E5071C-08

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: MY46100001 to MY46107160, SG46100001 to SG46100196

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

Parts Required:

P/N	Description	Qty.
E5071-62182 or	TESTED RECEIVER MODULE (WITHOUT BIAS TEE)	1
E5071-62192 or	TESTED RECEIVER MODULE (WITH BIAS TEE)	1
E5071-62097	TESTED RECEIVER MODULE	1

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:			
MODIFICATION RECOMMENDED			
ACTION CATEGORY: X ON SPECIFIED FAILURE [[]] AGREEABLE TIME	STANDARDS LABOR: 3.0 Hours		
LOCATION CATEGORY: [[]] CUSTOMER INSTALLABLE X ON-SITE X SERVICE CENTER [[]] CHANNEL PARTNER	SERVICE [[]] RETURN INVENTORY: [[]] SCRAP [[]] SEE TEXT	USED X RETURN PARTS: [[]] SCRAP [[]] SEE TEXT	
AVAILABILITY: PRODUCT'S SUPPORT LIFE	NO CHARGE AVAILABLE UNTIL: Oct, 2012		
AUTHOR: jm	PRODUCT LINE: WN		
ADDITIONAL INFORMATION:			

October 18, 2010

Agilent Technologies

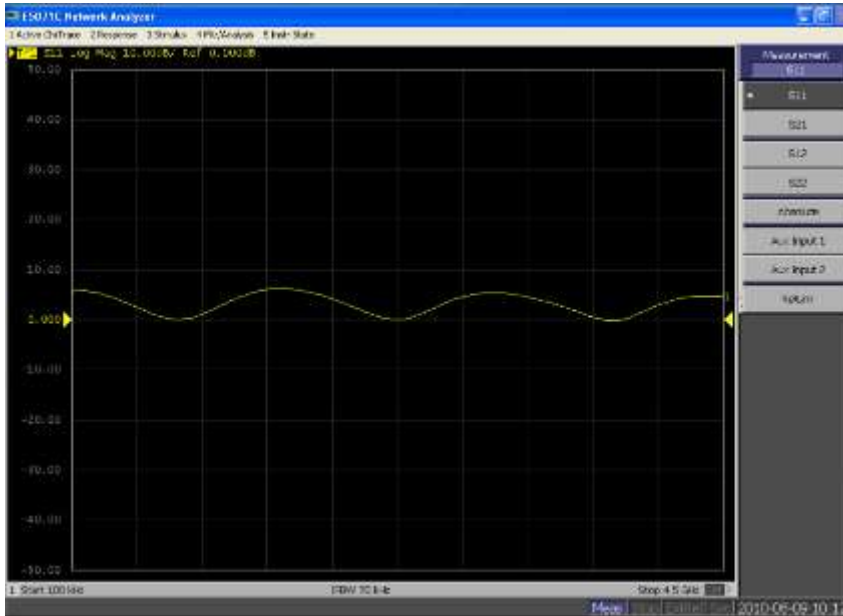**Situation:**
(1)Customer complains about the measurement data is not stable shortly after user calibration is performed.

(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.jpn.agilent.com/field_eng/service/faq/e5071c.htm
        4. Use the Mixer-ic diagnostic program.
        For more details, see the service note E5071C-08.

