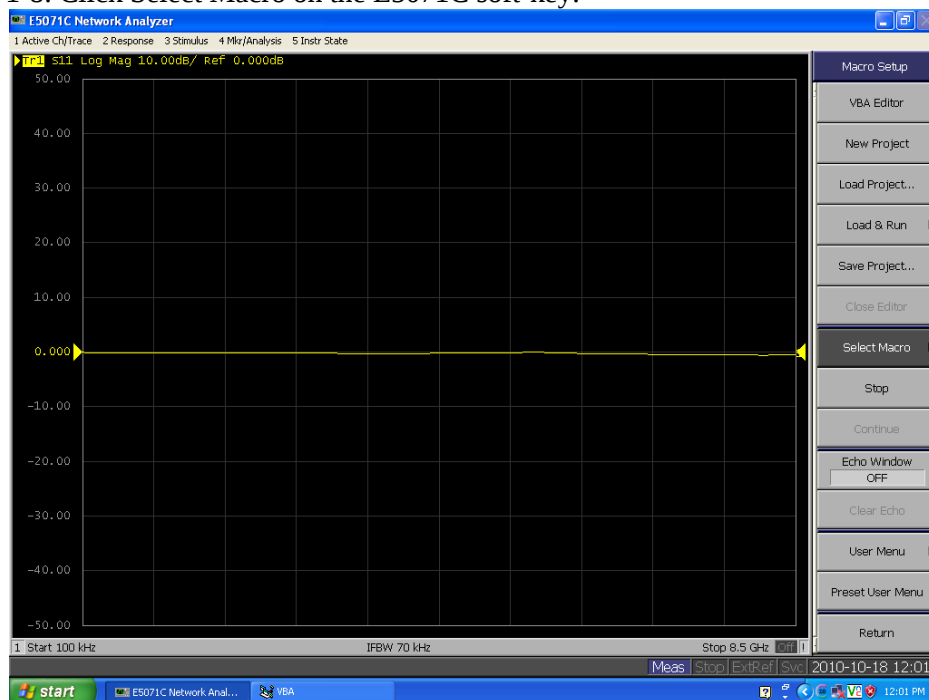
1-6. Click Removable Disk which the USB pen drive is inserted in.



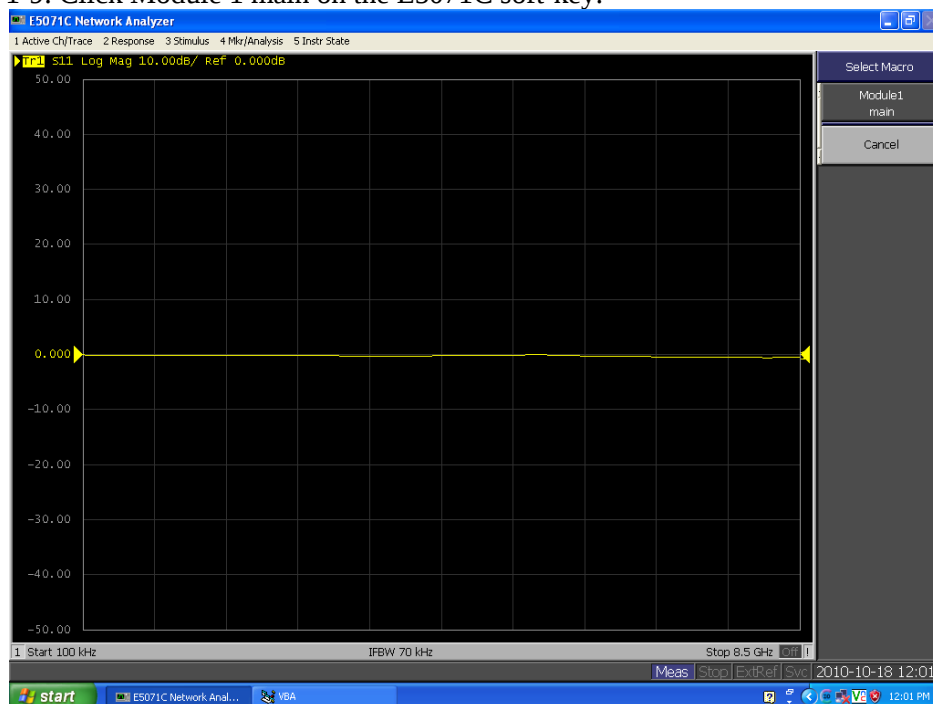
1-7. Select the Mixer-IC diagnostic Test program and Click Open button.



