Keysight FlexDCA Sampling Oscilloscope Firmware

FlexDCA A.06.40
and Below

Firmware
Release Notes

KEYSIGHT
TECHNOLOGIES

Notices

Edition

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Contents

Revision A.06.40, August 2019

- Starting with the A.06.40 software release, only the 64-bit FlexDCA installer will be available. Please plan to migrate to 64-bit Win7 or Win10 in order to continue to have access to the latest versions of FlexDCA. Older FlexDCA versions supporting 32-bit operating systems will continue to work. Going forward, Keysight will provide upgrades and defect fixes only for 64-bit operating systems.

New Features

- For Arbitrary Waveform Generator extended modules:
  - Added support for the M8194A Arbitrary Waveform Generator
  - Added ability to adjust symbol levels on Arbitrary Waveform Generators (AWG) and simulated modules. This new PAM Inner Level Amplitude Adjustment feature is part of the Research and Development Package.
  - Added signal optimization for arbitrary waveform generators.
- For locking clock recovery, added a Loop Bandwidth Tuning setting which increases the accuracy of clock recovery's Target LBW (Loop Bandwidwith).
- For waveform signal processing:
  - Added two custom chord signaling operators: CNRZ5 operator and ENRZ operator. This new feature is part of the Research and Development Package.
  - Increased the maximum function count for waveform signal processing to 64.
- Added the ability to establish a Flex-on-Flex remote connection to a DCA-X over USB.
- Added built-in System Impulse Response Correction (SIRC) files for the N1045A/B and the 86108B modules.
- In Jitter Mode, added a new Linearity scalar measurement for PAM4 signals.
- Added a new help topic with guidelines on network security.
- Improved TDECQ optimization.
- Improved Clock Data Recovery (CDR) calibration algorithm to improve locking behavior.
- Improved Jitter Mode signal processed pattern detection.
- Improved Jitter Mode measurements on closed eyes.
- Increased the number of samples acquired when measuring 12-edge output jitter, to get more consistent EOJ results.

- Improved offset alignment for LFE optimization.
- Added final versions of 802.3cd standard presets for TDECQ and TDECQ Equalizer.
- Added demonstration CNRZ5 and ENRZ waveform/setup files.
- FlexDCA running on a PC and connected to a DCA mainframe via Flex-On-Flex now honors package licenses (and package trials) that are installed on the DCA.
- The Licenses dialog now only displays the Single Feature Licenses category if a legacy single feature license is installed.
- Added Aluminum GUI theme for N1000A.
- Added new error message: "The instrument user data partition does not exist. Please contact Keysight support."
- Added new error message: "Loop bandwidth tuning: Unable to tune loop bandwidth (details)."

Recommended Action

- Disable Windows Server Message Block version 1 (SMBv1) File Sharing protocol per Microsoft's recommendation. On the DCA-X, use Windows Search and search for "*Turn Windows features on or off*". This opens the *Windows Features* dialog. In the dialog, clear the **SMB 1.0/CIFS File Sharing Support** feature.

Defects Fixed

- When using the SCPI Recorder, fixed an issue where CDR auto relock was incorrectly recording the :ACQuire:STOP command.
- Fixed precision timebase sync to help prevent loss of sync due to subrate jitter.
- Changed the Dark Calibration so that limit tests and other features are turned off before performing the calibration.
- Fixed an issue with the example Python script that demonstrates the :DISK:FILE:READ query. An *OPC? query was not appended to the :DISK:SIMage:SAVE command.
- Fixed a bug where dialogs from other FlexEye sessions were still in the foreground after switching tabs.
- Fixed an issue that caused “NaN” (Not A Number) to be reported in the measurement results for signals with very low jitter.
- Fixed an issue causing the :MEAS:EYE:TDEQ:STAT:DET query to return "?W" instead of "µW".

CRECovery Subsystem

- :CRECovery:LBWTuning:STATus? (new)
- :CRECovery:LBWTuning:TORelock (new)

EMODules Subsystem

- :EMODules:AWGenerator:MODE (new)
- :EMODules:AWGenerator:OPTimization:CHANnel (new)
- :EMODules:AWGenerator:OPTimization:FILE (new)
- :EMODules:AWGenerator:OPTimization:ITERations (new)
- :EMODules:AWGenerator:OPTimization:STARt (new)
- :EMODules:AWGenerator:OPTimization:STATus? (new)
- :EMODules:AWGenerator:OPTimization:STATus:REASon? (new)
- :EMODules:OPTimization:AWGenerator:CANCel (new)
- :EMODules:OPTimization:AWGenerator:CONTinue (new)
- :EMODules:OPTimization:AWGenerator:SDONe (new)

FUNCtion Subsystem

- :FUNCtion:SECondary (new)

MEASure Subsystem

- :MEASure:PLEVel:LINearity (new)
- :MEASure:PLEVel:LINearity:DEFinition (new)
- :MEASure:PLEVel:LINearity:LOCation? (new)
- :MEASure:PLEVel:LINearity:SOURce (new)
- :MEASure:PLEVel:LINearity:STATus? (new)
- :MEASure:PLEVel:LINearity:STATus:DETails? (new)
- :MEASure:PLEVel:LINearity:STATus:REASon? (new)

RDCA Subsystem

- :RDCA:CONNect:USB:SADDress (new)

SOURce Subsystem

- :SOURce:LEVel (new)

TIMebase Subsystem

- :TIMebase:DESKew:CSIGnaling (new)
- :TIMebase:DESKew:CSIGnaling:CANCel (new)
- :TIMebase:DESKew:CSIGnaling:CONTinue (new)
- :TIMebase:DESKew:CSIGnaling:FNAMe (new)

- :TIMebase:DESKew:CSIGnaling:FUNCtion (new)
- :TIMebase:DESKew:CSIGnaling:SAVE (new)
- :TIMebase:DESKew:CSIGnaling:SDONe? (new)

Revision A.06.03, May 2019

New Features

- Added new N1092A/B/C/D/E Option 40A, 40 GHz optical BW, to N1092A/B/C/D/E DCA-M optical sampling oscilloscopes.

Revision A.06.02, January 2019

New Features

- The FlexDCA KAP license is no longer required to use FlexDCA with the N8844A Data Analytics Web Service Software. FlexDCA no longer requires any FlexDCA license to use the N8844A.
- Added parameters to the :MEASure:RESults? query that select the number of results table fields that are returned.
- An N1076B, N1078A, or N1060A CDR calibration now prompts the user to remove or disable input signals during calibration.
- Automatic signal-type detection (NRZ or PAM4) now works for differential signals.

Defects Fixed

- When using an N469xD series Electronic Calibration (ECal) module, fixed an issue that caused the a TDR/TDT calibration to fail and display an “unexpected problem” message.
- For N1076B, N1078A, and N1060A modules, CDR Calibration now allows wider variable-gain amplifier currents.
- Fixed an issue where the JSA Results table displayed the wrong CDR Source channel indicator when a N1060A module was present.

MEASure Subsystem

- :MEASure:RESults? (modified)

Revision A.06.01, December 2018

New Features

- Updated the N1060A specifications and added important information on making 1 mm connections.
- When using Jitter Spectrum Analysis (JSA), calibration factors for phase detector gain correction are now applied based on either NRZ or PAM signal types. A new setting to control this is located in the Jitter Spectrum Analysis Setup dialog box. For remote control, two new CRECovery subsystem remote commands have been added as noted below.
- Added the ability to apply an extinction ratio correction factor to a PAM4 Outer Extinction Ratio measurement.
- Added the :CHANnel:NOISe? SCPI query that returns a channel's RMS noise for the current bandwidth, filter, and wavelength selection.
- System Impulse Response Correction (SIRC) will now be automatically re-enabled if SIRC was previously forced off because of an associated feature.

Defects Fixed

- Fixed an issue that prevented PAM linearity RLM (Ratio Level Mismatch) measurements from being made in Oscilloscope mode while PAM linearity RLM could be measured in Eye mode.
- Fixed an issue where an autoscale incorrectly calculated the horizontal position in FlexEye.
- Fixed an issue that occurred when an N1055A module was installed in an 86100D option STR. The module's step calibration could fail if the cable used to connect the trigger signal was short.
- Fixed an issue that slowed down FlexEye throughput.
- Fixed an issue with differential deskew when FlexDCA was set to free run acquisition mode while using the precision timebase.
- Fixed a file load problem with ADS explicit-X waveforms.
- Fixed an issue with the **:MEASure:RESults?** SCPI query that resulted in only Jitter and Amplitude measurements being returned.
- Fixed an issue with the Oscilloscope Mode PAM-N level measurements that was preventing the measurements from reporting a result if the input signal had too much over-shoot in the 0-3 transition or too much under-shoot in the 3-0 transition.

- Fixed an issue with the USB SCPI Server address of the N1000A DCA-X. The first component of the address is the USB Vendor Identification Number, which has been changed from 0x0957 (Agilent) to 0x2A8D (Keysight). The second component of the address is the USB Product Identification Number, which has been changed from 0xBE18 (86100D) to 0x7B01 (N1000A). The third component of the address is the USB serial number, which has been changed from the instrument DNS hostname to the instrument serial number.

CHANnel Subsystem

- :CHANnel:NOISe? (new)

CRECovery Subsystem

- :CRECovery:JSANalysis:STYPe (new)
- :CRECovery/JSANalysis:STYPe:AUTomatic (new)

MEASure Subsystem

- :MEASure:ERATio:CHANnel:OERFactor (new)

Revision A.06.00, October 2018

New Features

- Added support for new N1000A DCA-X sampling oscilloscope.
- Added support for new N1060A Precision Waveform Analyzer Module.
- Added support for new N1045B Electrical Remote Sampling Head Module.
- Added direct control of Keysight M8195A and M8196A arbitrary waveform generators as extended modules.
- For PAM4 waveforms in Eye/Mask mode, added two new measurements: Transition Time and Ceq.
- Changed the signal processing TDECQ equalizer operator's IEEE 802.3cd Draft 3.2 preset to IEEE 802.3cd Draft 3.5.
- Added support for new Package licensing which reduces and simplifies the number of licenses required to increase instrument capability. The new package licenses are Research and Development Package, Manufacturing Package, and Signal Integrity Package.
- Added support for N4694D series Microwave Electronic Calibration (ECal) module.
- Optical user calibrations on optical modules can now be performed in 86100D's Standard configuration (normal mode). Supported module's for Standard configuration. Previously, the 86100D had to be placed in Legacy mode.
- Mainframe user timebase calibrations can now be exported and imported as an xml file. One example of feature is if you operate your instrument at several different temperatures, and you wish to save a calibration for each temperature. From remote control, use the :CALibrate:FRAMe:TIMebase:USER:EXPort command.
- Added the :DISK:FILE:TIMestamp? SCPI query that returns a file's date-time properties.
- To simplify the location of SCPI commands for scalar Jitter-mode measurements on PAM4 waveforms, two new SCPI nodes have been added to the :MEASure subsystem. The new nodes are :MEASure:PEYE (for PAM4 measurements that are displayed on the Eye panel) and :MEASure:PLEVel (for PAM4 measurements displayed on the Level panel).
  - Commands in these two new nodes use the same measurement algorithms for PAM4 waveforms as their NRZ/PAM4 counterparts but cannot measure NRZ waveforms. You can still use the NRZ/PAM4 commands to measure PAM4 waveforms if you wish, however, switching to the new commands will make locating the commands easier as the new SCPI nodes correlate to the name of the measurement panels. This will also make your code easier to read. For example, the existing NRZ/PAM4 command :MEAS:EYE:RJ has a new PAM4 only version that is named :MEAS:PEYE:RJ.

- Added a Copy to Clipboard button to FlexDCA's About dialog box.
- Now displays de-embedded waveform if SIRC is active.
- The PRBS-31 pattern length is now only allowed with Rapid Eye enabled.
- In the help's SCPI subsystem introductions, added menus that group commands by function for easier access.

