N4903A-05

S E R V I C E N O T E

Supersedes:
None

N4903A - Serial Bit Error Ratio Tester with Option J20

Serial Numbers of the N4903A-J20 or N4903B-J20 plug-in:
All serial numbers

Unit fails Performance Verification / Calibration on the test "PG Sinusoidal Interference Amplitude Accuracy"

Parts Required:

P/N	Description	Qty.
N4903-69531		
If above part is not available, use the following part instead:		
N4903-60531		

ADMINISTRATIVE INFORMATION

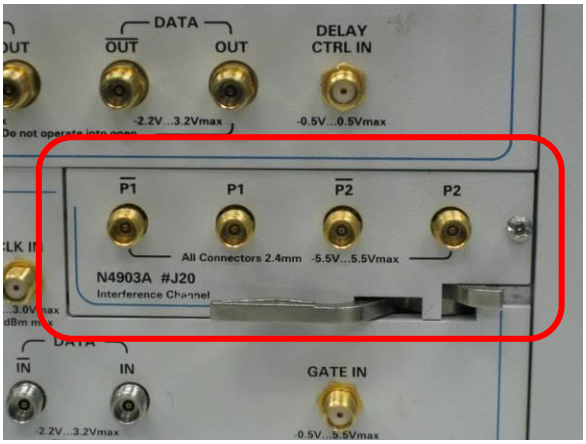
SERVICE NOTE CLASSIFICATION: **MODIFICATION RECOMMENDED**					
ACTION CATEGORY:	[ ] ON SPECIFIED FAILURE XX AGREEABLE TIME	STANDARDS LABOR: 0.5 Hours			
LOCATION CATEGORY:	[ ] CUSTOMER INSTALLABLE [ ] ON-SITE XX SERVICE CENTER [ ] CHANNEL PARTNER	SERVICE INVENTORY:	[ ] RETURN [ ] SCRAP [ ] SEE TEXT	USED PARTS:	XX RETURN [ ] SCRAP [ ] SEE TEXT
AVAILABILITY: PRODUCT'S SUPPORT LIFE		NO CHARGE AVAILABLE UNTIL: 31-Dec-2016			
AUTHOR: HK		PRODUCT LINE: PL24			
ADDITIONAL INFORMATION:					

April 3, 2012
Rev. 19

Agilent Technologies

Situation:

The N4903A Option J20 or N4903B Option J20 is a plug-in module that inserts into a N4903A or N4903B product as shown in the next 2 pictures.



Due to a degrading component inside the module, the module is failing Performance Verification / Calibration in the following way.

The Performance Verification / Calibration contains a measurement regarding Pattern Generator (PG) Sinusoidal Interference Amplitude Accuracy which is done for the normal and complement output.

The pattern of the failure looks like the following: massive consecutive failures:

PG Sinusoidal Interference Amplitude Accuracy Normal (J20)

Result	Set Frequency [MHz]	Set Amplitude [mV]	Min Test Limit [mV]	Max Test Limit [mV]	Meas. Amplitude [mV]	Amplitude Accuracy [mV]
pass	100.000	0.000	-20.000	30.000	7.128	7.128
pass	100.000	50.000	-29.000	38.500	55.311	5.311
pass	100.000	100.000	-38.000	47.000	104.924	4.924
pass	100.000	200.000	-56.000	64.000	209.162	9.162
pass	100.000	400.000	-92.000	98.000	411.183	11.183
pass	500.000	0.000	-20.000	30.000	6.926	6.926
*** FAIL ***	500.000	50.000	-29.000	38.500	18.754	-31.246
*** FAIL ***	500.000	100.000	-38.000	47.000	30.814	-69.186
*** FAIL ***	500.000	200.000	-56.000	64.000	53.640	-146.360
*** FAIL ***	500.000	400.000	-92.000	98.000	68.953	-331.047
pass	1000.000	0.000	-20.000	30.000	8.692	8.692
*** FAIL ***	1000.000	50.000	-29.000	38.500	20.602	-29.398
*** FAIL ***	1000.000	100.000	-38.000	47.000	35.069	-64.931
*** FAIL ***	1000.000	200.000	-56.000	64.000	66.076	-133.924
*** FAIL ***	1000.000	400.000	-92.000	98.000	123.057	-276.943
pass	2000.000	0.000	-20.000	30.000	11.268	11.268
pass	2000.000	50.000	-29.000	38.500	22.259	-27.741
*** FAIL ***	2000.000	100.000	-38.000	47.000	34.908	-65.092
*** FAIL ***	2000.000	200.000	-56.000	64.000	57.646	-142.354
*** FAIL ***	2000.000	400.000	-92.000	98.000	92.909	-307.091
pass	3000.000	0.000	-20.000	30.000	18.742	18.742
pass	3000.000	50.000	-29.000	38.500	23.377	-26.623
*** FAIL ***	3000.000	100.000	-38.000	47.000	34.051	-65.949
*** FAIL ***	3000.000	200.000	-56.000	64.000	57.784	-142.217
*** FAIL ***	3000.000	400.000	-92.000	98.000	97.463	-302.537