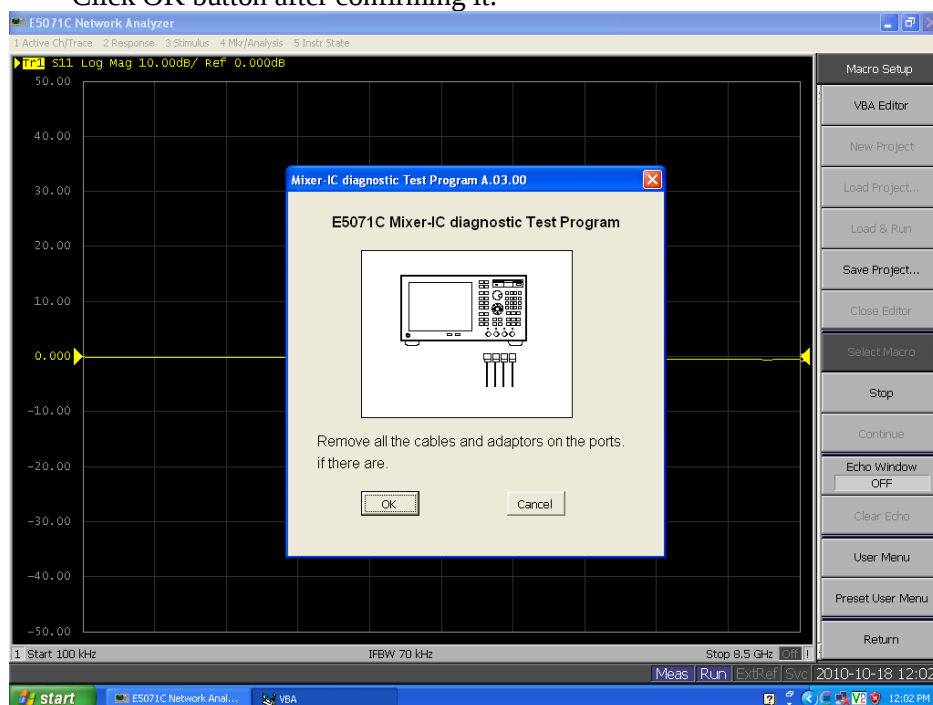
1-8. Click Select Macro on the E5071C soft-key.



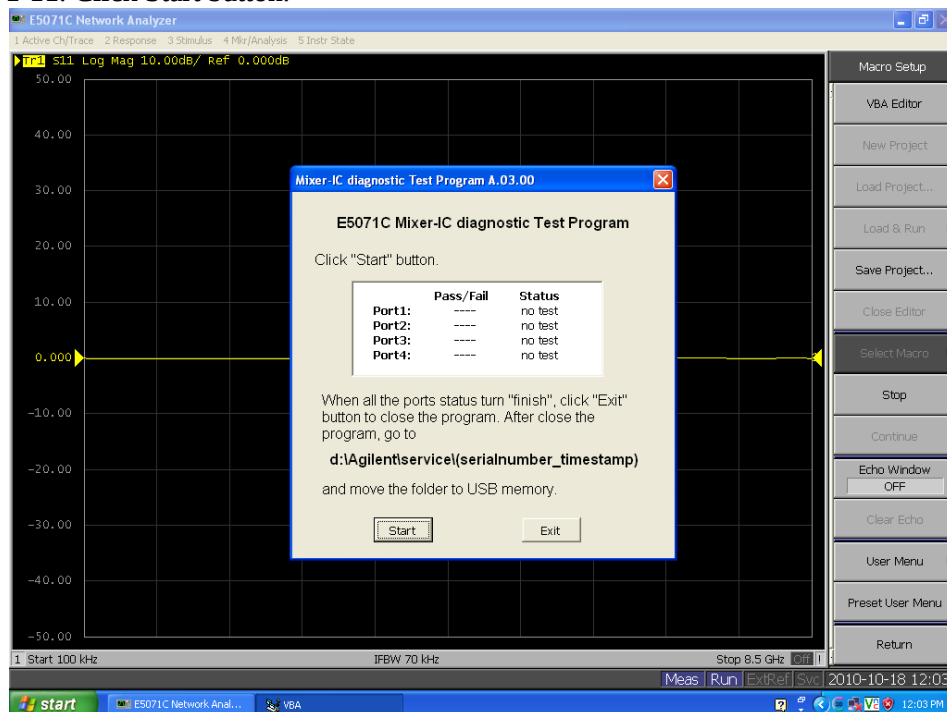
1-9. Click Module 1 main on the E5071C soft-key.