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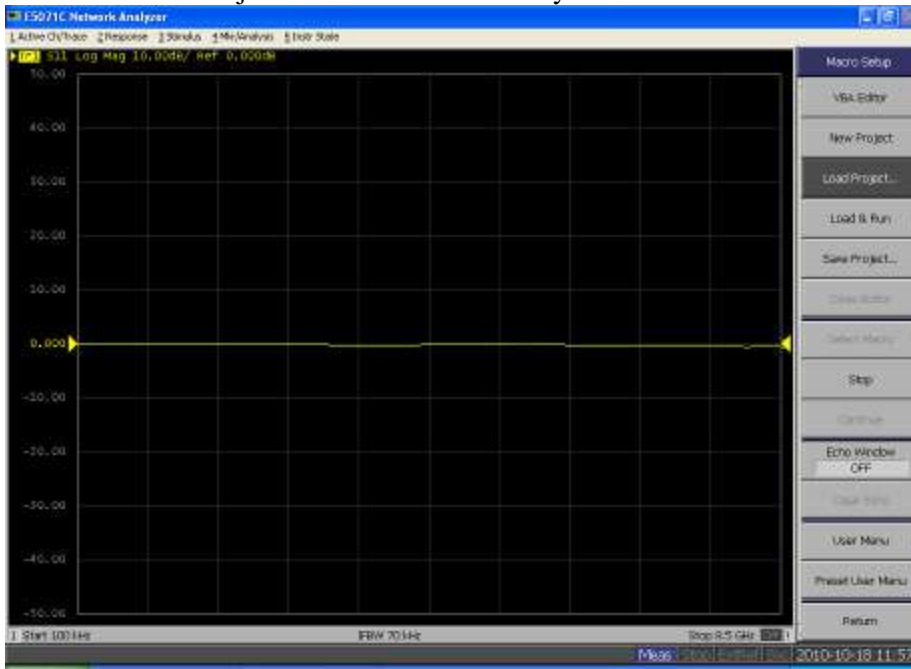1-1. Store Mixer-IC diagnostic program to USB pen drive which is scanned by Anti-Virus software.
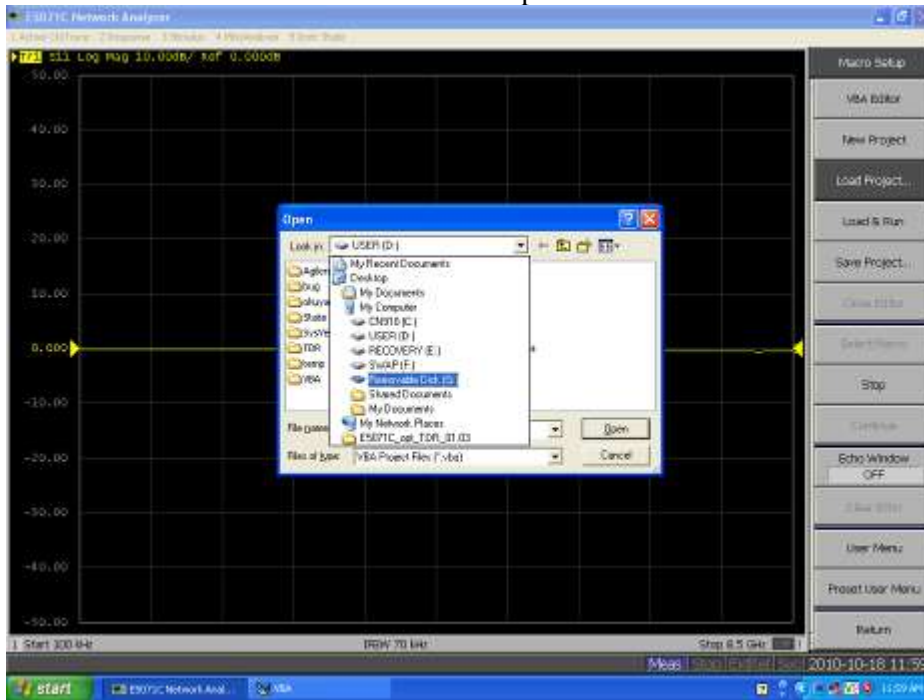1-2. Power on the E5071C and perform heat-run with 90 minutes.
1-3. Insert USB pen drive to the E5071C.
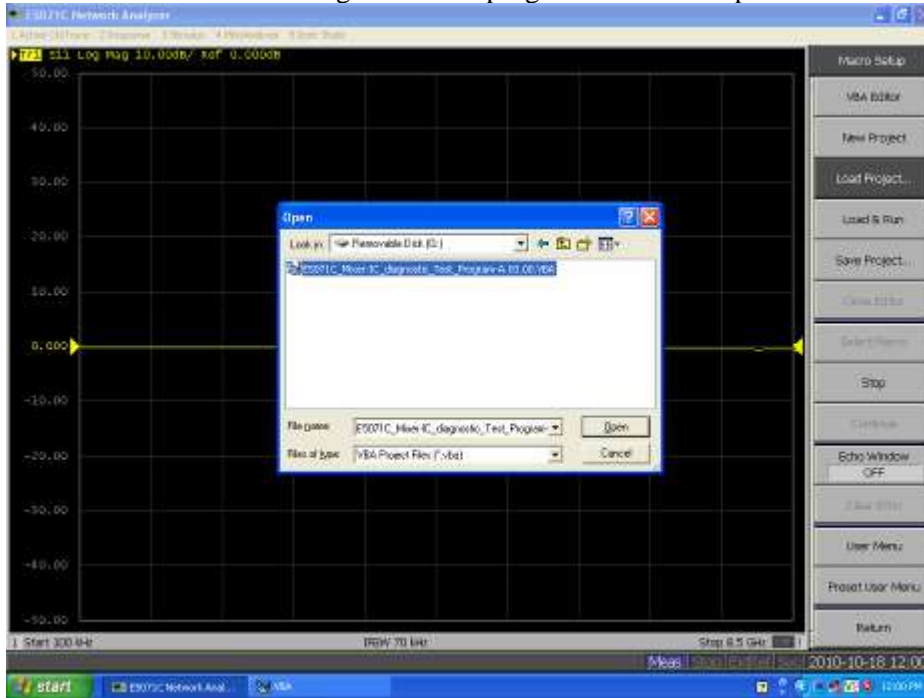1-4. Push Macro Setup on the E5071C hard-key.