Defects Fixed

- Fixed a "GUI has recovered from an unexpected software problem" error that was reported after JSA data was saved by the Documentation Wizard.
- Fixed two problems with saving VSA recording csv files:
  - Quadrature waveform was only saved if Interpolate was turned on.
  - Changing the filename resulted in the file type changing to pattern waveform (csv).
- Fixed intermittent problem where a Lissajous signal did not appear in PTB setup dialog.
- Updated the name of TDECQ standards-based presets (cd draft 3.2 to draft 3.5).
- Fixed an issue that caused the order of measurements in the 12-edge jitter comma-separated value file (*.csv) to be incorrect.
- Improved data handling of implicit waveforms for binary operators.
- Improved iterative optimization for TDECQ measurements.
- Fixed a problem where the JSA Spectrum chart was missing Peak pop-ups.
- Fixed a problem with corrected display resolution of the JSA Spectrum chart.
- Fixed a problem with corrected resolution issue with 4k monitors.
- Fixed a Win10 x86 Keysight License Manager installation issue.
- Fixed an throughput issue, introduced in A.05.70, that increased the time required for an autoscale in FlexEye.

CALibrate Subsystem

- :CALibrate:FRAMe:TIMebase:CHANnel (new)
- :CALibrate:FRAMe:TIMebase:USER:EXPort (new)
- :CALibrate:FRAMe:TIMebase:USER:IMPort (new)
- :CALibrate:OPTical:USER:CHANnel:WSELection (new)
- :CALibrate:TIMebase:SLOT:CHANnel (new)
- :CALibrate:TIMebase:SLOT:USER:EXPort (new)
- :CALibrate:TIMebase:SLOT:USER:IMPort (new)

DISK Subsystem

- :DISK:FILE:TIMestamp? (new)

EMODules Subsystem

- :EMODules:AWGenerator:AUPDate (new)
- :EMODules:AWGenerator:CDIVide (new)
- :EMODules:AWGenerator:FNAMe (new)
- :EMODules:AWGenerator:FORMat (new)
- :EMODules:AWGenerator:PATTern (new)
- :EMODules:AWGenerator:PLENgth (new)
- :EMODules:AWGenerator:SADDress (new)
- :EMODules:AWGenerator:SEND (new)
- :EMODules:AWGenerator:SRATe (new)
- :EMODules:AWGenerator:STATus? (new)
- :EMODules:AWGenerator:STATus:REASon? (new)
- :EMODules:AWGenerator:VADDress (new)
- :EMODules:AWGenerator:WTYPe (new)

MEASure Subsystem

- :MEASure:EYE:CEQ (new)
- :MEASure:EYE:CEQ:LOCation? (new)
- :MEASure:EYE:CEQ:SOURce (new)
- :MEASure:EYE:CEQ:STATus? (new)
- :MEASure:EYE:CEQ:STATus:DETails? (new)
- :MEASure:EYE:CEQ:STATus:REASon? (new)
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- :MEASure:PEYE:DDJ:EYE (new)
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- :MEASure:PLEVel:LIST:REMove (new)
- :MEASure:PLEVel:LIST:SELect (new)
- :MEASure:PLEVel:LSYMbol (new)
- :MEASure:PLEVel:LSYMbol:LEVel (new)
- :MEASure:PLEVel:LSYMbol:LOCation? (new)
- :MEASure:PLEVel:LSYMbol:SOURce (new)
- :MEASure:PLEVel:LSYMbol:STATus? (new)
- :MEASure:PLEVel:LSYMbol:STATus:DETails? (new)
- :MEASure:PLEVel:LSYMbol:STATus:REASon? (new)
- :MEASure:PLEVel:PI (new)
- :MEASure:PLEVel:PI:LEVel (new)
- :MEASure:PLEVel:PI:LOCation (new)
- :MEASure:PLEVel:PI:SOURce (new)
- :MEASure:PLEVel:PI:STATus (new)
- :MEASure:PLEVel:PI:STATus:DETails (new)
- :MEASure:PLEVel:PI:STATus:REASon (new)
- :MEASure:PLEVel:PIR (new)
- :MEASure:PLEVel:PIR:LEVel (new)
- :MEASure:PLEVel:PIR:LOCation (new)
- :MEASure:PLEVel:PIR:SOURce (new)
- :MEASure:PLEVel:PIR:STATus (new)
- :MEASure:PLEVel:PIR:STATus:DETails (new)
- :MEASure:PLEVel:PIR:STATus:REASon (new)
- :MEASure:PLEVel:RINoise (new)
- :MEASure:PLEVel:RINoise:LOCation? (new)

- :MEASure:PLEVel:RINoise:SOURce (new)
- :MEASure:PLEVel:RINoise:STATus? (new)
- :MEASure:PLEVel:RINoise:STATus:DETails? (new)
- :MEASure:PLEVel:RINoise:STATus:REASon? (new)
- :MEASure:PLEVel:RN (new)
- :MEASure:PLEVel:RN:LEVel (new)
- :MEASure:PLEVel:RN:LOCation? (new)
- :MEASure:PLEVel:RN:SOURce (new)
- :MEASure:PLEVel:RN:STATus? (new)
- :MEASure:PLEVel:RN:STATus:DETails? (new)
- :MEASure:PLEVel:RN:STATus:REASon? (new)
- :MEASure:PLEVel:SAMPlitude (new)
- :MEASure:PLEVel:SAMPlitude:LOCation? (new)
- :MEASure:PLEVel:SAMPlitude:SOURce (new)
- :MEASure:PLEVel:SAMPlitude:STATus? (new)
- :MEASure:PLEVel:SAMPlitude:STATus:DETails? (new)
- :MEASure:PLEVel:SAMPlitude:STATus:REASon? (new)
- :MEASure:PLEVel:TI (new)
- :MEASure:PLEVel:TI:LEVel (new)
- :MEASure:PLEVel:TI:LOCation? (new)
- :MEASure:PLEVel:TI:SOURce (new)
- :MEASure:PLEVel:TI:STATus? (new)
- :MEASure:PLEVel:TI:STATus:DETails? (new)
- :MEASure:PLEVel:TI:STATus:REASon? (new)
- :MEASure:PLEVel:UN (new)
- :MEASure:PLEVel:UN:LEVel (new)
- :MEASure:PLEVel:UN:LOCation? (new)
- :MEASure:PLEVel:UN:SOURce (new)
- :MEASure:PLEVel:UN:STATus? (new)
- :MEASure:PLEVel:UN:STATus:DETails? (new)
- :MEASure:PLEVel:UN:STATus:REASon? (new)
- :MEASure:JITTer:PAM:OJITter:LIST:SELect (deprecated)

SOURce Subsystem

- :SOURce:CDIVide (new)

- :SOURce:FILTer:RISetime (new)
- :SOURce:SKEW (new)

SYSTem Subsystem

- :SYSTem:LKEY:SOFTware:SUPPort:EXPiration:DATE? (new)
- :SYSTem:SOFTware:FEATures:ENABled? (new)
- :SYSTem:SOFTware:FEATures:VERSion? (new)
- :SYSTem:SOFTware:LICenses:FEATure? (new)
- :SYSTem:SOFTware:LICenses:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:VERSion? (new)
- :SYSTem:SOFTware:VERSion:DATE? (new)
- :SYSTem:SOFTware:FEATures:AEYE:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:AEYE:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:AFRemoval:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:AFRemoval:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:ATDR:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:ATDR:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:AWANalysis:EQUalizers:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:AWANalysis:EQUalizers:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:AWANalysis:UDOPerations:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:AWANalysis:UDOPerations:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:FEYE:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:FEYE:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:FLEX:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:FLEX:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:ISIM:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:ISIM:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:JITTer:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:JITTer:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:MEASure:TDEC:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:MEASure:TDEC:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:PAMN:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:PAMN:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:REPository:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:REPository:VERSion? (removed)

- :SYSTem:SOFTware:FEATures:TDCQ:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:TDCQ:VERSion? (removed)
- :SYSTem:SOFTware:FEATures:UDIMport:ENABled? (removed)
- :SYSTem:SOFTware:FEATures:UDIMport:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:OTHer:DEMO:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:OTHer:DEMO:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:OTHer:DEMO:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AEYE:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AEYE:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AEYE:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AFRemoval:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AFRemoval:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AFRemoval:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AMPLitude:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AMPLitude:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AMPLitude:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:ATDR:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:ATDR:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:ATDR:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AWANalysis:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AWANalysis:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:AWANalysis:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:FEYE:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:FEYE:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:FEYE:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:FLEX:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:FLEX:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:FLEX:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:ISIM:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:ISIM:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:ISIM:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:JITTer:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:JITTer:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:JITTer:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:PAMN:FEATure? (removed)

- :SYSTem:SOFTware:LICenses:SFEature:PAMN:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:PAMN:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:PRODuctivity:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:PRODuctivity:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:PRODuctivity:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:RDCA:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:RDCA:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:RDCA:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:REPository:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:REPository:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:REPository:VERSion? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:TDCQ:FEATure? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:TDCQ:INSTalled? (removed)
- :SYSTem:SOFTware:LICenses:SFEature:TDCQ:VERSion? (removed)

Revision A.05.80, June 2018

New Features

- The Documentation Wizard now includes the option to save Waveform Window Data (internal format of waveform file) in Oscilloscope and Eye/Mask modes.
- For the 86100D, added the ability to perform user timebase calibrations.
- Added support for new N1076B 56 GBd Electrical Clock Recovery DCA-M extended module.
- Added support for new N1078A 56 GBd Optical/Electrical Clock Recovery DCA-M extended module.
- For Eye Mode's TDEC measurement, added the ability to position the left and right histograms. Improved the measurement's waveform annotations.
- For Eye Mode's TDECQ measurement, the amplitude of decision thresholds can now be optimally determined within a specified percentage of the signal OMA, such that TDECQ is minimized. The timing of the histograms can also be optimized. The applicable settings are located in the TDECQ Configuration tab of the PAM-N Analysis Setup dialog box.
- Added three new 25.78125 GBd Ethernet masks for Eye/Mask testing:
  - 25GBASE-LR_ER_Rx.mskx (IEEE802.3cc Draft 3.2)
  - 100G-PSM4_Rx.mskx (100G PSM4 MSA rev 2)
  - 100G-SWDM4-Rx.mskx (100G SWDM4 MSA rev 2)
- Eye mode's FlexEye application is now compatible with pattern lock, math functions, and more. TDECQ measurements can be made using FlexEye.
- Concerning System Impulse Response Correction (SIRC):
  - For Eye Mode's FlexEye Streaming application, documented the ability to use SIRC (System Impulse Response Correction) on N1092 M-series modules on a per-channel basis. SIRC is enabled within the FlexEye Streaming Setup dialog box.
  - Added several SIRC 10 Gb/s filter rates for N1092-series DCA-Ms.
  - The signal legend now indicates if SIRC has been applied to a channel.
- For clock recovery, the Clock Recovery Setup dialog box:
  - Includes the new Spread Spectrum Clock field where you can indicate that a Spread Spectrum Clock (SSC) is used.
- Internal waveform record data can now be directly transferred to and from FlexDCA's waveform memory or channels using the following SCPI commands. This saves time as the data does not need to be placed in a file.

  - :WAVeform:XML:READ? (new)
  - :WAVeform:XML:WRITe? (new)
- Internal color-grade gray-scale database data can now be directly transferred to and from FlexDCA's CGGS memory or channels using the following SCPI commands. This saves time as the data does not need to be placed in a file.
  - :WAVeform:EYE:XML:READ? (new)
  - :WAVeform:EYE:XML:WRITe? (new)
- The magnitude response of the Signal Processing FFT operator can be normalized to a frequency.
- An Autoscale now clears FlexDCA's display as a last step.
- Improved performance on multi-CPU PCs.
- Added the Unrestricted Data Import feature to option 200.
- Added a new example Python script the performs TDECQ measurement using TDECQ equalizer math function and new SIRC 10 Gb/s filter.
- Reduced and simplified the Python example scripts and module with the goal of simplicity.
- The Microsoft .NET Framework 4.7.1 is now included with the FlexDCA installation. Older versions of Windows may require the latest Microsoft Windows Updates, or that a LAN connection to the Internet is present during the installation. Microsoft .NET Framework is a required component and if this component fails to install, contact Keysight support.