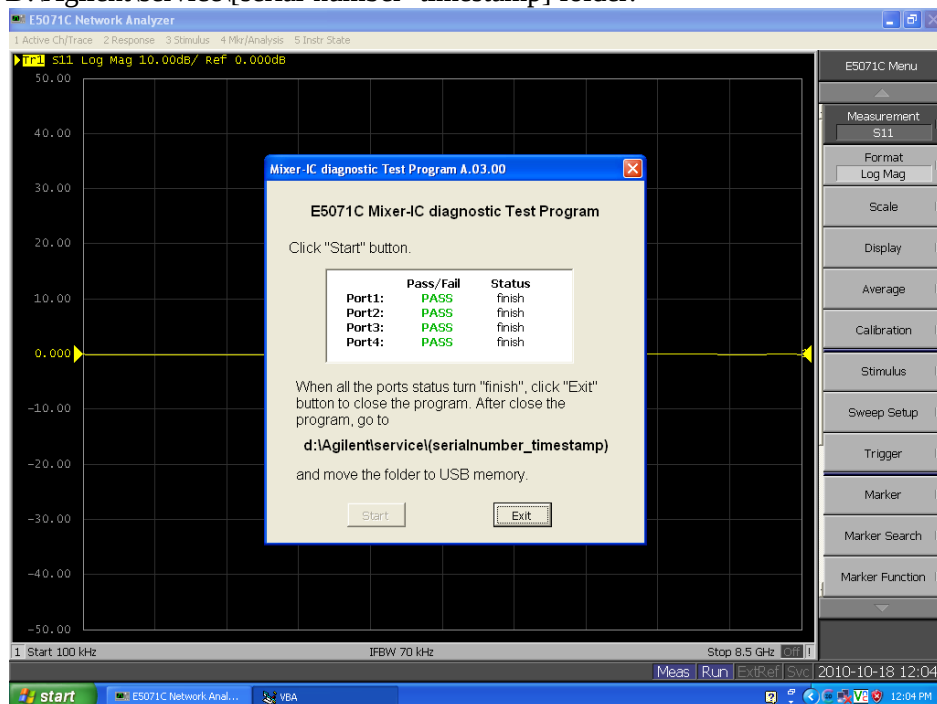
1-10. Remove all the cables and adaptors on the ports, if there are and Click OK button after confirming it.



1-11. Click Start button.

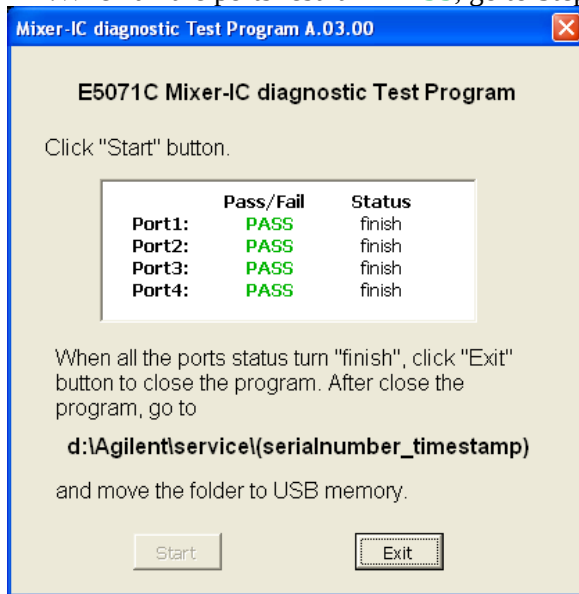


1-12. Take note all the ports status and Click Exit button. (This result is also stored on D:\Agilent\service\[serial-number+timestamp] folder.