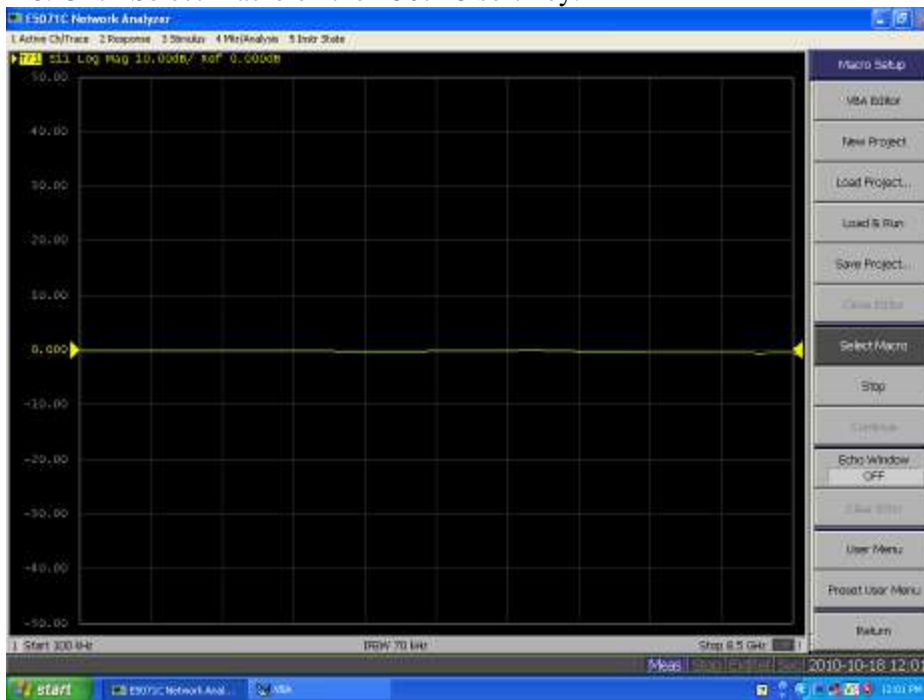1-5. Click Load Project on the E5071C soft-key.

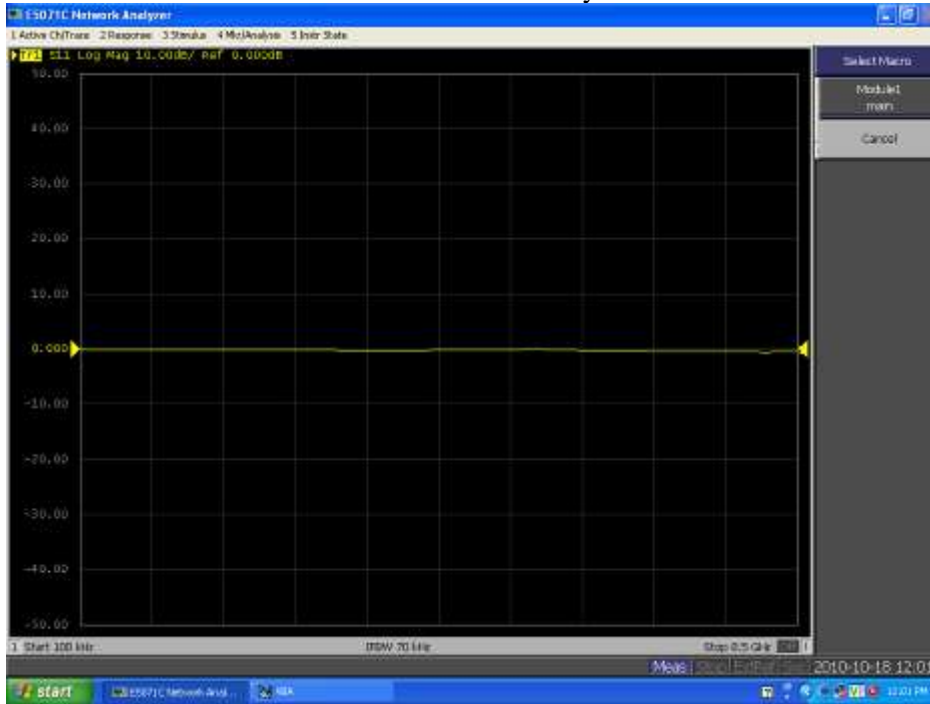1-6. Click Removable Disk which the USB pen drive is inserted in.

