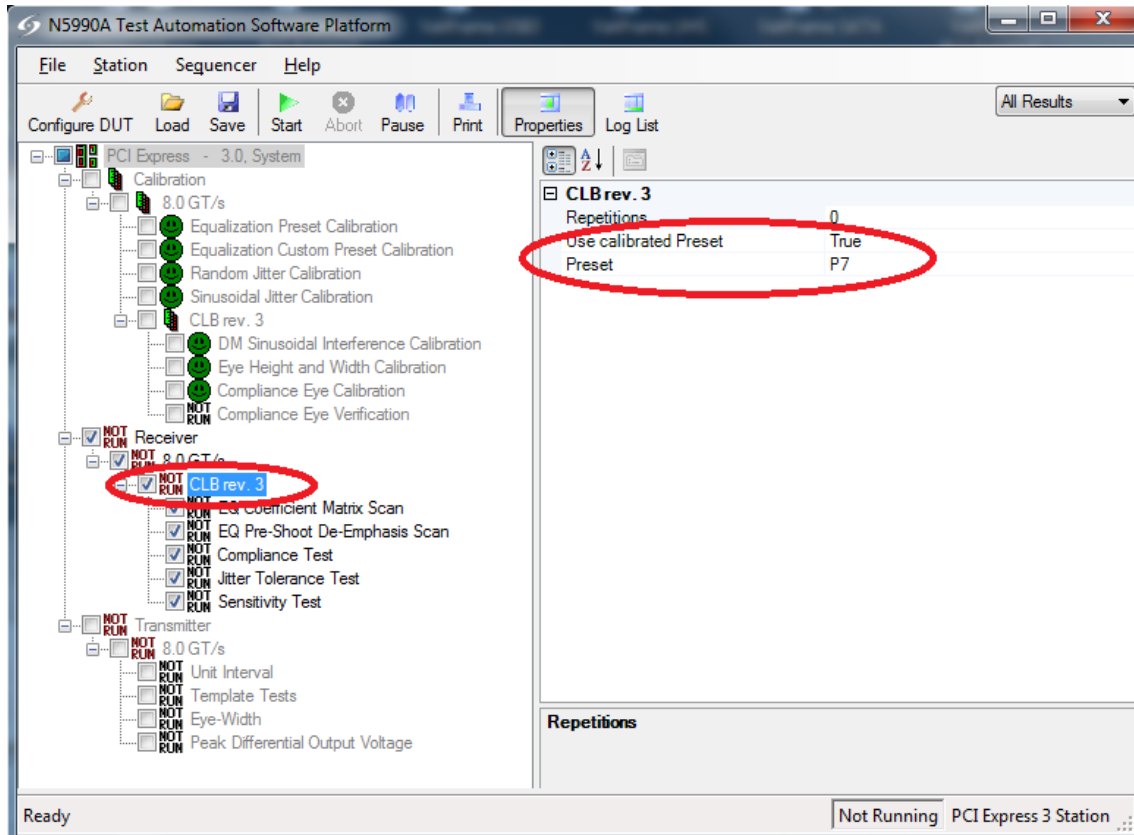


Rx Equalization optimization with N5990-101

Step 1: Select all Rx Tests in Expert Mode

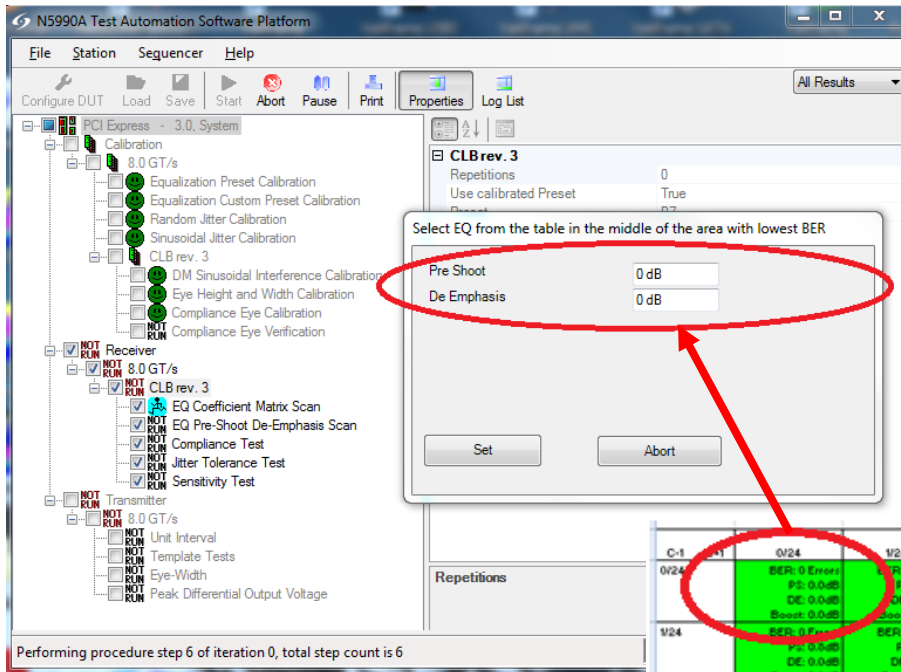
Step 2: Select initial equalization at CLB rev. 3 properties. Default is P7. If a good setting is already know, this setting should be selected.