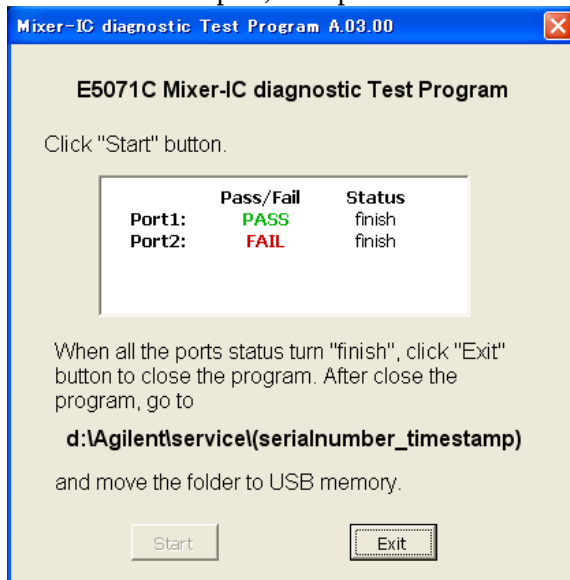
Step-2. By checking the Pass/Fail result, take following actions.

2-A. When all the ports result in **PASS**, go to Step-3 and Step-4.



2-B. When either of the port results in **FAIL**, replace the failed port with a new receiver board.

For the PASS port, no replacement is needed.

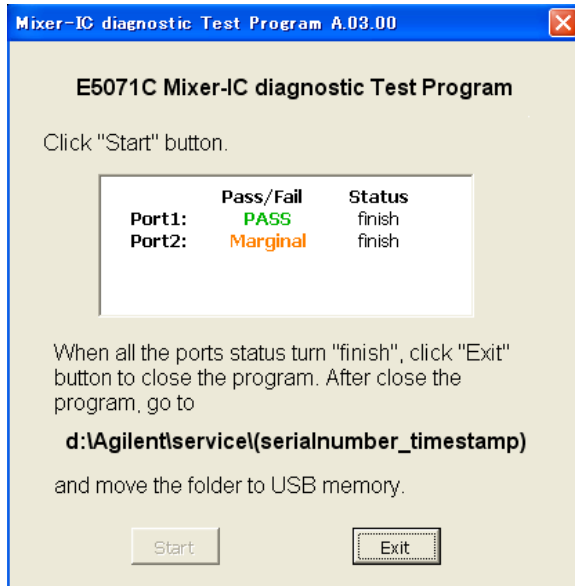


2-B-1. Replace the receiver board. (See the E5071C Service Guide for more details)

2-B-2. After the replacement, perform Post-Repair procedures. (See the E5071C Service Guide for more details)

2-C. When either of the port results in **Marginal** FAIL, segregate the root cause whether it's due to bridge or not. If the Marginal FAIL port is not due to Bridge failure, Agilent considers it as Mixer-IC failure. Marginal FAIL is only shown on Option 2D5/2K5/4D5/4K5.

(See Appendix [How to segregate the Bridge failure at marginal FAIL](#) for more details)



2-C-1. When the Marginal FAIL port is due to Mixer-IC failure, replace the receiver boards. (See the E5071C Service Guide for more details)

2-C-2. After the replacement, perform Post-Repair procedures. (See the E5071C Service Guide for more details)

Step-3. Store the Mixer-IC diagnostic test result to Siebel attachment.

3-1. Go to D:\Agilent\service\ directory,
Cut [serial-number+timestamp] folder and
Paste the folder to the Removable Disk.

3-2. Disconnect USB pen drive from the E5071C.

3-3. ZIP the [serial-number+timestamp] folder on the USB pen drive and put it to Siebel attachment.

Step-4. Remove the Mixer-IC Diagnostic Test program from the E5071C.

Appendix

How to segregate the Bridge failure at Marginal FAIL

(1) Target module

E5071-62089 POWER SPLITTER & BIAS TEE MODULE

(2) Required instrument

E5071C Network Analyzer (8.5GHz)

3.5mm Calibration kit

Female 3.5mm – female 3.5mm adaptor (SMA adaptor is also applicable)

SMA cable (e.g. 5062-6685)

(3) Procedure

Set network analyzer as below.

Start frequency : 100kHz

Stop frequency : 8.5GHz

Sweep type : Linear frequency

Sweep mode : stepped

Power : 0dBm

Number of point : 201

IF bandwidth : 1kHz

Connect SMA cable to port 1 and port 2 of network analyzer.

Make full 2-port calibration on port 1 and 2.

Connect bridge connectors as below.