Defects Fixed

- Fixed an issue where the throughput of the FlexEye Streaming Application could be substantially reduced. This issue was first introduced in FlexDCA version A.05.71.

New Instrument Messages

Added the following new instrument messages. Instrument messages are displayed at the bottom of the display and are returned by the :SYSTem:ERRor:NEXT? command.

- 081. Unable to digitally sign exported data
- 332. CDR YIG Bias Calibration is required for <identifier>
- 333. The <identifier> device is not responding. Please cycle power.
- 334. The <identifier> does not have a valid digital certificate.
- 370. SIRC has been deactivated: <identifier>.

CALibrate Subsystem

- :CALibrate:FRAMe:TIMebase:USER:CHANnel (new)
- :CALibrate:FRAMe:TIMebase:USER:DISCard (new)

- :CALibrate:FRAMe:TIMebase:USER:STARt (new)
- :CALibrate:FRAMe:TIMebase:USER:STATus? (new)
- :CALibrate:FRAMe:TIMebase:USER:STATus:DETails? (new)
- :CALibrate:FRAMe:TIMebase:USER:STATus:DTEMperature? (new)
- :CALibrate:FRAMe:TIMebase:USER:STATus:TIME? (new)
- :CALibrate:OPTical:USER:CHANnel:DISCard (new)
- :CALibrate:TIMebase:SLOT:USER:CHANnel (reserved)
- :CALibrate:TIMebase:SLOT:USER:DISCard (reserved)
- :CALibrate:TIMebase:SLOT:USER:STARt (reserved)
- :CALibrate:TIMebase:SLOT:USER:STATus? (reserved)
- :CALibrate:TIMebase:SLOT:USER:STATus:DETails? (reserved)
- :CALibrate:TIMebase:SLOT:USER:STATus:DTEMperature? (reserved)
- :CALibrate:TIMebase:SLOT:USER:STATus:TIME? (reserved)

CHANnel Subsystem

- :CHANnel:SIRC:EPResets (new)
- :CHANnel:SIRC:EPResets:SELections? (new)

CRECovery Subsystem

- :CRECovery:EHGain (new)
- :CRECovery:SSCLock (new)

DISK Subsystem

Modified the method used to specify the file type and name when saving a screen image.

- :DISK:DWIZard:WAVE:IINTernal (new)
- :DISK:SIMage:FNAMe (modified)
- :DISK:SIMage:FTYPe? (modified)

FEYE Subsystem

- :FEYE:SPUI (new)
- :FEYE:UPLock (new)

LTESt Subsystem

Modified the method used to specify the file type and name when saving a screen image file as a reporting action for an Acquisition Limit test, Measurement Limit test, Eye Mask Limit test, or Limit Line limit test.

- :LTESt:ACQuire:SIMage:FNAMe (modified)
- :LTESt:ACQuire:SIMage:FTYPe? (modified)
- :LTESt:ACQuire:SWAVeform:CHANnel:FNAMe (modified)
- :LTESt:ACQuire:SWAVeform:CHANnel:FTYPe (new)
- :LTESt:ACQuire:SWAVeform:CMODe:FNAMe (modified)
- :LTESt:ACQuire:SWAVeform:CMODe:FTYPe (new)
- :LTESt:ACQuire:SWAVeform:DIFF:FNAMe (modified)
- :LTESt:ACQuire:SWAVeform:DIFF:FTYPe (new)
- :LTESt:LLINe:SIMage:FNAMe (modified)
- :LTESt:LLINe:SIMage:FTYPe? (modified)
- :LTESt:LLINe:SWAVeform:CHANnel:FNAMe (modified)
- :LTESt:LLINe:SWAVeform:CHANnel:FTYPe (new)
- :LTESt:LLINe:SWAVeform:CMODe:FNAMemodified)›
- :LTESt:LLINe:SWAVeform:CMODe:FTYPe (new)
- :LTESt:LLINe:SWAVeform:DIFF:FNAMe (modified)
- :LTESt:LLINe:SWAVeform:DIFF:FTYPe (new)
- :LTESt:MEASure:SIMage:FNAMe (modified)
- :LTESt:MEASure:SIMage:FTYPe? (modified)
- :LTESt:MEASure:SWAVeform:CHANnel:FNAMe (modified)
- :LTESt:MEASure:SWAVeform:CHANnel:FTYPe (new)
- :LTESt:MEASure:SWAVeform:CMODe:FNAMe (modified)
- :LTESt:MEASure:SWAVeform:CMODe:FTYPe (new)
- :LTESt:MEASure:SWAVeform:DIFF:FNAMe (modified)
- :LTESt:MEASure:SWAVeform:DIFF:FTYPe (new)
- :LTESt:MTESt:SIMage:FNAMe (modified)
- :LTESt:MTESt:SIMage:FTYPe? (modified)
- :LTESt:MTESt:SWAVeform:CHANnel:FNAMe (modified)
- :LTESt:MTESt:SWAVeform:CHANnel:FTYPe (new)
- :LTESt:MTESt:SWAVeform:CMODe:FNAMe (modified)
- :LTESt:MTESt:SWAVeform:CMODe:FTYPe (new)
- :LTESt:MTESt:SWAVeform:DIFF:FNAMe (modified)
- :LTESt:MTESt:SWAVeform:DIFF:FTYPe (new)

MEASure Subsystem

- :MEASure:EYE:OOMA:UNITs (new)

- :MEASure:EYE:TDEQ:OMA:METHod (removed)
- :MEASure:EYE:TDEQ:OMA:VALue (removed)
- :MEASure:JITTer:OJITter:JNU (new)
- :MEASure:JITTer:OJITter:JNU:DISPlay (new)
- :MEASure:JITTer:OJITter:JNU:ECATegory (new)
- :MEASure:JITTer:OJITter:JNU:LOCation? (new)
- :MEASure:JITTer:OJITter:JNU:SOURce (new)
- :MEASure:JITTer:OJITter:JNU:STATus? (new)
- :MEASure:JITTer:OJITter:JNU:STATus:DETails? (new)
- :MEASure:JITTer:OJITter:JNU:STATus:REASon? (new)
- :MEASure:JITTer:OJITter:SJNU (new)
- :MEASure:JITTer:OJITter:J4U (deprecated)
- :MEASure:JITTer:OJITter:J4U:DISPlay (deprecated)
- :MEASure:JITTer:OJITter:J4U:ECATegory (deprecated)
- :MEASure:JITTer:OJITter:J4U:LOCation? (deprecated)
- :MEASure:JITTer:OJITter:J4U:SOURce (deprecated)
- :MEASure:JITTer:OJITter:J4U:STATus? (deprecated)
- :MEASure:JITTer:OJITter:J4U:STATus:DETails? (deprecated)
- :MEASure:JITTer:OJITter:J4U:STATus:REASon? (deprecated)
- :MEASure:TDEC:LHTime (new)
- :MEASure:TDEC:RHTime (new)
- :MEASure:TDEQ:LHTime (new)
- :MEASure:TDEQ:OHSeparation (new)
- :MEASure:TDEQ:OHTHresholds (new)
- :MEASure:TDEQ:OHTime (new)
- :MEASure:TDEQ:RHTime (new)
- :MEASure:TDEQ:TALimit (new)

SPRocess Subsystem

- :SPRocess:CONVolve:ALIGn (new)
- :SPRocess:DCONvolve:ALIGn (new)
- :SPRocess:DDEMbed:ALIGn (new)
- :SPRocess:DDEConvolve:ALIGn (new)
- :SPRocess:DEConvolve:ALIGn (new)
- :SPRocess:DEMBed:ALIGn (new)

- :SPRocess:FFT:NFRequency (new)
- :SPRocess:TEQualizer:MNPRecursors (new)
- :SPRocess:TEQualizer:NPRecursors:AUTO (new)

SYSTem Subsystem

- :SYSTem:LKEY:SOFTware:SUPPort:EXPiration:DATE? (new)
- :SYSTem:SOFTware:FEATures:AEYE:ENABled? (new)
- :SYSTem:SOFTware:FEATures:AEYE:VERSion? (new)
- :SYSTem:SOFTware:FEATures:AFRemoval:ENABled? (new)
- :SYSTem:SOFTware:FEATures:AFRemoval:VERSion? (new)
- :SYSTem:SOFTware:FEATures:ATDR:ENABled? (new)
- :SYSTem:SOFTware:FEATures:ATDR:VERSion? (new)
- :SYSTem:SOFTware:FEATures:AWANalysis:EQUalizers:ENABled? (new)
- :SYSTem:SOFTware:FEATures:AWANalysis:EQUalizers:VERSion? (new)
- :SYSTem:SOFTware:FEATures:AWANalysis:UDOPerations:ENABled? (new)
- :SYSTem:SOFTware:FEATures:AWANalysis:UDOPerations:VERSion? (new)
- :SYSTem:SOFTware:FEATures:FEYE:ENABled? (new)
- :SYSTem:SOFTware:FEATures:FEYE:VERSion? (new)
- :SYSTem:SOFTware:FEATures:FLEX:ENABled? (new)
- :SYSTem:SOFTware:FEATures:FLEX:VERSion? (new)
- :SYSTem:SOFTware:FEATures:ISIM:ENABled? (new)
- :SYSTem:SOFTware:FEATures:ISIM:VERSion? (new)
- :SYSTem:SOFTware:FEATures:JITTer:ENABled? (new)
- :SYSTem:SOFTware:FEATures:JITTer:VERSion? (new)
- :SYSTem:SOFTware:FEATures:MEASure:TDEC:ENABled? (new)
- :SYSTem:SOFTware:FEATures:MEASure:TDEC:VERSion? (new)
- :SYSTem:SOFTware:FEATures:PAMN:ENABled? (new)
- :SYSTem:SOFTware:FEATures:PAMN:VERSion? (new)
- :SYSTem:SOFTware:FEATures:REPository:ENABled? (new)
- :SYSTem:SOFTware:FEATures:REPository:VERSion? (new)
- :SYSTem:SOFTware:FEATures:TDCQ:ENABled? (new)
- :SYSTem:SOFTware:FEATures:TDCQ:VERSion? (new)
- :SYSTem:SOFTware:FEATures:UDIMport:ENABled? (new)
- :SYSTem:SOFTware:FEATures:UDIMport:VERSion? (new)
- :SYSTem:SOFTware:LICenses:OTHer:DEMO:FEATure? (new)

- :SYSTem:SOFTware:LICenses:OTHer:DEMO:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:OTHer:DEMO:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AEYE:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AEYE:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AEYE:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AFRemoval:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AFRemoval:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AFRemoval:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AMPLitude:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AMPLitude:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AMPLitude:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:ATDR:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:ATDR:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:ATDR:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AWANalysis:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AWANalysis:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:AWANalysis:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:FEYE:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:FEYE:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:FEYE:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:FLEX:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:FLEX:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:FLEX:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:ISIM:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:ISIM:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:ISIM:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:JITTer:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:JITTer:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:JITTer:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:PAMN:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:PAMN:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:PAMN:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:PRODuctivity:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:PRODuctivity:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:PRODuctivity:VERSion? (new)

- :SYSTem:SOFTware:LICenses:SFEature:RDCA:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:RDCA:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:RDCA:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:REPository:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:REPository:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:REPository:VERSion? (new)
- :SYSTem:SOFTware:LICenses:SFEature:TDCQ:FEATure? (new)
- :SYSTem:SOFTware:LICenses:SFEature:TDCQ:INSTalled? (new)
- :SYSTem:SOFTware:LICenses:SFEature:TDCQ:VERSion? (new)
- :SYSTem:SOFTware:VERSion:DATE? (new)

WAVeform Subsystem

- :WAVeform:EYE:XML:READ? (new)
- :WAVeform:EYE:XML:WRITe? (new)
- :WAVeform:XML:READ? (new)
- :WAVeform:XML:WRITe? (new)

Revision A.05.71, January 2018

New Features

- New TDECQ preset for Fiber Channel. Also changed the target SER and increased SER setting to three significant digits to reflect latest FC standard.
- Added Ethernet eye masks:
  - 100G 4WDM MSA Rx, rev 1.0 Mar 2017
    (Maskfile 025.78125 – 100G-4WDM_Rx.mskx)
  - 100G CWDM4 MSA Rx, rev 1.1 Nov 2015
    (Maskfile 025.78125 –100G-CWDM4_Rx.mskx)

Defects Fixed

- Fixed a bug where FlexEye SIRC didn't work when the channel wasn't displayed in the primary session.
- Fixed a bug where the Precision Timebase channels would be included in acquisition limits if “Show Precision Timebase Signals” was enabled.
- Fixed a bug in the :MEAS:RESults? query for TDECQ and Partial TDECQ measurements.