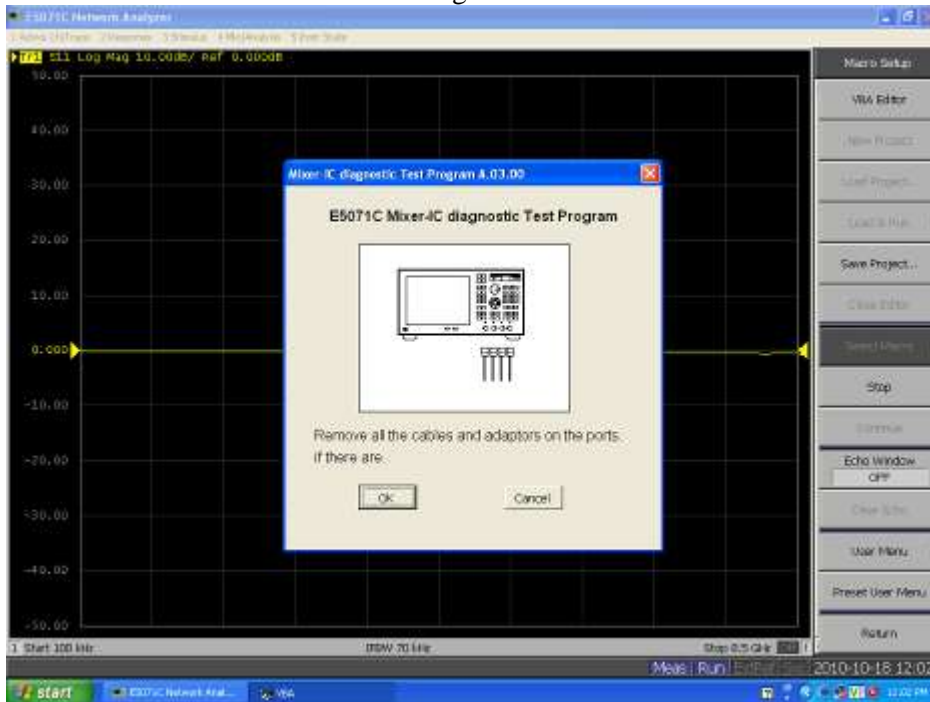1-7. Select the Mixer-IC diagnostic Test program and Click Open button.