Step 3: Start all 8GT/s Rx tests.



Rx Equalization optimization with N5990-101

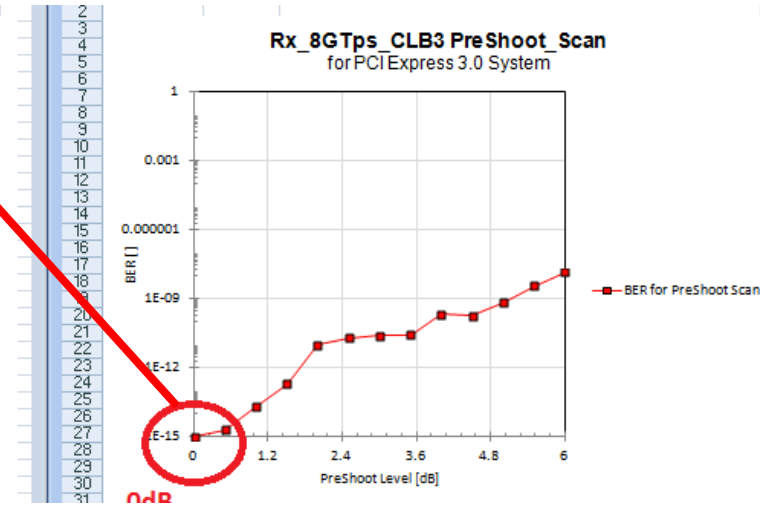
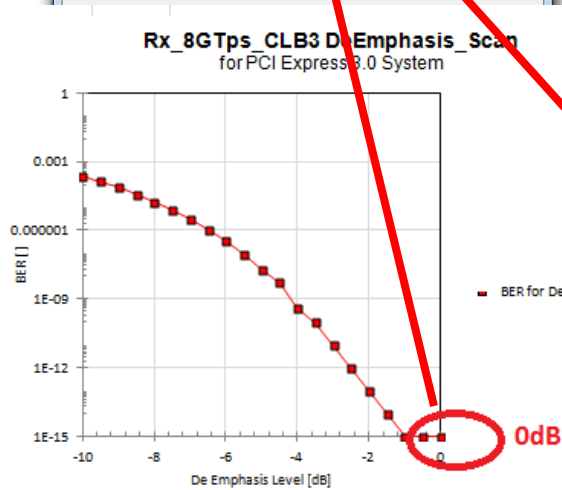
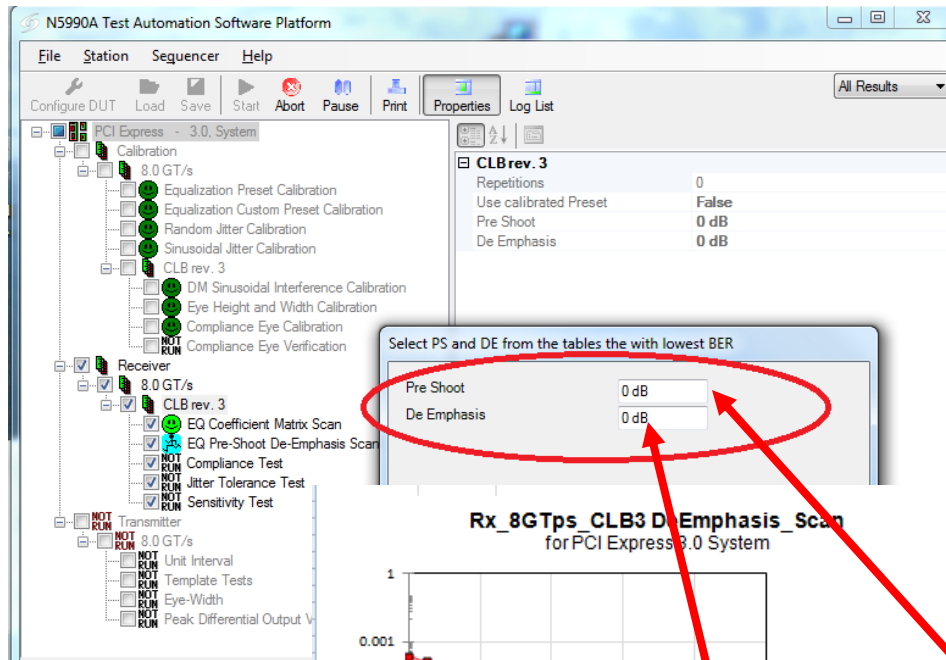
Step 4: When EQ Coefficient Matrix Scan has finished, select the PS and DE combination in the middle of the area with the lowest BER.