Revision A.05.70, December 2017

New Features

- Support for the N8844A Data Analytics Web Service Software. The N8844A is a Keysight product that allows you to create a database repository server for storing FlexDCA scalar data and a data analytics web server for viewing, graphing, and sharing your data.
- For PAM-4 waveforms in Eye mode, the TDECQ measurement now places more meaningful measurement annotations on the displayed waveform. In addition, pixels representing relative error contributions are colored red. Because TDECQ is a complicated measurement, four new complementary measurements have been added. These new measurements measure the contribution to TDECQ of specific portions of the PAM-4 waveform:
  - Noise Margin (rms) used to perform a system-level test that is similar to TDECQ.
  - Partial SER used to inspect contributing sources of target Symbol Error Ratio (SER) for TDECQ.
  - Partial TDECQ used to inspect contributing sources of TDECQ.
  - Partial Noise Margin used to inspect contributing Noise Margin sources.
- The TDECQ equalizer now optionally supports iterative optimization as specified in the 802.3bs draft 3.1 standard.
- Added SIRC capability on N1092 M-Series modules for long patterns (e.g. PRBS-31).
- For Eye Mode's FlexEye Streaming application, added the ability to use SIRC (System Impulse Response Correction) on N1092 M-series modules on a per channel basis. SIRC is enabled within the FlexEye Streaming Setup dialog box.
- In Jitter mode, added three PAM-4 Output Jitter measurements for the IEEE 802.3bs standard: J4u, Jrms, and EOJ.
- Improved throughput for Rapid Eye.
- Added the ability to save Eye mode's database as a CSV text file. Previously, the data could only be exported as a .cgsx file with the waveform data in binary.
- Added the ability to save waveform data as VSA recording files in Oscilloscope and Eye modes when pattern lock is turned on. The VSA file (.csv or .txt) can be imported into Keysight's 89600 VSA and WLA software. The 89600 is a set of tools for signal demodulation and vector signal analysis.
- In Jitter mode, the currently displayed jitter data (graphs and scalar information) can now be placed directly into jitter data memory. It is no longer required to save the currently displayed jitter data into a file before it can be imported into the Jitter Data Memory.

- For saving screen images, waveforms, eye database, and jitter database files, changed the File > Save menu and dialog box. Previously the file name extension determined the file type. Now, you separately specify the file format and name. Under remote control, the :DISK subsystem is still used to save waveform and database files.
- The :DISK subsystem commands that load saved files into memory have been deprecated. New commands have been created within the :WMEMory, :EMEMory, and :JDMemory subsystems to load saved files into waveform memory, eye database memory, and jitter database memory.
- When making oscilloscope mode or TDR/TDT mode delta-time measurements, the maximum stop edge has been increased from edge 100 to edge 200.

New Instrument Messages

Added the following new instrument messages. Instrument messages are displayed at the bottom of the display and are returned by the :SYSTem:ERRor:NEXT? command.

- 147. The trigger divide ratio was adjusted to ...
- 148. The symbol rate file must be divisible by the trigger frequency count
- 149. The trigger frequency must be greater than...
- 350. Repository Error
- 351. Repository operation timed out
- 352. Repository operation canceled by user
- 353. Connected to repository: <URI>
- 354. You have been logged out due to inactivity
- 355. <number> measurement(s) published to repository
- 356. The user name or password is incorrect
- 357. There are no valid active measurement results to publish
- 358. There are no new measurement results since last publish
- 359. Please specify a valid repository server URI
- 360. Please specify a valid repository user name
- 361. There are no cached credentials available for server: <URL>
- 362. Cannot publish without a connection to a repository

Defects Fixed

- Fixed Autoscale errors that prevented signal type detection during pattern autoscale and, when the previous signal type was PAM 4, proper detection of a clock.
- Fixed a problem that prevented the proper scaling and offset applied to optical signals during an autoscale.
- Resolved an issue where clock recovery would not relock on startup. Now, on power up, FlexDCA attempts to lock a CDR module if that module is the trigger source.

- Fixed an issue when using TDR de-embedding with an 54754A module that caused inproper fixture characterized with AFR.
- Fixed an error that caused special characters within Documentation Wizard waveform files to be incorrect.

CALibrate Subsystem

- :CALibrate:FRAMe:TIMebase:STARt (new, reserved for future use)

CRECovery Subsystem

- :CRECovery:ELEVel (new)

DISK Subsystem

The :DISK:node:RECall commands that are used to load waveform data files into FlexDCA's waveform, color-grade/gray-scale, and jitter database have been deprecated and replaced by :FILE:LOAD commands in the individual memory subsystems. the associated :DISK:node:RECall:DESTination child commands are no longer needed because the :FILE:LOAD commands specify the memory number to import the file's data into. New commands have also been added to the individual memory subsystems that specify the name of the file to import. So, the :DISK subsystem is used to save waveforms to files and the :WMEMory, :EMEMory, and :JDMemory subsystems are used to import a file's data back into FlexDCA.

- :DISK:DWIZard:OJITter:SDATa (new)
- :DISK:SIMage:FNAMe:AUPDate (new)
- :DISK:SIMage:FTYPe (new)
- :DISK:WAVeform:SAVE:VSA:DTYPe (new)
- :DISK:WAVeform:SAVE:VSA:QSOUrce (new)
- :DISK:EYE:FNAMe:AUPDate (new)
- :DISK:EYE:FNAMe:USTandard (new)
- :DISK:EYE:SAVE:FTYPe (new)
- :DISK:EYE:RECall (deprecated)
- :DISK:EYE:RECall:DESTination (deprecated)
- :DISK:JDATabase:FNAMe:AUPDate (new)
- :DISK:JDATabase:FNAMe:USTandard (new)
- :DISK:JDATabase:RECall (deprecated)
- :DISK:JDATabase:RECall:DESTination (deprecated)
- :DISK:JSANalysis:FNAMe:AUPDate (new)
- :DISK:JSANalysis:FNAMe:USTandard (new)

- :DISK:SIMage:FNAMe:USTandard (new)
- :DISK:WAVeform:FNAMe:AUPDate (new)
- :DISK:WAVeform:FNAMe:USTandard (new)
- :DISK:WAVeform:LINTerpolate (new)
- :DISK:WAVeform:LSDigits (new)
- :DISK:WAVeform:LSDigits:NUMber (new)
- :DISK:WAVeform:SAVE:FTYPe (new)
- :DISK:WAVeform:SAVE:VSA:DTYPe (new)
- :DISK:WAVeform:SAVE:VSA:QSOUrce (new)
- :DISK:WAVeform:FFORmat (deprecated)
- :DISK:WAVeform:SAVE:FLAYout (deprecated)
- :DISK:WAVeform:RECall (deprecated)
- :DISK:WAVeform:RECall:DESTination (deprecated)

DISPlay Subsystem

- :DISPlay:JITTer:OJITter:ECATegory (new)

EMEMory Subsystem

- :EMEMory:DSTatus? (new)
- :EMEMory:DSTatus:REASon? (new)
- :EMEMory:FILE:LOAD (new)
- :EMEMory:FILE:NAME (new)
- :EMEMory:UNAMe:UFName (new)

FEYE Subsystem

- :FEYE:CHANnel:SIRC

JDMemory Subsystem

- :JDMemory:CLEar (new)
- :JDMemory:DSTatus? (new)
- :JDMemory:DSTatus:REASon? (new)
- :JDMemory:FILE:LOAD (new)
- :JDMemory:FILE:NAME (new)
- :JDMemory:LOAD (new)
- :JDMemory:LOAD:SOURce (new)

JSAMemory Subsystem

- :JSAMemory:CLEar (new)
- :JSAMemory:DSTatus? (new)
- :JSAMemory:DSTatus:REASon? (new)
- :JSAMemory:FILE:LOAD (new)
- :JSAMemory:FILE:NAME (new)
- :JSAMemory:LOAD (new)
- :JSAMemory:LOAD:SOURce (new)

LTESt Subsystem

- :LTESt:ACQuire:SIMage:FNAMe:AUPDate (new)
- :LTESt:ACQuire:SIMage:FNAMe:USTandard (new)
- :LTESt:ACQuire:SIMage:FTYPe (new)
- :LTESt:LLINe:SIMage:FNAMe:AUPDate (new)
- :LTESt:LLINe:SIMage:FNAMe:USTandard (new)
- :LTESt:LLINe:SIMage:FTYPe (new)
- :LTESt:MEASure:SIMage:FNAMe:AUPDate (new)
- :LTESt:MEASure:SIMage:FNAMe:USTandard (new)
- :LTESt:MEASure:SIMage:FTYPe (new)
- :LTESt:MTESt:SIMage:FNAMe:AUPDate (new)
- :LTESt:MTESt:SIMage:FNAMe:USTandard (new)
- :LTESt:MTESt:SIMage:FTYPe (new)

MEASure Subsystem

- :MEASure:EYE:NMARgin (new)
- :MEASure:EYE:NMARgin:LOCation? (new)
- :MEASure:EYE:NMARgin:SOURce (new)
- :MEASure:EYE:NMARgin:STATus? (new)
- :MEASure:EYE:NMARgin:STATus:REASon? (new)
- :MEASure:EYE:PNMargin (new)
- :MEASure:EYE:PNMargin:EYE (new)
- :MEASure:EYE:PNMargin:LOCation? (new)
- :MEASure:EYE:PNMargin:SIDe (new)
- :MEASure:EYE:PNMargin:SOURce (new)
- :MEASure:EYE:PNMargin:STATus? (new)

- :MEASure:EYE:PNMargin:STATus:REASon? (new)
- :MEASure:EYE:PSER (new)
- :MEASure:EYE:PSER:EYE (new)
- :MEASure:EYE:PSER:LOCation? (new)
- :MEASure:EYE:PSER:SIDe (new)
- :MEASure:EYE:PSER:SOURce (new)
- :MEASure:EYE:PSER:STATus? (new)
- :MEASure:EYE:PSER:STATus:REASon? (new)
- :MEASure:EYE:PTDeq (new)
- :MEASure:EYE:PTDeq:EYE (new)
- :MEASure:EYE:PTDeq:LOCation? (new)
- :MEASure:EYE:PTDeq:SIDe (new)
- :MEASure:EYE:PTDeq:SOURce (new)
- :MEASure:EYE:PTDeq:STATus? (new)
- :MEASure:EYE:PTDeq:STATus:REASon? (new)
- :MEASure:JITTer:OJITter:EOJ (new)
- :MEASure:JITTer:OJITter:EOJ:DISPlay (new)
- :MEASure:JITTer:OJITter:EOJ:ECATegory (new)
- :MEASure:JITTer:OJITter:EOJ:LOCation? (new)
- :MEASure:JITTer:OJITter:EOJ:SOURce (new)
- :MEASure:JITTer:OJITter:EOJ:STATus? (new)
- :MEASure:JITTer:OJITter:EOJ:STATus:REASon? (new)
- :MEASure:JITTer:OJITter:HISTogram? (new)
- :MEASure:JITTer:OJITter:HISTogram:SAMPles? (new)
- :MEASure:JITTer:OJITter:HISTogram:XINCrement? (new)
- :MEASure:JITTer:OJITter:HISTogram:XORigin? (new)
- :MEASure:JITTer:OJITter:J4U (new)
- :MEASure:JITTer:OJITter:J4U:DISPlay (new)
- :MEASure:JITTer:OJITter:J4U:ECATegory (new)
- :MEASure:JITTer:OJITter:J4U:LOCation? (new)
- :MEASure:JITTer:OJITter:J4U:SOURce (new)
- :MEASure:JITTer:OJITter:J4U:STATus? (new)
- :MEASure:JITTer:OJITter:J4U:STATus:REASon? (new)
- :MEASure:JITTer:OJITter:JRMS:DISPlay (new)
- :MEASure:JITTer:OJITter:JRMS:ECATegory (new)