1-8. Click Select Macro on the E5071C soft-key.
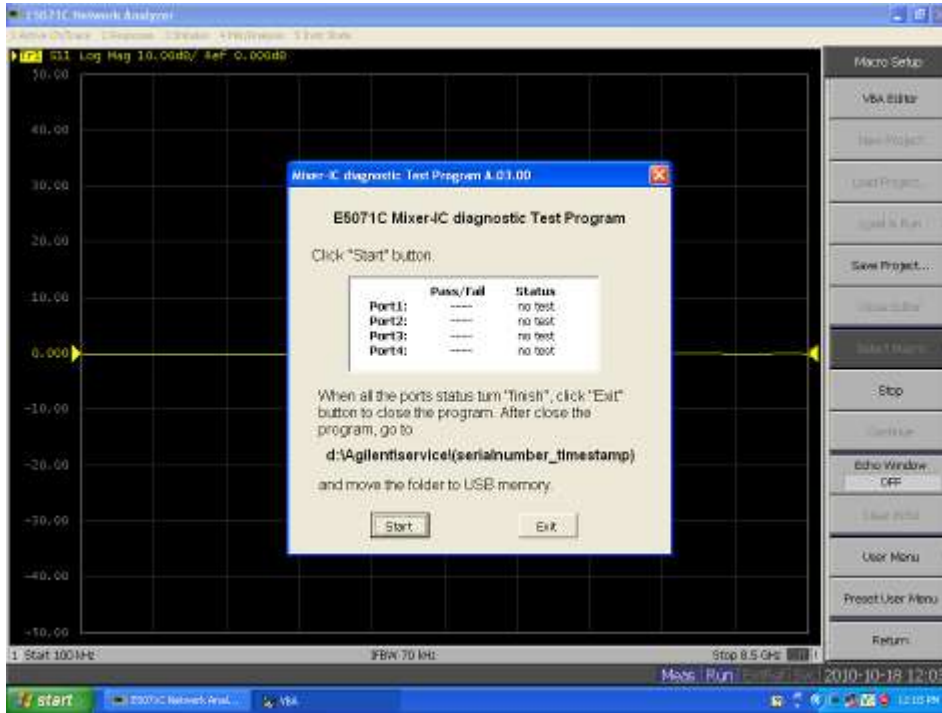
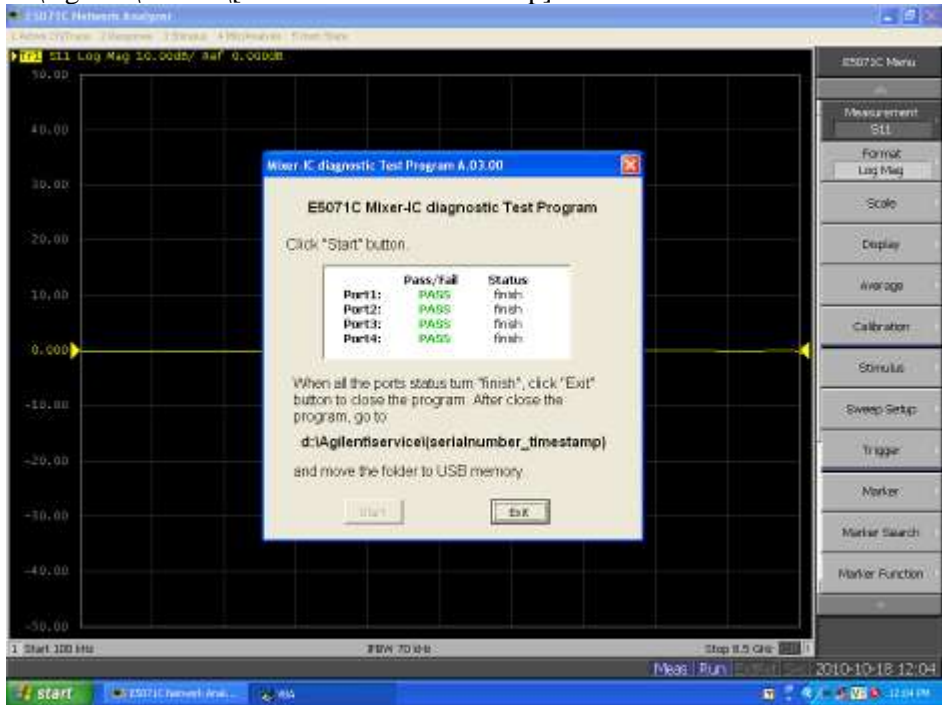1-9. Click Module 1 main on the E5071C soft-key.