C-1	0/24	1/24	2/24	3/24	4/24	5/24	6/24	7/24	8/24
0/24	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: -0.8dB Boost: 0.8dB	BER: 0 Errors PS: 0.0dB DE: -1.6dB Boost: 1.6dB	BER: 0 Errors PS: 0.0dB DE: -2.5dB Boost: 2.5dB	BER: 0 Errors PS: 0.0dB DE: -3.5dB Boost: 3.5dB	BER: 0 Errors PS: 0.0dB DE: -4.7dB Boost: 4.7dB	BER: 2 Errors PS: 0.0dB DE: -6.0dB Boost: 6.0dB	BER: 4.0E-6 PS: 0.0dB DE: -7.6dB Boost: 7.6dB	BER: 2.07E-6 PS: 0.0dB DE: -9.5dB Boost: 9.5dB
1/24	BER: 0 Errors PS: 0.8dB DE: 0.0dB Boost: 0.8dB	BER: 0 Errors PS: 0.8dB DE: -0.8dB Boost: 1.6dB	BER: 0 Errors PS: 0.8dB DE: -1.7dB Boost: 2.5dB	BER: 0 Errors PS: 1.0dB DE: -2.9dB Boost: 3.5dB	BER: 0 Errors PS: 1.2dB DE: -3.9dB Boost: 4.7dB	BER: 0 Errors PS: 1.5dB DE: -5.3dB Boost: 6.0dB	BER: 2 Errors PS: 1.5dB DE: -6.9dB Boost: 7.6dB	BER: 3.75E-6 PS: 1.5dB DE: -8.8dB Boost: 9.5dB	
2/24	BER: 0 Errors PS: 1.6dB DE: 0.0dB Boost: 1.6dB	BER: 0 Errors PS: 1.7dB DE: -0.3dB Boost: 1.4dB	BER: 0 Errors PS: 1.9dB DE: -1.3dB Boost: 2.5dB	BER: 0 Errors PS: 2.0dB DE: -2.5dB Boost: 3.5dB	BER: 0 Errors PS: 2.3dB DE: -3.9dB Boost: 4.7dB	BER: 0 Errors PS: 2.9dB DE: -5.0dB Boost: 6.0dB	BER: 1 Errors PS: 2.5dB DE: -6.0dB Boost: 6.0dB		
3/24	BER: 0 Errors PS: 2.5dB DE: 0.0dB Boost: 2.5dB	BER: 0 Errors PS: 1.7dB DE: -1.0dB Boost: 2.7dB	BER: 0 Errors PS: 3.1dB DE: -2.0dB Boost: 3.5dB	BER: 0 Errors PS: 3.5dB DE: -3.5dB Boost: 4.7dB	BER: 0 Errors PS: 3.5dB DE: -5.0dB Boost: 6.0dB	BER: 0 Errors PS: 4.1dB DE: -6.0dB Boost: 6.0dB			
4/24	BER: 0 Errors PS: 3.5dB DE: 0.0dB Boost: 3.5dB	BER: 0 Errors PS: 3.3dB DE: -1.2dB Boost: 4.7dB	BER: 0 Errors PS: 4.4dB DE: -2.5dB Boost: 6.0dB	BER: 0 Errors PS: 5.5dB DE: -4.5dB Boost: 7.6dB	BER: 0 Errors PS: 6.0dB DE: -6.0dB Boost: 9.5dB				
5/24	BER: 0 Errors PS: 4.7dB DE: 0.0dB Boost: 4.7dB	BER: 0 Errors PS: 5.3dB DE: -1.3dB Boost: 6.0dB	BER: 0 Errors PS: 6.0dB DE: -2.3dB Boost: 7.6dB	BER: 0 Errors PS: 7.0dB DE: -4.3dB Boost: 9.5dB					
6/24	BER: 0 Errors PS: 6.0dB DE: 0.0dB Boost: 6.0dB	BER: 0 Errors PS: 6.8dB DE: -1.6dB Boost: 7.6dB	BER: 0 Errors PS: 8.0dB DE: -3.5dB Boost: 9.5dB						