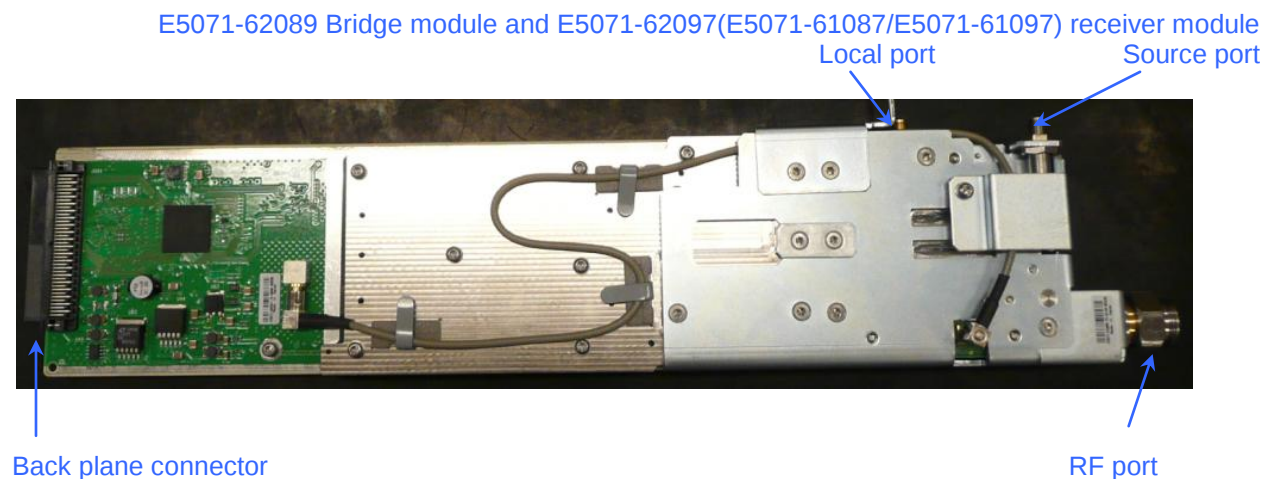
Receiver Source port to port 1 of network analyzer.

Receiver RF port to port 2 of network analyzer.

Receiver Local port and backplane connector need no connection.

Measure S21.

(4) Bridge Module Port Location

Fig 1. Bridge module port location

(5) Example of Measurement

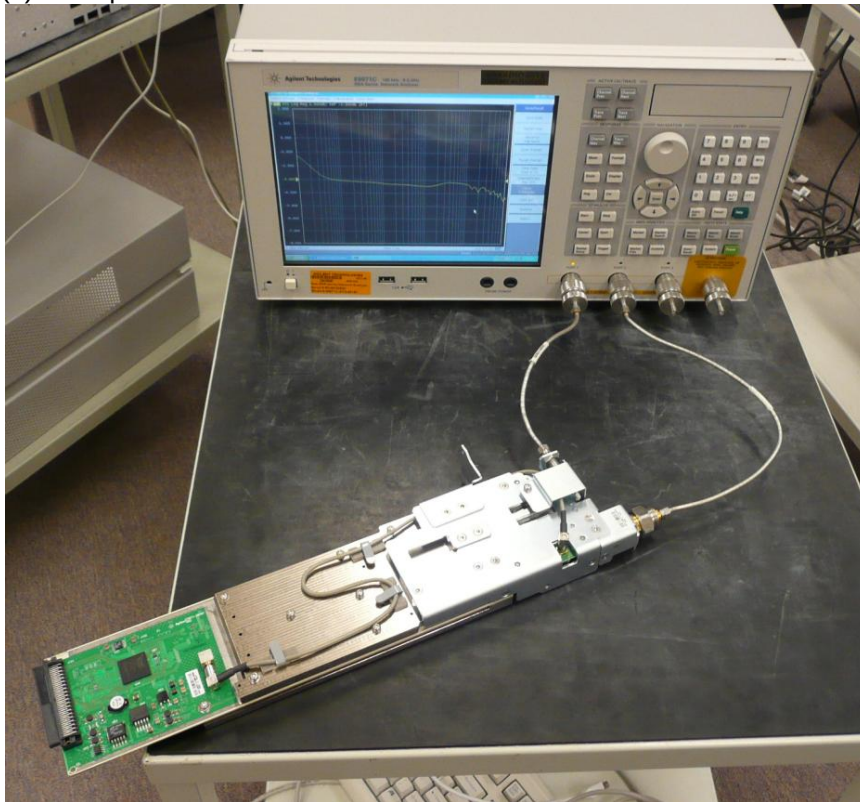
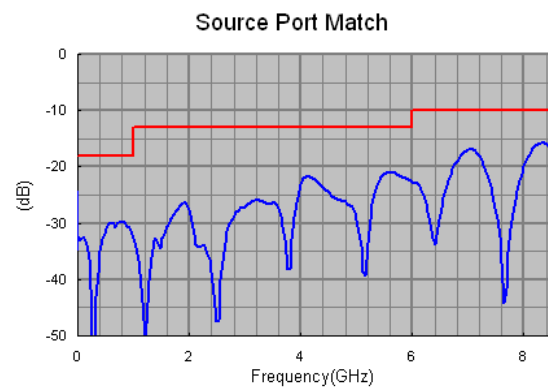
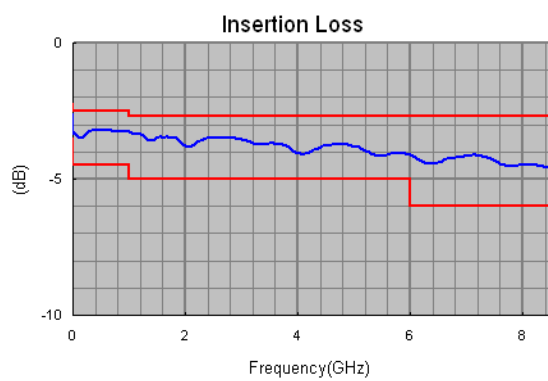


