

N4010A-08A**S E R V I C E****N O T E**Supersedes:
N4010A-08**N4010A Wireless Connectivity Test Set****Serial Numbers: MY46320256 / MY47230414**

[Note 1: Not all instruments in this range are affected. Refer to page 6 of this Service Note.]

[Note 2: Additional instruments outside of this range are listed on page 7 of this Service Note.]

RF Assembly Reliability Issue**To Be Performed By: Agilent-Qualified Personnel****Parts Required:**

P/N	Description	Qty.
0181-0233	Tantalum Capacitor (1uF)	1
or		
N4010-61870	RF Assembly Kit	1

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:			
MODIFICATION RECOMMENDED			
ACTION CATEGORY:	X IMMEDIATELY <input type="checkbox"/> ON SPECIFIED FAILURE <input type="checkbox"/> AGREEABLE TIME	STANDARDS LABOR (REPAIR): 1.5 Hours (Average) LABOR (CALIBRATION): 3 Hours (Average)	
LOCATION CATEGORY:	<input type="checkbox"/> CUSTOMER INSTALLABLE <input type="checkbox"/> ON-SITE X SERVICE CENTER	SERVICE INVENTORY: <input type="checkbox"/> RETURN <input type="checkbox"/> SCRAP X SEE TEXT	USED PARTS: X RETURN <input type="checkbox"/> SCRAP <input type="checkbox"/> SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE		
NO CHARGE AVAILABLE UNTIL: 31-Dec-2009			
AUTHOR: FC		PRODUCT LINE: PN	
ADDITIONAL INFORMATION: All affected service inventory has been recalled & replaced/repared prior to publication of this Service Note			

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Situation:

This Service Note addresses a manufacturing defect that was introduced to the N4010A RF Assembly during 2007 that went undetected for several months. This error relates to the placement of a 1uF tantalum capacitor on a low DC voltage supply line – the capacitor was fitted using the wrong polarity, causing it to de-rate over time. If the capacitor de-rates to the point that it fails, the N4010A RF Assembly will no longer work correctly.

In order to minimize the inconvenience that can result from a failing instrument, Agilent would prefer to repair this defect in all affected units prior to failure.

Please note: If the capacitor fails it will not result in a safety issue:

1. It will not result in the generation of dangerous voltages (neither internally nor externally).
2. It will not result in a fire hazard - even though the capacitor will burn-out, it is surrounded by non-combustible materials.
3. It will not result in a 'smoke event' – the RF Assembly is encased in a metal RF clamshell, so it is highly unlikely that any smoke and/or odors will be generated.

If the capacitor has failed, the most likely failure mechanism is that the N4010A receiver path will be severely degraded, perhaps non-existent. A simple way to verify whether or not the receiver path is damaged is to run the internal alignment routine by pressing **System, Service, Calibrate All**:

- Pass = the receiver path is working (i.e. capacitor has not failed).
- Fail = this may be due to a failed capacitor, but it may also be an unrelated fault.

Solution/Action:

Step 1: Determine whether or not the instrument is affected by this issue.

(Note: This can be checked by the customer prior to contacting Agilent).

- (a) Check to see if the instrument serial number is included in either of the lists shown on pages 6 & 7 of this document.

If the instrument serial number is not included in either of these lists, then this Service Note does not apply. As such, if the instrument is exhibiting a fault then it will require further debug to trace the issue to root cause.

- (b) Send the following remote enquiry to the instrument, and read back the returned data (formatted as a text string):

SERV:HW:INF? FRONTEND

- (c) The returned data contains several items that are comma-separated. The 'Serial Number' item is followed by an 11 digit number that signifies the serial number of the RF Assembly PCB.

Example: "Name,Front-End Assembly,Part Number,N4010-61043,Serial Number,**20073501405**,Hardware Rev,104,Firmware Rev,16,Cal Date,190407"

- (d) If the serial number of the PCB is in the range of 20063900003 to 20074600975 (inclusive), then the N4010A is at risk of failing due to the capacitor issue, and it must be repaired in accordance with this Service Note.

- (e) If the serial number of the PCB begins with '9' then the instrument has already been repaired in accordance with this Service Note. Alternatively, if the serial number is outside of the specified range, then this Service Note does not apply. In either case, if it is exhibiting a fault then it will require further debug to trace the issue to root cause.