Rx Equalization optimization with N5990-101

Step 5: When EQ PS and DE Scan has finished, select PS and DE combination with lowest BER



Rx Equalization optimization with N5990-101

Step :6 All remaining Rx Tests will be done with optimized equalization settings

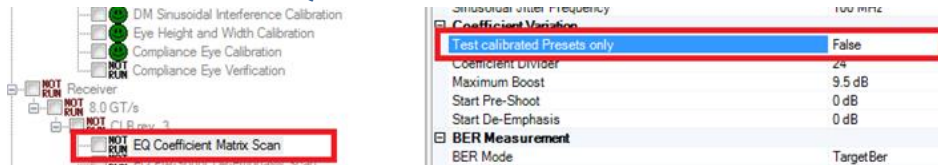
The screenshot displays the N5990A Test Automation Software Platform interface. The main window shows a tree view of test configurations for a PCI Express 3.0 System. The 'Receiver' section is expanded to '8.0 GT/s' and 'CLB rev. 3'. The 'Properties' window for 'CLB rev. 3' is open, showing the following settings:

Property	Value
Repetitions	0
Use calibrated Preset	False
Pre Shoot	0 dB
De Emphasis	0 dB

A red circle highlights the 'Use calibrated Preset' and 'De Emphasis' settings. The 'Repetitions' field is also visible below the table.

Rx Equalization optimization with N5990-101

2 Modes for EQ Coefficient Matrix Scan:



1. Scans complete matrix using **uncalibrated** pre-shoot and de-emphasis:

C-1	C-1	024	124	224	324	424	524	624	724	824
024		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 1 Error PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 1 Error PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 3.31e-3 PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 2.43e-7 PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 6.76e-4 PS: 0.0dB DE: 0.0dB Boost: 0.0dB
124		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 3.21e-9 PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 2.54e-7 PS: 0.0dB DE: 0.0dB Boost: 0.0dB	
224		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 2.07e-9 PS: 0.0dB DE: 0.0dB Boost: 0.0dB		
324		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 2.09e-9 PS: 0.0dB DE: 0.0dB Boost: 0.0dB		
424		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 1 Error PS: 0.0dB DE: 0.0dB Boost: 0.0dB		
524		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB			
624		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB			
724		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB			
824		BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	BER: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB			