- :MEASure:JITTer:OJITter:JRMS (new)
- :MEASure:JITTer:OJITter:JRMS:LOCation? (new)
- :MEASure:JITTer:OJITter:JRMS:SOURce (new)
- :MEASure:JITTer:OJITter:JRMS:STATus? (new)
- :MEASure:JITTer:OJITter:JRMS:STATus:REASon? (new)
- :MEASure:JITTer:OJITter:STATe (new)
- :MEASure:JITTer:PAM:EYE:LIST:REMove (new)
- :MEASure:JITTer:PAM:OJITter:LIST:SELect (new)
- :MEASure:JITTer:PAM:LEVel:LIST:REMove (new)

REPository Subsystem (new)

- :REPository:CANCel (new)
- :REPository:CONNect (new)
- :REPository:CONNect:STATe? (new)
- :REPository:DISConnect (new)
- :REPository:DSET (new)
- :REPository:DUT:MODel (new)
- :REPository:DUT:SERial (new)
- :REPository:MEASure:AMPLitude:SELection (new)
- :REPository:MEASure:AMPLitude:SELection:ALL (new)
- :REPository:MEASure:AMPLitude:SELection:CLEar (new)
- :REPository:MEASure:CRECovery:SELection (new)
- :REPository:MEASure:CRECovery:SELection:ALL (new)
- :REPository:MEASure:CRECovery:SELection:CLEar (new)
- :REPository:MEASure:EYE:SELection (new)
- :REPository:MEASure:EYE:SELection:ALL (new)
- :REPository:MEASure:EYE:SELection:CLEar (new)
- :REPository:MEASure:HISTogram:SELection (new)
- :REPository:MEASure:HISTogram:SELection:ALL (new)
- :REPository:MEASure:HISTogram:SELection:CLEar (new)
- :REPository:MEASure:JITTer:SELection (new)
- :REPository:MEASure:JITTer:SELection:ALL (new)
- :REPository:MEASure:JITTer:SELection:CLEar (new)
- :REPository:MEASure:MTESt:SELection (new)
- :REPository:MEASure:MTESt:SELection:ALL (new)

- :REPository:MEASure:MTESt:SELection:CLEar (new)
- :REPository:MEASure:OSCilloscope:SELection (new)
- :REPository:MEASure:OSCilloscope:SELection:ALL (new)
- :REPository:MEASure:OSCilloscope:SELection:CLEar (new)
- :REPository:MEASure:PAM:EYE:SELection (new)
- :REPository:MEASure:PAM:EYE:SELection:ALL (new)
- :REPository:MEASure:PAM:EYE:SELection:CLEar (new)
- :REPository:MEASure:PAM:OJITter:SELection (new)
- :REPository:MEASure:PAM:OJITter:SELection:ALL (new)
- :REPository:MEASure:PAM:OJITter:SELection:CLEar (new)
- :REPository:MEASure:PAM:LEVel:SELection (new)
- :REPository:MEASure:PAM:LEVel:SELection:ALL (new)
- :REPository:MEASure:PAM:LEVel:SELection:CLEar (new)
- :REPository:MEASure:PMODe (new)
- :REPository:MEASure:PUBLish:LLIMit (new)
- :REPository:MEASure:PUBLish:NAME (new)
- :REPository:MEASure:PUBLish:SOURce:LOCation (new)
- :REPository:MEASure:PUBLish:SOURce:TYPE (new)
- :REPository:MEASure:PUBLish:STATe (new)
- :REPository:MEASure:PUBLish:ULIMit (new)
- :REPository:MEASure:SELection:ALL (new)
- :REPository:MEASure:SELection:CLEar (new)
- :REPository:MEASure:TDR:SELection (new)
- :REPository:MEASure:TDR:SELection:ALL (new)
- :REPository:MEASure:TDR:SELection:CLEar (new)
- :REPository:PUBLish (new)
- :REPository:SERVer:NAME (new)
- :REPository:SERVer:VERSion? (new)
- :REPository:USER (new)

SPRocess Subsystem

- :SPRocess:TEQualizer:TAPS:IOPTimize (new)
- :SPRocess:TEQualizer:TAPS:SEED (new)
- :SPRocess:TEQualizer:TAPS:SEED:COPy (new)
- :SPRocess:TEQualizer:TAPS:SEED:ENABle (new)

STATus Subsystem

- :STATus:REPository:EVENt? (new)
- :STATus:REPository:ENABle (new)

SYSTem Subsystem

- :SYSTem:MPButton:SIMage:FTYPe (new)

TDR Subsystem

- :TDR:SPMemory:DSTatus? (new)
- :TDR:SPMemory:DSTatus:REASon? (new)
- :TDR:SPMemory:FILE:LOAD (new)
- :TDR:SPMemory:FILE:NAME (new)
- :TDR:SPMemory:LOAD
- :TDR:SPMemory:LOAD:SOURce (new)
- :TDR:SPMemory:SOURce (deprecated)

TRIGger Subsystem

- :TRIGger:MRATe? (new)

WMEMory Subsystem

- :WMEMory:DSTatus? (new)
- :WMEMory:DSTatus:REASon? (new)
- :WMEMory:FILE:LOAD (new)
- :WMEMory:FILE:NAME (new)
- :WMEMory:UNAMe:UFName (new)

Revision A.05.63, September 2017

Defects Fixed

- Fixed a typographical error in the reference bandwidth for 53.125 GBd. The bandwidth was listed as 38.4 GHz instead of 38.7 GHz.
- Fixed an erroneous status message on TDECQ.
- Improved the performance of Autoscale in FlexEye.
- Fixed a synchronization error in the remote commands for saving screen captures.
- Fixed a synchronization error in the remote commands for changing the results panel's tab size.
- Improved Jitter Mode behavior with signal processing operators that caused display clipping.
- Added the CPRI 48x rate (24.33024 GBd) and fixed the CPRI 20x rate (10.1376 GBd)

Revision A.05.62, June 2017

New Features

- Support for new N1046A 75/85/>100 GHz electrical module. One, two, or four channel remote heads.
- N1092X extension to SIRC to include enhanced BW for 53 GBd TDECQ reference receiver.
- Made the following changes to the user-defined measurements and user-defined operators:
  - The input variable *BitRate* that is passed to the script has been deprecated. Instead, the new *SymbolRate* input variable is passed. Python and compiled MATLAB scripts will remain backwards compatible so you do not need to update your existing scripts.
  - For user measurements, the *BER* and *bits* measurement units are no longer supported. The new baud (*Bd*) measurement unit is used instead.
- In response to the change in the IEEE 802.3bs Draft specification:
  - Added the following two new factory Presets for the TDECQ reference equalizer: *IEEE 802.3bs Draft 2.2* preset which specifies two taps per UI and *IEEE 802.3bs Draft 3.2* preset which specifies one tap per UI.
- For TDECQ measurements, the oscilloscope's reference bandwidth has been decreased from (0.75)(symbol rate) to approximately (0.5)(symbol rate).
- Reference filter selections in the drop-down lists for optical channels now include additional information for both hardware filters and SIRC rates. In addition to the baud rate, the filter name now includes the 3 dB frequency. Previously, only the baud rate was displayed. This change allows for additional selections within the same data rate. For example, the following three SIRC filters are now be available at 26.5625 GBd:
  - 26.5625 GBd NRZ
  - 26.5625 GBd TDEC
  - 26.5625 GBd TDECQ

Defects Fixed

- Fixed a defect that could prevent querying the statistics (Min, Max, Mean) of the TDECQ measurements via SCPI.
- Fixed a defect that resulted in the message *"The data analysis engine has recovered from an unexpected software problem"* when optimizing the taps of the TDECQ equalizer.

- Fixed an issue that caused Autoscale to detect the incorrect data rate in some cases when using Free Run with Precision Timebase.
- Fixed a condition where repeatedly locking an N1076A to a stressed signal using SCPI commands resulted in a SCPI timeout that occurred for all SCPI commands.
- Fixed an issue where an N1076A's front-panel *Locked* indicator light remained on even when the N1076A was not locked.
- Fixed an error that prevented simultaneous data acquisition from multiple acquisitions systems such as an N1076A with JSA and an N109X-series sampling oscilloscope.

Revision A.05.61, March 2017

New Features

- For RIN measurements in Jitter mode, you can now select results that are based on FlexDCA's standard algorithm or the IEEE algorithm. The result of the IEEE based measurement is approximately 6 dB greater than FlexDCA's standard measurement.

Defects Fixed

- In remote mode, the clock recovery *Attempting Lock* dialog box is no longer displayed.

MEASure Subsystem

`:AMPLitude:DEFine:RINoise:DEFinition (new)`

Revision A.05.60, January 2017

New Features

- Jitter Mode now supports measurements on PAM-4 signals.
- With the advent of PAM-4 support, some terms shown in the GUI, measurements, and remote programming commands have been renamed to support these usage changes. The following list includes some of the changes:
  - bits to unit interval (UI)
  - bits/second (b/s) to Baud (Bd)
  - data rate to symbol rate
  - bit rate to symbol rate
  - samples/bit to samples/UI
  - BER (Bit Error Rate) to SER (Symbol Error Rate)
  - Jitter mode's DDJ Vs Bit graph has been renamed DDJ Vs Symbol.
  - Jitter mode's ISI Vs Bit graph has been renamed ISI Vs Symbol.
  - Jitter mode's BER Jitter Bathtub graph has been renamed SER Jitter Bathtub.
  - Jitter mode's BER Amplitude Bathtub graph has been renamed SER Amplitude Bathtub.
  - Changed the :DISPlay:JITTer:GRAPh:TYPE command's arguments that are used to display the DDJ Vs Symbol and ISI Vs Symbol graphs.
- Enhanced selections in the PAM-N Analysis Setup dialog box.
- Added new Thresholds tab to the Jitter Mode Measurement Setup dialog box.
- In Eye/Mask Mode, added the new PAM-4 Outer Extinction Ratio measurement.
- In Eye/Mask Mode, added the new PAM-4 Outer OMA measurement.
- In Eye/Mask Mode, added the new PAM-4 TDECQ measurement.
- Added new signal processing TDECQ Equalizer Operator.
- Added the ability to preserve input waveform noise on the output waveform of the following signal processing operators:
  - Bessel operator
  - Butterworth operator
  - Continuous Time Linear Equalizer (CTLE) operator
  - Linear Feedforward Equalizer operator
  - Gaussian operator

  - Sin(x)/x operator
  - TDECQ Equalizer operator
- In Jitter Mode, when the source is a PAM-4 waveform, the Jitter and Amplitude NRZ results tables are replaced by the PAM-4 Eye and Level results tables.
- FlexDCA's help system (FlexDCA.chm) can now be viewed on mobile devices depending on the operating system and installed CHM reader application. This help has been tested on an iPhone 5 and iPad mini with the CHM+ Reader application installed from the Apple's App store. The use of a stylus is recommended.

Defects Fixed

- Corrected an error in the following 100G-SR4 Ethernet eye mask: 25.78125 - 100GBASE-SR4_Rx_SEC_Optical.mskx. The error was in the definition of Standard Mask Violations for Region 1.