1-10. Remove all the cables and adaptors on the ports, if there are and
      Click OK button after confirming it.
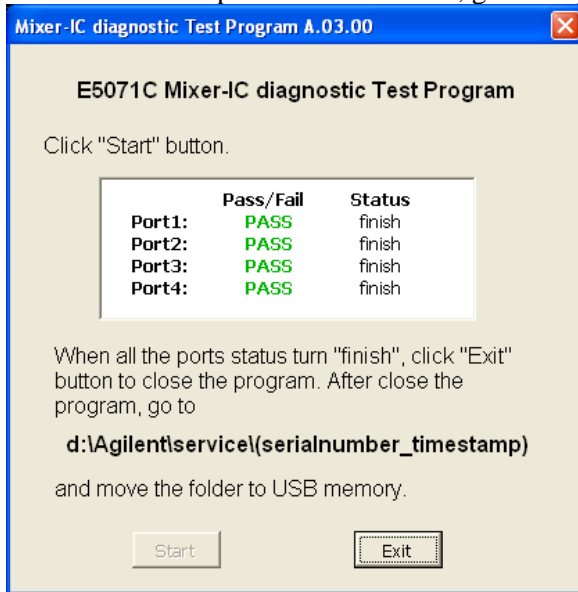
1-11. Click Start button.

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.
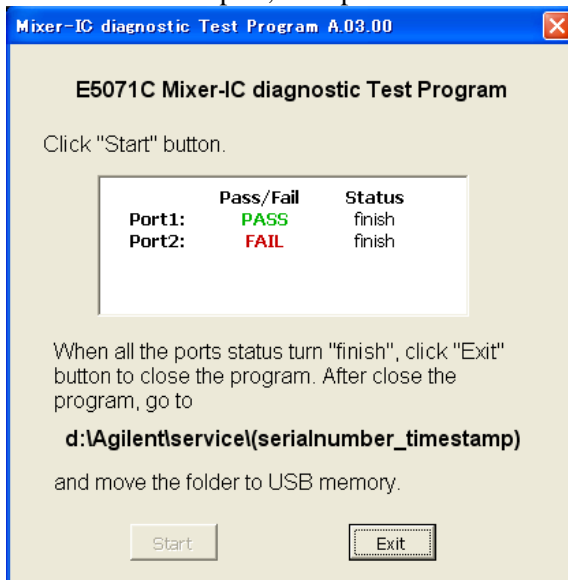
Step-2. By checking the Pass/Fail result, take following actions.
2-A.When all the ports result in **PASS**, go to Step-3 and Step-4.

2-B.When either of the port results in **FAIL**, replace the failed port with a new receiver board.
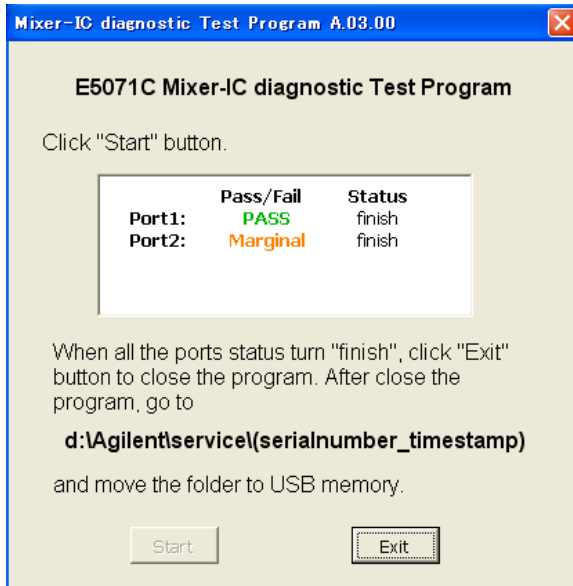For the PASS port, no replacement is needed.

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

E5071-62089 Bridge module and E5071-62097(E5071-61087/E5071-61097) receiver module
Local port   Source port