Step 2: Determine the correct repair method for an affected instrument.

(Note: This can only be checked at an Agilent Service Center).

- (a) Remove the RF Assembly from the instrument.
- (b) Refer to Figures 1 and 2:
Remove the 14 screws that secure the metal RF shield to the PCB. Carefully remove the top half of the RF shield, and the metal gaskets that are used to provide RF shielding. Please note the position and orientation of these parts, as they will be re-used during the assembly process.

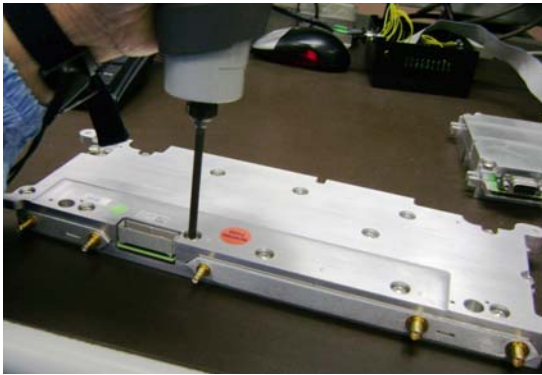


Figure 1



Figure 2

- (c) Refer to Figures 3 and 4:
Locate capacitor C160, and check to see if it is burned-out. If it is burned-out then the complete RF Assembly must be replaced (part number N4010-69870). If it is not burned out then proceed to step 2(e).

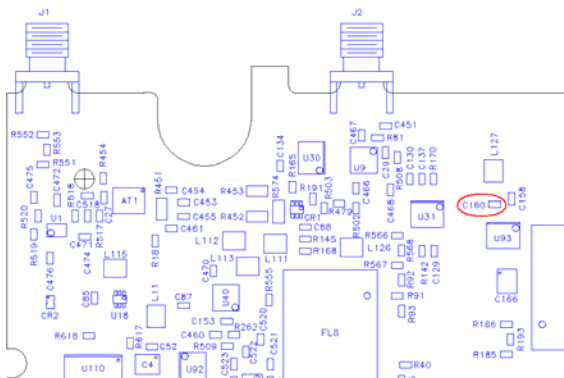


Figure 3

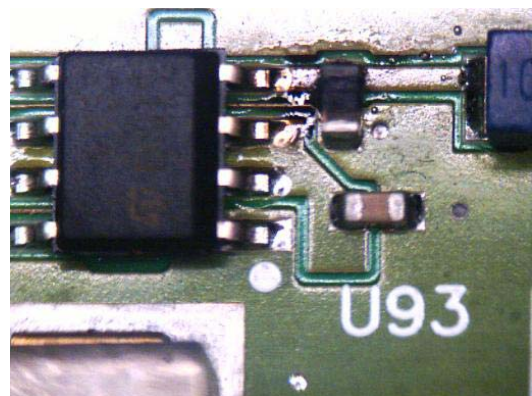
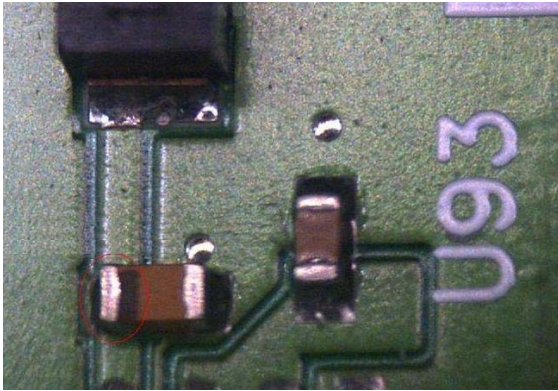
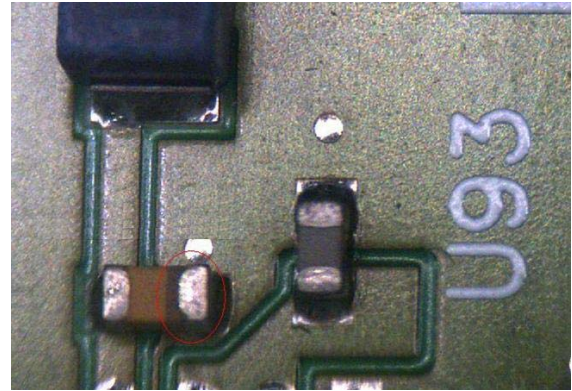


Figure 4

- (d) Once the RF Assembly has been replaced, repeat steps 1(b) & 1(c) to obtain the serial number of the new board, and then proceed to step 2(i).