ACQuire Subsystem

```
:ACQuire:RSPec (modified)
:ACQuire:SPUI (new)
:ACQuire:SPUI:MODE (new)
:ACQuire:SPBit (deprecated)
:ACQuire:SPBit:MODe (deprecated)
```

CRECovery Subsystem

```
:CRECovery:ADRatio? (new)
```

DISK Subsystem

```
:DISK:DWIZard:JPEYe:SDATa (new)
:DISK:DWIZard:JPLevel:SDATa (new)
```

DISPlay Subsystem

```
:DISPlay:AMPLitude:LEVel (modified)
:DISPlay:JITTer:ASPectrum:EDGE (new)
:DISPlay:JITTer:EYE (new)
:DISPlay:JITTer:GRAPh:TYPE (modified)
:DISPlay:JITTer:SGRaph:RANGe (new)
:DISPlay:JITTer:SGRaph:STARt (new)
:DISPlay:JITTer:DDJVsbit:NBITs (deprecated)
:DISPlay:JITTer:DDJVsbit:STARt (deprecated)
```

MEASure Subsystem

Substantial changes have been made to the MEASure subsystem's AMPLitude-series commands, which initiate Jitter Mode's interference/noise measurements. For example, one new NRZ/PAM-4 compatible command replaces and deprecates two current NRZ

compatible commands. The new command applies to both NRZ and PAM-4 signals and comes with a new :LEVel child command that selects the desired level to measure. In addition, BER commands have been replaced by SER commands. For Jitter Mode's measurements that are based on an eye, a new :EYE child command has been added to selects the desired eye to measure on PAM-4 signals.

The following table compares three deprecated commands with their new replacement commands.

Although the deprecated commands continue to be available, it is strongly recommended that you use the new commands.

Table 1 Examples of Old and New Commands

New Commands	Old Deprecated Commands
:MEASure:AMPLitude:HSYMbol	:MEASure:AMPLitude:HONe :MEASure:AMPLitude:HZERo
:MEASure:AMPLitude:SERFloor	:MEASure:AMPLitude:BERFloor
:MEASure:AMPLitude:SERLimit	:MEASure:AMPLitude:BERLimit

Bit Number of Highest Level (at Specified Level)

```
:MEASure:AMPLitude:HSYMbol (new)
:MEASure:AMPLitude:HSYMbol:LEVel (new)
:MEASure:AMPLitude:HSYMbol:LOCation? (new)
:MEASure:AMPLitude:HSYMbol:SOURce (new)
:MEASure:AMPLitude:HSYMbol:STATus? (new)
:MEASure:AMPLitude:HSYMbol:STATus:REASon? (new)
:MEASure:AMPLitude:HONe (deprecated)
:MEASure:AMPLitude:HONe:LOCation? (deprecated)
:MEASure:AMPLitude:HONe:SOURce (deprecated)
:MEASure:AMPLitude:HONe:STATus? (deprecated)
:MEASure:AMPLitude:HONe:STATus:REASon? (deprecated)
:MEASure:AMPLitude:HZERo (deprecated)
:MEASure:AMPLitude:HZERo:LOCation? (deprecated)
:MEASure:AMPLitude:HZERo:SOURce (deprecated)
:MEASure:AMPLitude:HZERo:STATus? (deprecated)
:MEASure:AMPLitude:HZERo:STATus:REASon? (deprecated)
```

Bit Number of Lowest Level (at Specified Level)

```
:MEASure:AMPLitude:LSYMbol (new)
:MEASure:AMPLitude:LSYMbol:LEVel (new)
:MEASure:AMPLitude:LSYMbol:LOCation? (new)
:MEASure:AMPLitude:LSYMbol:SOURce (new)
:MEASure:AMPLitude:LSYMbol:STATus? (new)
:MEASure:AMPLitude:LSYMbol:STATus:REASon? (new)
:MEASure:AMPLitude:LZERo (deprecated)
:MEASure:AMPLitude:LZERo:LOCation? (deprecated)
```

```
:MEASure:AMPLitude:LZERo:SOURce (deprecated)
:MEASure:AMPLitude:LZERo:STATus? (deprecated)
:MEASure:AMPLitude:LZERo:STATus:REASon? (deprecated)
:MEASure:AMPLitude:LONe (deprecated)
:MEASure:AMPLitude:LONe:LOCation? (deprecated)
:MEASure:AMPLitude:LONe:SOURce (deprecated)
:MEASure:AMPLitude:LONe:STATus? (deprecated)
:MEASure:AMPLitude:LONe:STATus:REASon? (deprecated)
```

Deterministic Interference

```
:MEASure:AMPLitude:DI (new)
:MEASure:AMPLitude:DI:LEVel (new)
:MEASure:AMPLitude:DI:LOCation? (new)
:MEASure:AMPLitude:DI:SOURce (new)
:MEASure:AMPLitude:DI:STATus? (new)
:MEASure:AMPLitude:DI:STATus:REASon? (new)
:MEASure:AMPLitude:DIONes (deprecated)
:MEASure:AMPLitude:DIONes:LOCation? (deprecated)
:MEASure:AMPLitude:DIONes:SOURce (deprecated)
:MEASure:AMPLitude:DIONes:STATus? (deprecated)
:MEASure:AMPLitude:DIONes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:DIZeros (deprecated)
:MEASure:AMPLitude:DIZeros:LOCation? (deprecated)
:MEASure:AMPLitude:DIZeros:SOURce (deprecated)
:MEASure:AMPLitude:DIZeros:STATus? (deprecated)
:MEASure:AMPLitude:DIZeros:STATus:REASon? (deprecated)
```

Eye Height

```
:MEASure:AMPLitude:EHEight (new)
:MEASure:AMPLitude:EHEight:EYE (new)
:MEASure:AMPLitude:EHEight:LOCation? (new)
:MEASure:AMPLitude:EHEight:SOURce (new)
:MEASure:AMPLitude:EHEight:STATus? (new)
:MEASure:AMPLitude:EHEight:STATus:REASon? (new)
```

Eye Opening

```
:MEASure:AMPLitude:EOPening:EYE (new)
```

Inter-Symbol Interference

```
:MEASure:AMPLitude:ISI (new)
:MEASure:AMPLitude:ISI:LEVel (new)
:MEASure:AMPLitude:ISI:LOCation? (new)
:MEASure:AMPLitude:ISI:SOURce (new)
:MEASure:AMPLitude:ISI:STATus? (new)
:MEASure:AMPLitude:ISI:STATus:REASon? (new)
:MEASure:AMPLitude:ISIOnes (deprecated)
:MEASure:AMPLitude:ISIOnes:LOCation? (deprecated)
:MEASure:AMPLitude:ISIOnes:SOURce (deprecated)
:MEASure:AMPLitude:ISIOnes:STATus? (deprecated)
:MEASure:AMPLitude:ISIOnes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:ISIZeros (deprecated)
```

```
:MEASure:AMPLitude:ISIZeros:LOCation? (deprecated)
:MEASure:AMPLitude:ISIZeros:SOURce (deprecated)
:MEASure:AMPLitude:ISIZeros:STATus? (deprecated)
:MEASure:AMPLitude:ISIZeros:STATus:REASon? (deprecated)
```

Inter-Symbol Interference Versus Symbol

```
:MEASure:AMPLitude:ISISymbol? (new)
:MEASure:AMPLitude:ISISymbol:HIGHest? (new)
:MEASure:AMPLitude:ISISymbol:LOWest? (new)
:MEASure:AMPLitude:ISISymbol:SYMBols? (new)
:MEASure:AMPLitude:ISIVsbit? (deprecated)
:MEASure:AMPLitude:ISIVsbit:BITS (deprecated)
:MEASure:AMPLitude:ISIVsbit:HIGHest (deprecated)
:MEASure:AMPLitude:ISIVsbit:LOWest (deprecated)
```

Periodic Interference / BIR (rms) (Bounded Uncorrelated Interference)

```
:MEASure:AMPLitude:PIR (new)
:MEASure:AMPLitude:PIR:LEVel (new)
:MEASure:AMPLitude:PIR:LOCation? (new)
:MEASure:AMPLitude:PIR:SOURce (new)
:MEASure:AMPLitude:PIR:STATus? (new)
:MEASure:AMPLitude:PIR:STATus:REASon? (new)
:MEASure:AMPLitude:PIROnes (deprecated)
:MEASure:AMPLitude:PIROnes:LOCation? (deprecated)
:MEASure:AMPLitude:PIROnes:SOURce (deprecated)
:MEASure:AMPLitude:PIROnes:STATus? (deprecated)
:MEASure:AMPLitude:PIROnes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:PIRZeros (deprecated)
:MEASure:AMPLitude:PIRZeros:LOCation? (deprecated)
:MEASure:AMPLitude:PIRZeros:SOURce (deprecated)
:MEASure:AMPLitude:PIRZeros:STATus? (deprecated)
:MEASure:AMPLitude:PIRZeros:STATus:REASon? (deprecated)
:MEASure:AMPLitude:BIROnes (deprecated)
:MEASure:AMPLitude:BIROnes:LOCation? (deprecated)
:MEASure:AMPLitude:BIROnes:SOURce (deprecated)
:MEASure:AMPLitude:BIROnes:STATus? (deprecated)
:MEASure:AMPLitude:BIROnes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:BIRZeros (deprecated)
:MEASure:AMPLitude:BIRZeros:LOCation? (deprecated)
:MEASure:AMPLitude:BIRZeros:SOURce (deprecated)
:MEASure:AMPLitude:BIRZeros:STATus? (deprecated)
:MEASure:AMPLitude:BIRZeros:STATus:REASon? (deprecated)
```

Periodic Interference (dual-dirac) or BUI (Bounded Uncorrelated Interference)

```
:MEASure:AMPLitude:PI (new)
:MEASure:AMPLitude:PI:LEVel (new)
:MEASure:AMPLitude:PI:LOCation? (new)
:MEASure:AMPLitude:PI:SOURce (new)
:MEASure:AMPLitude:PI:STATus? (new)
:MEASure:AMPLitude:PI:STATus:REASon? (new)
:MEASure:AMPLitude:PIONes (deprecated)
:MEASure:AMPLitude:PIONes:LOCation? (deprecated)
```

```
:MEASure:AMPLitude:PIONes:SOURce (deprecated)
:MEASure:AMPLitude:PIONes:STATus? (deprecated)
:MEASure:AMPLitude:PIONes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:PIZeros (deprecated)
:MEASure:AMPLitude:PIZeros:LOCation? (deprecated)
:MEASure:AMPLitude:PIZeros:SOURce (deprecated)
:MEASure:AMPLitude:PIZeros:STATus? (deprecated)
:MEASure:AMPLitude:PIZeros:STATus:REASon? (deprecated)
:MEASure:AMPLitude:BUIOnes (deprecated)
:MEASure:AMPLitude:BUIOnes:LOCation? (deprecated)
:MEASure:AMPLitude:BUIOnes:SOURce (deprecated)
:MEASure:AMPLitude:BUIOnes:STATus? (deprecated)
:MEASure:AMPLitude:BUIOnes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:BUIZeros (deprecated)
:MEASure:AMPLitude:BUIZeros:LOCation? (deprecated)
:MEASure:AMPLitude:BUIZeros:SOURce (deprecated)
:MEASure:AMPLitude:BUIZeros:STATus? (deprecated)
:MEASure:AMPLitude:BUIZeros:STATus:REASon? (deprecated)
```

Q Measurement

```
:MEASure:AMPLitude:Q:EYE (new)
```

Random Noise

```
:MEASure:AMPLitude:RN (new)
:MEASure:AMPLitude:RN:LEVel (new)
:MEASure:AMPLitude:RN:LOCation? (new)
:MEASure:AMPLitude:RN:SOURce (new)
:MEASure:AMPLitude:RN:STATus? (new)
:MEASure:AMPLitude:RN:STATus:REASon? (new)
:MEASure:AMPLitude:RNONes (deprecated)
:MEASure:AMPLitude:RNONes:LOCation? (deprecated)
:MEASure:AMPLitude:RNONes:SOURce (deprecated)
:MEASure:AMPLitude:RNONes:STATus? (deprecated)
:MEASure:AMPLitude:RNONes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:RNZeros (deprecated)
:MEASure:AMPLitude:RNZeros:LOCation? (deprecated)
:MEASure:AMPLitude:RNZeros:SOURce (deprecated)
:MEASure:AMPLitude:RNZeros:STATus? (deprecated)
:MEASure:AMPLitude:RNZeros:STATus:REASon? (deprecated)
```