Fig 2. Measurement setup



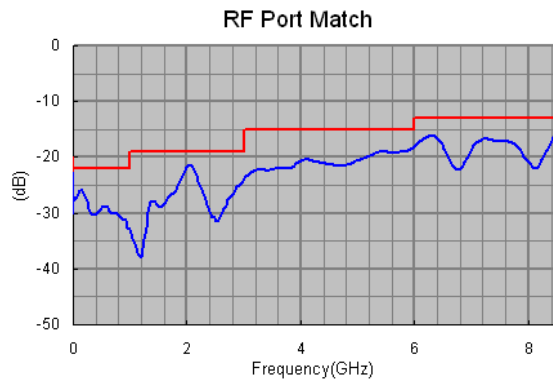


Fig 3. Example of measurement data

(6) Test Limit

S21 Bridge Insertion Loss

300kHz to 1MHz	-3.5dB to -2.2dB
1MHz to 1GHz	-4.5dB to -2.5dB
1GHz to 6GHz	-5.0dB to -2.7dB
6GHz to 8.5GHz	-6.0dB to -2.7dB

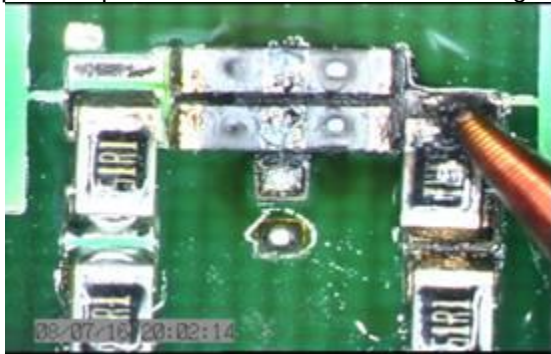
S11 Source Port Return Loss

300kHz to 1GHz	-18dB
1GHz to 6GHz	-13dB
6GHz to 8.5GHz	-10dB

S22 RF Port Return Loss

300kHz to 1MHz	-20dB
1MHz to 10MHz	-23dB
10MHz to 1GHz	-22dB
1GHz to 3GHz	-19dB
3GHz to 6GHz	-15dB
6GHz to 8.5GHz	-13dB

When Bridge Insertion Loss limit, Source Port Return Loss Limit or RF Port Return Loss is out of limit, please open the chassis and check the bridge circuit visually.



Note: When the bridge failure is shown, EOS(Excessive Over Stress) by customer is highly suspected. For this case, this service note is NOT applied.

Serial numbers:

MY46100105	MY46100425	MY46100706	MY46100974	MY46101130	MY46101296	MY46101492	MY46101663
MY46100121	MY46100444	MY46100708	MY46100993	MY46101135	MY46101297	MY46101493	MY46101665
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