Back plane connector   RF port
Fig 1. Bridge module port location

(5) Example of Measurement

Fig 2. Measurement setup

Insertion Loss

Source Port Match
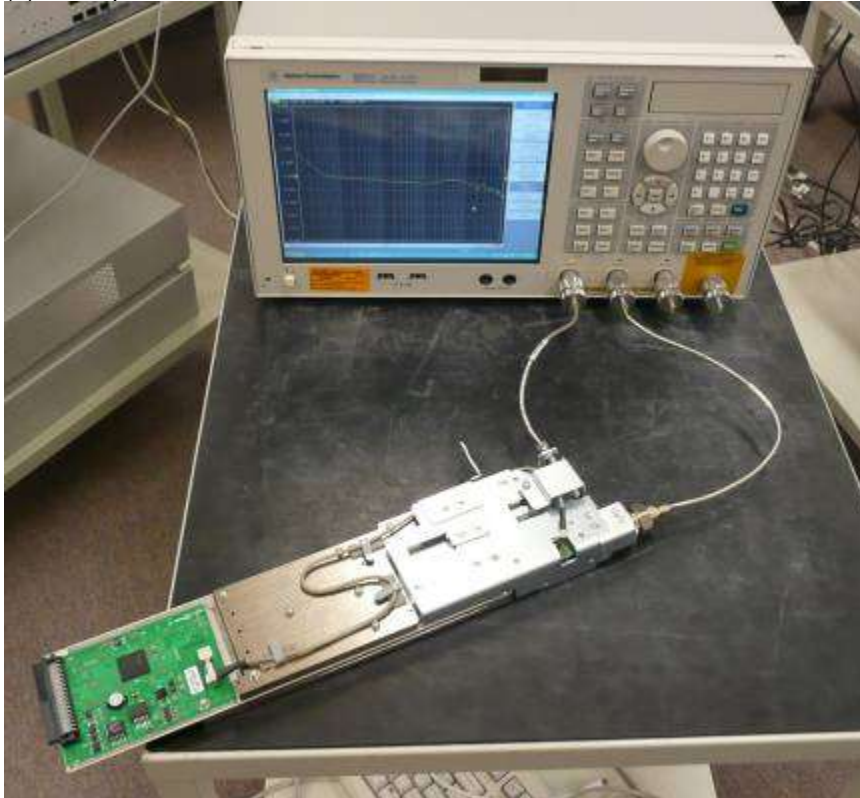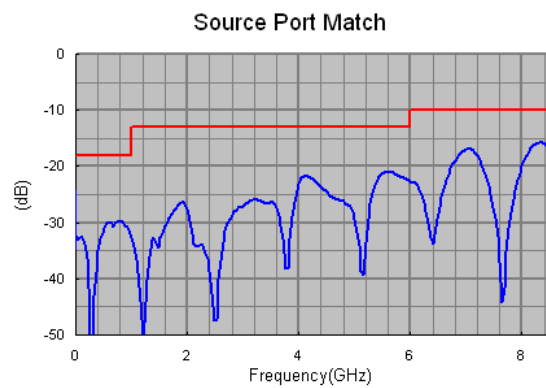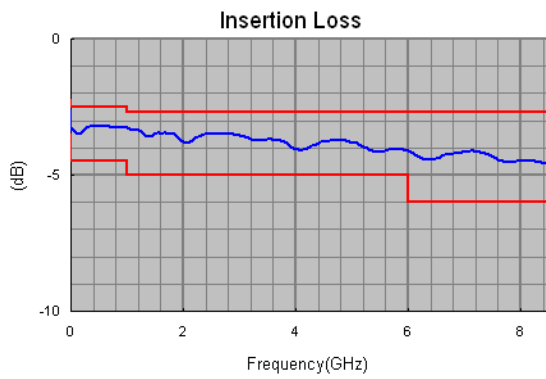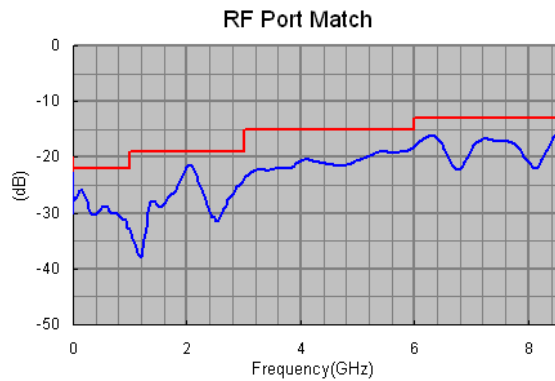
Fig 3. Example of measurement data

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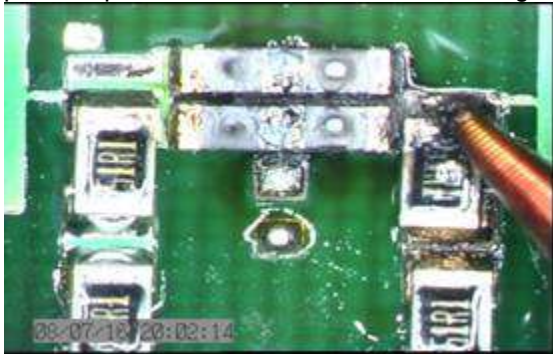
Note: When the bridge failure is shown, EOS(Excessive Over Stress) by customer is highly suspected. For this case, this service note is NOT applied.

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