SER (Symbol Error Rate) Floor

```
:MEASure:AMPLitude:SERFloor (new)
:MEASure:AMPLitude:SERFloor:EYE (new)
:MEASure:AMPLitude:SERFloor:LOCation? (new)
:MEASure:AMPLitude:SERFloor:SOURce (new)
:MEASure:AMPLitude:SERFloor:STATus? (new)
:MEASure:AMPLitude:SERFloor:STATus:REASon? (new)
:MEASure:AMPLitude:BERFloor (deprecated)
:MEASure:AMPLitude:BERFloor:LOCation? (deprecated)
:MEASure:AMPLitude:BERFloor:SOURce (deprecated)
:MEASure:AMPLitude:BERFloor:STATus? (deprecated)
:MEASure:AMPLitude:BERFloor:STATus:REASon? (deprecated)
```

SER (Symbol Error Rate) Limit

```
:MEASure:AMPLitude:SERLimit (new)
:MEASure:AMPLitude:SERLimit:EYE (new)
:MEASure:AMPLitude:SERLimit:LOCation? (new)
:MEASure:AMPLitude:SERLimit:SOURce (new)
:MEASure:AMPLitude:SERLimit:STATus? (new)
:MEASure:AMPLitude:SERLimit:STATus:REASon? (new)
:MEASure:AMPLitude:BERLimit (deprecated)
:MEASure:AMPLitude:BERLimit:LOCation? (deprecated)
:MEASure:AMPLitude:BERLimit:SOURce (deprecated)
:MEASure:AMPLitude:BERLimit:STATus? (deprecated)
:MEASure:AMPLitude:BERLimit:STATus:REASon? (deprecated)
```

Symbol Level

```
:MEASure:AMPLitude:LEVel (new)
:MEASure:AMPLitude:LEVel:LEVel (new)
:MEASure:AMPLitude:LEVel:LOCation? (new)
:MEASure:AMPLitude:LEVel:SOURce (new)
:MEASure:AMPLitude:LEVel:STATus? (new)
:MEASure:AMPLitude:LEVel:STATus:REASon? (new)
:MEASure:AMPLitude:OLEVel (deprecated)
:MEASure:AMPLitude:OLEVel:LOCation? (deprecated)
:MEASure:AMPLitude:OLEVel:SOURce (deprecated)
:MEASure:AMPLitude:OLEVel:STATus? (deprecated)
:MEASure:AMPLitude:OLEVel:STATus:REASon? (deprecated)
:MEASure:AMPLitude:ZLEVel (deprecated)
:MEASure:AMPLitude:ZLEVel:LOCation? (deprecated)
:MEASure:AMPLitude:ZLEVel:SOURce (deprecated)
:MEASure:AMPLitude:ZLEVel:STATus? (deprecated)
:MEASure:AMPLitude:ZLEVel:STATus:REASon? (deprecated)
```

Total Interference

```
:MEASure:AMPLitude:TI (new)
:MEASure:AMPLitude:TI:LEVel (new)
:MEASure:AMPLitude:TI:LOCation? (new)
:MEASure:AMPLitude:TI:SOURce (new)
:MEASure:AMPLitude:TI:STATus? (new)
:MEASure:AMPLitude:TI:STATus:REASon? (new)
:MEASure:AMPLitude:TIONes (deprecated)
:MEASure:AMPLitude:TIONes:LOCation? (deprecated)
:MEASure:AMPLitude:TIONes:SOURce (deprecated)
:MEASure:AMPLitude:TIONes:STATus? (deprecated)
:MEASure:AMPLitude:TIONes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:TIZeros (deprecated)
:MEASure:AMPLitude:TIZeros:LOCation? (deprecated)
:MEASure:AMPLitude:TIZeros:SOURce (deprecated)
:MEASure:AMPLitude:TIZeros:STATus? (deprecated)
:MEASure:AMPLitude:TIZeros:STATus:REASon? (deprecated)
```

Uncorrelated Noise

```
:MEASure:AMPLitude:UN (new)
```

```
:MEASure:AMPLitude:UN:LEVel (new)
:MEASure:AMPLitude:UN:LOCation? (new)
:MEASure:AMPLitude:UN:SOURce (new)
:MEASure:AMPLitude:UN:STATus? (new)
:MEASure:AMPLitude:UN:STATus:REASon? (new)
:MEASure:AMPLitude:UNONes (deprecated)
:MEASure:AMPLitude:UNONes:LOCation? (deprecated)
:MEASure:AMPLitude:UNONes:SOURce (deprecated)
:MEASure:AMPLitude:UNONes:STATus? (deprecated)
:MEASure:AMPLitude:UNONes:STATus:REASon? (deprecated)
:MEASure:AMPLitude:UNZeros (deprecated)
:MEASure:AMPLitude:UNZeros:LOCation? (deprecated)
:MEASure:AMPLitude:UNZeros:SOURce (deprecated)
:MEASure:AMPLitude:UNZeros:STATus? (deprecated)
:MEASure:AMPLitude:UNZeros:STATus:REASon? (deprecated)
```

Outer Extinction Ratio

```
:MEASure:EYE:OER (new)
:MEASure:EYE:OER:LOCation? (new)
:MEASure:EYE:OER:SOURce (new)
:MEASure:EYE:OER:STATus? (new)
:MEASure:EYE:OER:STATus:REASon? (new)
:MEASure:EYE:OER:UNITs (new)
```

Outer OMA measurement

```
:MEASure:EYE:OOMA (new)
:MEASure:EYE:OOMA:LOCation? (new)
:MEASure:EYE:OOMA:SOURce (new)
:MEASure:EYE:OOMA:STATus? (new)
:MEASure:EYE:OOMA:STATus:REASon? (new)
```

Transmitter and Dispersion Eye Closure for PAM4 (TDECQ)

```
:MEASure:EYE:TDEQ (new)
:MEASure:EYE:TDEQ:LOCation? (new)
:MEASure:EYE:TDEQ:SOURce (new)
:MEASure:EYE:TDEQ:STATus? (new)
:MEASure:EYE:TDEQ:STATus:REASon? (new)
:MEASure:TDEQ:HWIDth (new)
:MEASure:TDEQ:PRESets (new)
:MEASure:TDEQ:PRESets:SELections (new)
:MEASure:TDEQ:TSER (new)
```

Duty Cycle Distortion (DCD)

```
:MEASure:JITTer:DCD:EYE (new)
```

Data-Dependent Jitter (DDJ)

```
:MEASure:JITTer:DDJ:EYE (new)
```

Data-Dependent Jitter Versus Symbol

```
:MEASure:JITTer:DDJSymbol? (new)
:MEASure:JITTer:DDJSymbol:EARLiest? (new)
:MEASure:JITTer:DDJSymbol:LATest? (new)
:MEASure:JITTer:DDJSymbol:SYMBols? (new)
:MEASure:JITTer:DDJVsbit? (deprecated)
:MEASure:JITTer:DDJVsbit:BITS? (deprecated)
:MEASure:JITTer:DDJVsbit:EARLiest? (deprecated)
:MEASure:JITTer:DDJVsbit:LATest? (deprecated)
```

Data Dependant Pulse Width Shrinkage (DDPWS)

```
:MEASure:JITTer:DDPWs:EYE (new)
```

Deterministic Jitter (DJ)

```
:MEASure:JITTer:DJ:EYE (new)
```

Eye Skew

```
:MEASure:JITTer:ESKew (new)
:MEASure:JITTer:ESKew:EYE (new)
:MEASure:JITTer:ESKew:LOCation? (new)
:MEASure:JITTer:ESKew:SOURce (new)
:MEASure:JITTer:ESKew:STATus? (new)
:MEASure:JITTer:ESKew:STATus:REASon? (new)
```

Eye Width

```
:MEASure:JITTer:EWIDth (new)
:MEASure:JITTer:EWIDth:EYE (new)
:MEASure:JITTer:EWIDth:LOCation? (new)
:MEASure:JITTer:EWIDth:SOURce (new)
:MEASure:JITTer:EWIDth:STATus? (new)
:MEASure:JITTer:EWIDth:STATus:REASon? (new)
```

F/2 jitter

```
:MEASure:JITTer:FOVer:EYE (new)
```

Inter-Symbol Interference (ISI)

```
:MEASure:JITTer:ISI:EYE (new)
```

J1, J2, J3, J4, J5, J6, J7, J8, or J9

```
:MEASure:JITTer:JN:EYE (new)
```

Jitter Sampling Level

```
:MEASure:JITTer:LEVel:EYE (new)
```

Select a Measurement Listing in Eye and Level Results Tables

```
:MEASure:JITTer:PAM:EYE:LIST:SELect (new)
```

```
:MEASure:JITTer:PAM:LEVel:LIST:SELect (new)
```

Periodic Jitter (PJ)

```
:MEASure:JITTer:PJ:EYE (new)
```

Periodic Jitter (PJ) RMS

```
:MEASure:JITTer:PJRMs:EYE (new)
```

Random Jitter

```
:MEASure:JITTer:RJ:EYE (new)
```

Total Jitter

```
:MEASure:JITTer:TJ:EYE (new)
```

Uncorrelated Jitter (UJ)

```
:MEASure:JITTer:UJ:EYE (new)
```

Return ordered list of edge symbol numbers

```
:MEASure:JITTer:ESYMbols? (new)
:MEASure:JITTer:EBITs? (deprecated A.05.60)
```

Measurement Definitions

```
:MEASure:AMPLitude:DEFine:LOCation:PERCent:LEVel (new)
:MEASure:AMPLitude:DEFine:LOCation:TYPE (new)
:MEASure:AMPLitude:DEFine:RNCValue:LEVel (new)
:MEASure:AMPLitude:DEFine:RNCValue:ONE (deprecated)
:MEASure:AMPLitude:DEFine:RNCValue:ZERO (deprecated)
:MEASure:AMPLitude:DEFine:RNSValue:LEVel (new)
:MEASure:AMPLitude:DEFine:RNSValue:ONE (deprecated)
:MEASure:AMPLitude:DEFine:RNSValue:ZERO (deprecated)
:MEASure:JITTer:DEFine:EOPening (new)
:MEASure:JITTer:DEFine:EOPening:PROBability (new)
:MEASure:JITTer:DEFine:LEVel:CUSTom (deprecated)
:MEASure:JITTer:DEFine:LEVel:CUSTom:EYE (new)
:MEASure:JITTer:DEFine:LEVel:PERCent (deprecated)
:MEASure:JITTer:DEFine:LEVel:PERCent:EYE (new)
:MEASure:JITTer:DEFine:LEVel:TYPe (modified)
:MEASure:JITTer:DEFine:LWIDth (new)
:MEASure:JITTer:DEFine:LWIDth:PERCent (new)
:MEASure:JITTer:DEFine:THReshold:ECDefinition (new)
:MEASure:JITTer:DEFine:THReshold:ESTiming (new)
:MEASure:JITTer:DEFine:THReshold:PRESets (new)
:MEASure:JITTer:DEFine:THReshold:PRESets:SELections? (new)
:MEASure:JITTer:DEFine:THReshold:PROBability (new)
```

Eye Contours and Advanced Eye Analysis Configuration

```
:MEASure:PAM:OSCilloscope:LRMS:GALL (new)
:MEASure:PAM:OSCilloscope:LRMS:LEVel (new)
```

SLOT Subsystem

```
:SLOT:TRIGger:SRATe (new)
:SLOT:TRIGger:SRATe:AUTodetect (new)
:SLOT:TRIGger:BRATe (deprecated)
:SLOT:TRIGger:BRATe:AUTodetect (deprecated)
```