- (e) The polarity of C160 is indicated by a dark brown stripe at the positive electrode. The correct orientation of C160 is shown in Figure 5, whilst Figure 6 shows the wrong orientation of C160. If the orientation of C160 is correct, then proceed to step 2(h), otherwise continue to step 2(f).

*Figure 5**Figure 6*

- (f) Use a hot air solder station (set to 380°C) & tweezers to remove C160 as shown in Figure 7. Use the same settings to heat the solder on the pad and replace C160 (part number 0181-0233).
Note: Do not apply hot air directly to the device, as it may be damaged by over-heating.

*Figure 7*

- (g) Use a manual soldering station (set to a maximum of 370°C) to touch-up the solder fillets on both sides of C160 as shown in Figure 8.

Note: The maximum exposure time is 3 seconds – the device can be damaged by over-heating.



Figure 8

- (h) Place the metal gaskets on the PCB, ensuring the position and orientation of each one is correct. Carefully fit the top half of the RF shield, and tighten the 14 screws to 21 in-lbs (2.37 Nm) using the sequence shown in Figure 9.

Note: Repeat the tightening process once more to ensure the RF gasket is fully compressed.

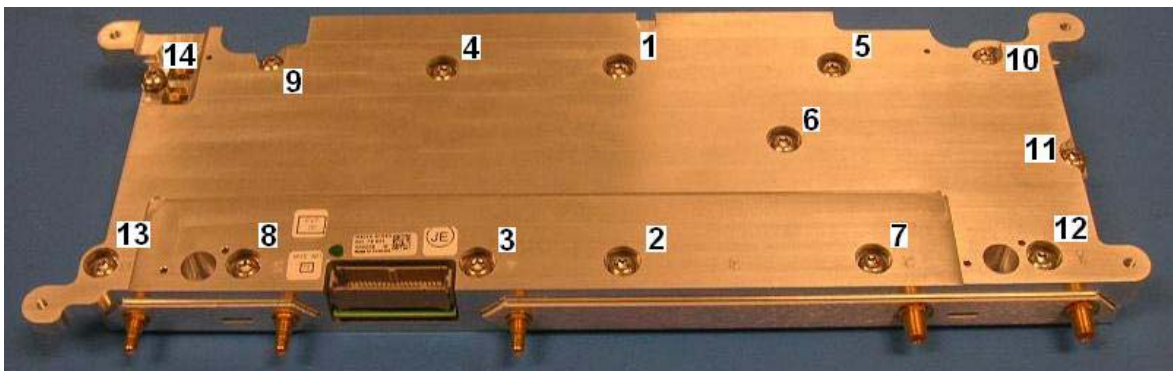


Figure 9

- (i) Re-assemble the N4010A, and switch it on. Take the 11 digit serial number that was extracted in steps 1(b) & 1(c), change the first digit to '9', and update the PCB EEPROM data using the command:

SERV:HW:INF FRONTEND,"*,*,9xxxxxxxxxx,*,*"

Example: **SERV:HW:INF FRONTEND,"*,*,90073501405,*,*"**

- (j) The N4010A must now be fully adjusted prior to running the performance verification tests.

Affected Instruments In The Serial Number Range MY46320255 / MY47230414

The serial number range on the front page of this Service Note refers to instruments that were newly shipped, but only a subset of these were actually affected by this defect. The instruments listed below are known to be affected:

MY46320256	MY47070276	MY47230121	MY47230206	MY47230264	MY47230330
MY46320260	MY47070277	MY47230122	MY47230208	MY47230265	MY47230331
MY46320262	MY47070278	MY47230123	MY47230209	MY47230266	MY47230332
MY46320487	MY47070281	MY47230124	MY47230210	MY47230267	MY47230333
MY47070144	MY47070282	MY47230125	MY47230211	MY47230268	MY47230334
MY47070198	MY47070283	MY47230126	MY47230212	MY47230269	MY47230335
MY47070210	MY47070284	MY47230128	MY47230213	MY47230270	MY47230338
MY47070218	MY47070286	MY47230130	MY47230214	MY47230271	MY47230339
MY47070219	MY47070289	MY47230131	MY47230217	MY47230272	MY47230340
MY47070222	MY47070290	MY47230132	MY47230218	MY47230273	MY47230343
MY47070224	MY47070291	MY47230133	MY47230219	MY47230274	MY47230344
MY47070226	MY47070292	MY47230134	MY47230220	MY47230275	MY47230345
MY47070227	MY47070296	MY47230135	MY47230221	MY47230276	MY47230346
MY47070229	MY47070297	MY47230136	MY47230222	MY47230277	MY47230348
MY47070230	MY47070298	MY47230137	MY47230223	MY47230278	MY47230350
MY47070231	MY47070299	MY47230138	MY47230224	MY47230279	MY47230353
MY47070232	MY47070300	MY47230142	MY47230225	MY47230281	MY47230363
MY47070234	MY47070302	MY47230143	MY47230226	MY47230282	MY47230370
MY47070235	MY47070304	MY47230144	MY47230228	MY47230283	MY47230371
MY47070236	MY47070308	MY47230147	MY47230231	MY47230284	MY47230372
MY47070237	MY47070310	MY47230154	MY47230232	MY47230285	MY47230375
MY47070238	MY47070311	MY47230160	MY47230233	MY47230286	MY47230379
MY47070239	MY47070312	MY47230161	MY47230234	MY47230287	MY47230381
MY47070240	MY47070313	MY47230165	MY47230235	MY47230288	MY47230382
MY47070241	MY47070314	MY47230167	MY47230236	MY47230289	MY47230383
MY47070242	MY47070315	MY47230171	MY47230237	MY47230292	MY47230384
MY47070245	MY47230101	MY47230173	MY47230238	MY47230294	MY47230385
MY47070246	MY47230102	MY47230177	MY47230239	MY47230299	MY47230386
MY47070247	MY47230103	MY47230178	MY47230240	MY47230305	MY47230387
MY47070248	MY47230104	MY47230179	MY47230241	MY47230307	MY47230388
MY47070249	MY47230105	MY47230180	MY47230242	MY47230308	MY47230389
MY47070250	MY47230107	MY47230181	MY47230243	MY47230309	MY47230390
MY47070251	MY47230108	MY47230182	MY47230245	MY47230317	MY47230391
MY47070252	MY47230109	MY47230195	MY47230247	MY47230318	MY47230392
MY47070253	MY47230110	MY47230196	MY47230248	MY47230320	MY47230393
MY47070254	MY47230112	MY47230198	MY47230249	MY47230322	MY47230395
MY47070260	MY47230113	MY47230199	MY47230250	MY47230323	MY47230410
MY47070261	MY47230115	MY47230200	MY47230254	MY47230324	MY47230414
MY47070264	MY47230116	MY47230201	MY47230255	MY47230325	
MY47070265	MY47230117	MY47230202	MY47230256	MY47230326	
MY47070266	MY47230118	MY47230203	MY47230257	MY47230327	
MY47070272	MY47230119	MY47230204	MY47230262	MY47230328	
MY47070275	MY47230120	MY47230205	MY47230263	MY47230329	

Additional Instruments Covered By This Service Note

This defect also impacted RF Assemblies that were provided to Agilent's service organization for use as spare parts – the instruments listed below are at-risk of having been repaired using defective material.

GB44140173	GB45140178	GB45140331	GB45280126	GB45350162	GB46170323
GB44140175	GB45140254	GB45140390	GB45280127	GB45350203	GB46170325
GB44140233	GB45140257	GB45140398	GB45280152	GB45400399	GB46170481
GB44440280	GB45140290	GB45140402	GB45280153	GB45400421	GB46170508
GB44450160	GB45140296	GB45140407	GB45280163	GB45500180	GB46170600
GB44450231	GB45140318	GB45140410	GB45280166	GB45500290	GB46170660
GB44450275	GB45140320	GB45140411	GB45280195	GB45500424	GB46170667
GB44450288	GB45140327	GB45280101	GB45350128	GB45500445	MY46320106
GB45140101	GB45140328	GB45280124	GB45350150	GB46170321	MY46320244