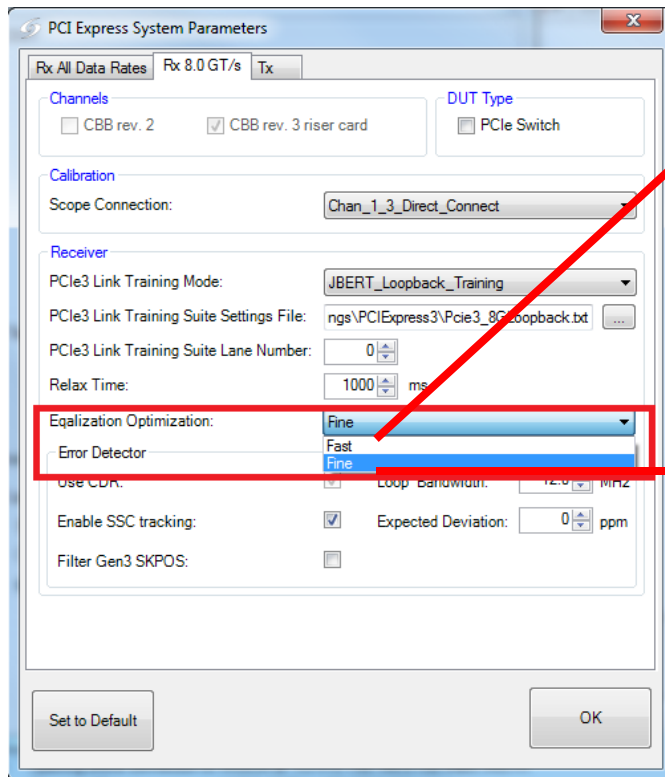
2. Scans only **calibrated** Presets (P0 P9):

C-1	C-1	024	124	224	324	424	524	624	724	824
024		P0: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -0.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.6dB Boost: 0.0dB	P2: 0 Errors PS: 0.0dB DE: -2.5dB Boost: 0.0dB	P1: 4.00e-10 PS: 0.0dB DE: -3.5dB Boost: 0.0dB	P2: 5.00e-4 PS: 0.0dB DE: -4.4dB Boost: 0.0dB	P0: 6.00e-6 PS: 0.0dB DE: -6.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -7.6dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -8.5dB Boost: 0.0dB
124		Not tested PS: 0.0dB DE: -0.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -0.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.1dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.9dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -3.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -4.7dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -5.6dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -6.5dB Boost: 0.0dB
224		P5: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -0.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.6dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.5dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -3.4dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -4.3dB Boost: 0.0dB	P7: 1.00e-9 PS: 0.0dB DE: -5.2dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -6.1dB Boost: 0.0dB	
324		P6: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.0dB Boost: 0.0dB	P8: 6 Errors PS: 0.0dB DE: -3.5dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -4.4dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -5.3dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -6.2dB Boost: 0.0dB		
424		P3: 0 Errors PS: 0.0dB DE: 0.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.2dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.4dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -3.6dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -4.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -6.0dB Boost: 0.0dB			
524		Not tested PS: 0.0dB DE: 0.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.3dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.6dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -3.9dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -5.2dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -6.5dB Boost: 0.0dB			
624		Not tested PS: 0.0dB DE: 0.0dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -1.4dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -2.8dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -4.2dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -5.6dB Boost: 0.0dB	Not tested PS: 0.0dB DE: -7.0dB Boost: 0.0dB			

Rx Equalization optimization with N5990-101

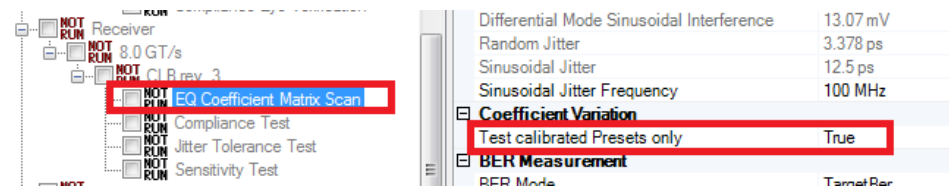
2 Modes for EQ optimization (Applies only for 8GT/s Systems and Add-In Cards):

Can be selected in “Configure DUT->Show Parameters”:



1. Fast

Only EQ Matrix Scan with calibrated Presets



2. Fine

Full EQ Matrix Scan + PS / DE Scan