Parameters

Amplitude range: 0 to 400mV (single ended), 0 to 800mV (differential)
The output signal amplitude is reduced by 3 dB when sinusoidal interference is enabled.
Specification: level accuracy: +/-10% +/- 10mV typical

Or like this: sporadic failures:

PG Sinusoidal Interference Amplitude Accuracy Complement (J20)

Result	Set Frequency [MHz]	Set Amplitude [mV]	Min Test Limit [mV]	Max Test Limit [mV]	Meas. Amplitude [mV]	Amplitude Accuracy [mV]
pass	100.000	0.000	-20.000	30.000	6.911	6.911
pass	100.000	50.000	-29.000	38.500	52.140	2.140
pass	100.000	100.000	-38.000	47.000	100.417	0.417
pass	100.000	200.000	-56.000	64.000	200.308	0.308
pass	100.000	400.000	-92.000	98.000	394.357	-5.643
pass	500.000	0.000	-20.000	30.000	6.399	6.399
pass	500.000	50.000	-29.000	38.500	42.612	-7.389
pass	500.000	100.000	-38.000	47.000	82.470	-17.531
pass	500.000	200.000	-56.000	64.000	160.411	-39.589
*** FAIL ***	500.000	400.000	-92.000	98.000	306.934	-93.066
pass	1000.000	0.000	-20.000	30.000	6.861	6.861
pass	1000.000	50.000	-29.000	38.500	40.463	-9.537
pass	1000.000	100.000	-38.000	47.000	77.434	-22.566
pass	1000.000	200.000	-56.000	64.000	154.475	-45.525
*** FAIL ***	1000.000	400.000	-92.000	98.000	301.792	-98.208
pass	2000.000	0.000	-20.000	30.000	9.099	9.099
pass	2000.000	50.000	-29.000	38.500	40.710	-9.290
pass	2000.000	100.000	-38.000	47.000	77.390	-22.610
pass	2000.000	200.000	-56.000	64.000	149.457	-50.543
*** FAIL ***	2000.000	400.000	-92.000	98.000	292.605	-107.395
pass	3000.000	0.000	-20.000	30.000	12.381	12.381
pass	3000.000	50.000	-29.000	38.500	39.858	-10.142
pass	3000.000	100.000	-38.000	47.000	76.326	-23.674
pass	3000.000	200.000	-56.000	64.000	147.394	-52.606
*** FAIL ***	3000.000	400.000	-92.000	98.000	287.861	-112.139

Parameters

Amplitude range: 0 to 400mV (single ended), 0 to 800mV (differential)
The output signal amplitude is reduced by 3 dB when sinusoidal interference is enabled.
Specification: level accuracy: +/-10% +/- 10mV typical

The failures may be limited to normal or complement or they may show up at normal and complement together.

The root cause for these failures is a component problem inside the module.

The solution is to exchange the module at the expense of the factory.

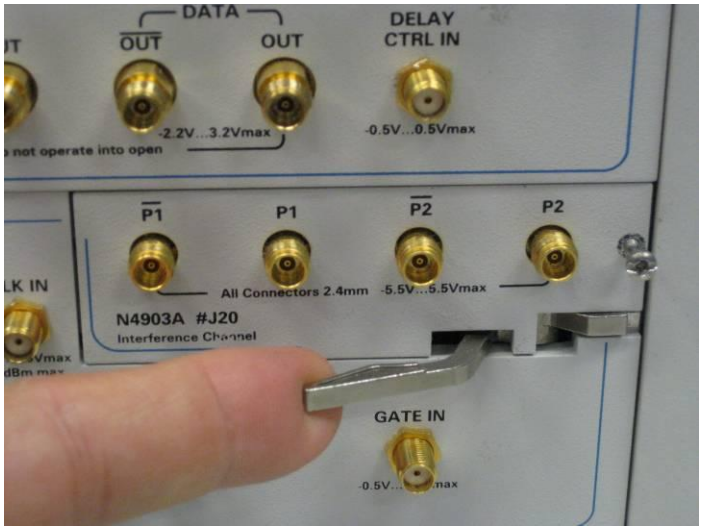
Solution/Action:

The following paragraphs contain instructions on how to exchange the J20 module. You will need a normal screw driver.

Power down the N4903A or N4903B.

Unplug the N4903A/B-J20 from the N4903A or N4903B. Completely loosen the screw shown in the next picture.

And then use the lever to unplug the module.



Have a spare part (N4903-69531) ready to slide in instead.

Re-Assembly

Insert the N4903A/B-J20 back into the N4903A/B product and secure it by tightening the Screw:

Turn on the N4903A/B and check whether the plug-in is recognized correctly.

After warm up time (30 min.), use the Bigfoot Calibration / Performance Verification software to verify that the N4903A/B-J20 plug-in is fully working. 3 measurements cover the J20:

- PG Sinusoidal Interference Amplitude Accuracy (Normal and Complement)
- PG Sinusoidal Interference Frequency Accuracy
- PG Intersymbol Interference Trace Length Accuracy (Normal and Complement)

Repair Tracking Sheet

Please track the repairs in the following spreadsheet and mark the type of repair:

\\BERT-Support\public\Repair J20\ISI_Service Note_Track.xlsx

Use the correct worksheet (there are 2 worksheets in the Excel document!!)