SOURce Subsystem

```
:SOURce:SRATe (new)
:SOURce:DRATe (deprecated)
```

SPRocess Subsystem

Align Math Operator

```
:SPRocess:ALIGn:TIMe:AUTo (modified)
:SPRocess:ALIGn:TIMe:RECalculate (modified)
```

Bessel Filter Math Operator

```
:SPRocess:BESSel:PNOise (new)
:SPRocess:BESSel:PNOise:BANDwidth (new)
:SPRocess:BESSel:PNOise:BANDwidth:AUTo (new)
```

Butterworth Filter Math Operator

```
:SPRocess:BUTTerworth:PNOise (new)
:SPRocess:BUTTerworth:PNOise:BANDwidth (new)
:SPRocess:BUTTerworth:PNOise:BANDwidth:AUTo (new)
```

Continuous Time Linear Equalizer (CTLE) Math Operator

```
:SPRocess:CTLequalizer:PNOise (new)
:SPRocess:CTLequalizer:PNOise:BANDwidth (new)
:SPRocess:CTLequalizer:PNOise:BANDwidth:AUTo (new)
```

Decision Feedback Equalizer Math Operator

```
:SPRocess:DFEQualizer:TAPS (modified)
:SPRocess:DFEQualizer:TAPS:AUTo (modified)
:SPRocess:DFEQualizer:TAPS:COUNt (modified)
:SPRocess:DFEQualizer:TAPS:LLIMit (modified)
:SPRocess:DFEQualizer:TAPS:RECalculate (modified)
:SPRocess:DFEQualizer:TAPS:ULIMit (modified)
```

Linear Equalizer Math Operator

```
:SPRocess:FFEQualizer:NPRecursors (modified)
:SPRocess:FFEQualizer:PNOise (new)
:SPRocess:FFEQualizer:PNOise:BANDwidth (new)
:SPRocess:FFEQualizer:PNOise:BANDwidth:AUTo (new)
:SPRocess:FFEQualizer:TAPS (modified)
:SPRocess:FFEQualizer:TAPS:AUTo (modified)
```

```
:SPRocess:FFEQualizer:TAPS:COUNt (modified)
:SPRocess:FFEQualizer:TAPS:NORMalize (modified)
:SPRocess:FFEQualizer:TAPS:RECalculate (modified)
:SPRocess:FFEQualizer:TSPacing (modified)
:SPRocess:FFEQualizer:TSPacing:TPUI (new)
:SPRocess:FFEQualizer:TSPacing:TPBit (deprecated)
```

Gaussian Filter Math Operator

```
:SPRocess:GAUSsian:PNOise (new)
:SPRocess:GAUSsian:PNOise:BANDwidth (new)
:SPRocess:GAUSsian:PNOise:BANDwidth:AUTo (new)
```

Sin(x)/x Math Operator

```
:SPRocess:SINC:BANDwidth (new)
:SPRocess:SINC:PNOise (new)
:SPRocess:SINC:PNOise:BANDwidth (new)
:SPRocess:SINC:PNOise:BANDwidth:AUTo (new)
```

TDECQ (Transmitter and Dispersion Eye Closure Quaternary) Equalizer Math Operator

```
:SPRocess:TEQualizer:DCGain? (new)
:SPRocess:TEQualizer:NPRecursors (new)
:SPRocess:TEQualizer:PNOise (new)
:SPRocess:TEQualizer:PNOise:BANDwidth (new)
:SPRocess:TEQualizer:PNOise:BANDwidth:AUTo (new)
:SPRocess:TEQualizer:PRESets (new)
:SPRocess:TEQualizer:PRESets:SELections (new)
:SPRocess:TEQualizer:TAPS (new)
:SPRocess:TEQualizer:TAPS:AUTo (new)
:SPRocess:TEQualizer:TAPS:COUNt (new)
:SPRocess:TEQualizer:TAPS:NORMalize (new)
:SPRocess:TEQualizer:TAPS:RECalculate (new)
:SPRocess:TEQualizer:TSPacing:TPUI (new)
```

SYSTem Subsystem

```
:SYSTem:SIGNal:TYPE? (new)
```

TIMebase Subsystem

```
:TIMebase:SRATe (new)
:TIMebase:UIPosition (new)
:TIMebase:UIRange (new)
:TIMebase:UNITs (modified)
:TIMebase:BPOSition (deprecated)
:TIMebase:BRANge (deprecated)
:TIMebase:BRATe (deprecated)
```

TRIGger Subsystem

```
:TRIGger:SRATe (new)
:TRIGger:SRATe:AUTodetect (new)
```

```
:TRIGger:BRATe (deprecated)
:TRIGger:BRATe:AUTodetect (deprecated)
```

WAVeform Subsystem

```
:WAVeform:PATTern:NSYMbols? (new)
:WAVeform:PATTern:PPUI? (new)
:WAVeform:PATTern:SRATe? (new)
:WAVeform:PATTern:BITS? (deprecated)
:WAVeform:PATTern:PPBit? (deprecated))
:WAVeform:PATTern:BRATe? (deprecated)
```

WMEMory Subsystem

```
:WMEMory:SRATe (new)
:WMEMory:BRATe (deprecated)
```

Revision A.05.51, October 2016

Differences from revision A.05.50.

New Features

- Revised specifications for N1092A/B/C/D/E and N1094A/B DCA-M multiple-channel sampling oscilloscopes.

Defects Fixed

- Fixed a problem that could occur when attempting to autoscale a signal with free run trigger.
- Fixed a problem with the 86115D-004.
- Fixed a problem where the Uncertainty for the Mask Test Auto-margin Hit Ratio was reporting an artificially low number after a large amount of data was acquired.
- Fixed a problem where differential signals with a large common mode offset would be incorrectly auto scaled.
- Fixed a problem on calibrated TDR traces when measuring the end of a long device where not enough data was being acquired to properly correct the response.

Revision A.05.50, September 2016

Differences from revision A.05.41.

New Features

- FlexDCA is compatible with Windows 7, Windows 8, and Windows 10 but is *not* compatible with Windows XP.
- Support for new N1092C and N1092E DCA-M multiple-channel optical/electrical sampling oscilloscopes.
- Support for new N1094A/B DCA-M multiple-channel electrical sampling oscilloscopes.
- Support for new N1076A electrical clock recovery extended module.
- Support for new N1077A optical/electrical clock recovery extended module.
- Ability to configure a 3rd pole for the CTLE math function.
- New Eye mode OMA at Crossing measurement for optical NRZ signals.
- New Eye mode VECP measurement for optical NRZ signals.
- Changed existing TDEC eye measurement to calculate OMA using the new Eye-mode OMA at Crossing measurement.

Defects Fixed

- Fixed a defect that prevents jitter mode measurements on PRBS-15 patterns when running FlexDCA in compatibility mode or when connected remotely to an 86100C instrument.
- Fixed a defect that caused incorrect measurements across TDR modules when TDR calibration was active.
- Fixed a defect that would occasionally prevent TDR De-Embedding on multiple ports of a single DUT.
- Fixed a hang that would occur if a screen capture was initiated from SCPI while, in the GUI, the user was dragging the FlexDCA application across the screen.
- Fixed a defect in Jitter Mode's Eye Opening measurement.

MEASure Subsystem

```
:MEASure:EYE:OMAXp (new)
:MEASure:EYE:OMAXp:LOCation? (new)
:MEASure:EYE:OMAXp:SOURce (new)
:MEASure:EYE:OMAXp:STATus? (new)
:MEASure:EYE:OMAXp:STATus:REASon? (new)
```

```
:MEASure:EYE:TDEC:OMA:METHod (modified)
:MEASure:EYE:VECP (new)
:MEASure:EYE:VECP:LOCation? (new)
:MEASure:EYE:VECP:OMA:METHod (new)
:MEASure:EYE:VECP:OMA:VALue (new)
:MEASure:EYE:VECP:SOURce (new)
:MEASure:EYE:VECP:STATus? (new)
:MEASure:EYE:VECP:STATus:REASon? (new)
```

SPRocess Subsystem

```
:SPRocess:CTLequalizer:PCOunt (new)
:SPRocess:CTLequalizer:POLe3 (modified)
:SPRocess:CTLequalizer:ZERo2 (modified)
```

Revision A.05.41, June 2016

Differences from revision A.05.40.

General Comments

- Support for Windows 10.
- Support for SCPI over VXI-11 with Windows 8 and Windows 10.
- For optical channel reference filters, added the ability to specify the filter using the filter 3 dB bandwidth (Hz) in addition to the existing capability of specifying them by data rate (b/s).
- When an Extinction Ratio Correction Factor (ERCF) is applied, added the ability to turn on or off the display of the ERCF values in the measurement results panel.
- Added the ability to remotely break a Flex-on-Flex connection *from* the 86100D.
- Added a response to the :SYSTem:HAL? programming query that indicates that FlexDCA is running as an independent FlexEye session instance in Eye/Mask mode's FlexEye Independent Eye Acquisition.
- Updated the Python example programs to use the new keyflex module. This module makes your programs easier to create and provides many functions that you can leverage.

Defects Fixed

- Fixed a defect that could cause a SCPI timeout error when using the N4877A Clock/Data Recovery and Demultiplexer.

APPLication Subsystem

```
:APPLication:CNAMe? (new)
:APPLication:CSTate? (new)
:APPLication:RDISconnect? (new)
```

CHANnel Subsystem

```
:CHANnel:BANDwidth:FREQuency (preferred over :CHANNel:BANDwidth because
selection is made explicitly instead of implicitly)
:CHANnel:FSELect:BANDwidth (new) (preferred over :CHANNel:FSELect because
selection is made explicitly instead of implicitly)
:CHANnel:FSELect:BANDwidth:MAXimum (new)
:CHANnel:FSELect:BANDwidth:MINimum (new)
:CHANnel:FSELect:BANDwidth:VSET (new)
```

:CHANnel:FSELect:RATe *(preferred over :CHANNel:FSELect because selection is made explicitly instead of implicitly)*
:CHANnel:WAVelength:VALue *(preferred over :CHANNel:WAVelength because selection is made explicitly instead of implicitly)*

MEASure Subsystem

:MEASure:ERATio:DCFactor (new)

SYSTem Subsystem

- :SYSTem:HAL? (revised)

Revision A.05.40, May 2016

Differences from revision A.05.31.

General Comments

- Support for new N1092A/B/D DCA-M multiple-channel optical sampling oscilloscope extended module.
- New FlexEye Independent Eye Acquisition and Analysis.
- In TDR/TDT mode, added N1930B PLTS Automatic Fixture Removal (AFR). Automatic Fixture Removal requires FlexDCA option N1010A-AFR.
- When defining an external transducer, you can now indicate signal inversion (negative gain).
- Added new 100G SR4 stressed receiver mask (25.78125 - 100GBASE-SR4_Rx_SEC_Optical.mskx) as an available mask in Eye/Mask mode.
- Added the ability to copy signal processing operators within the signal processing construction area. By holding the control key while dragging, you can duplicate an operator including its configuration.
- Expanded offering of Python example programs.

CHANnel Subsystem

```
:CHANnel:TRANsducer:INVert
```

DISK Subsystem

```
:DISPlay:DWIZard:T:OHMS:SDATa
:DISPlay:DWIZard:T:PERCent:SDATa
:DISPlay:DWIZard:T:VOLTs:SDATa
:DISPlay:DWIZard:TOHMs:SDATa (deprecated)
:DISPlay:DWIZard:TPERcent:SDATa (deprecated)
:DISPlay:DWIZard:TVOLts:SDATa (deprecated)
```

DISPlay Subsystem

```
:DISPlay:TSMode
```

FEYE Subsystem (new)

```
:FEYE:CHANnel:ENABled
:FEYE:CHANnel:SID
:FEYE:DIFF:ENABled
```

```
:FEYE:DIFF:SID
:FEYE:SAMPles
:FEYE:STATe
:FEYE:VIEW
```

SLOT Subsystem

```
TRIGger:BRATe
TRIGger:BRATe:AUTodetect
TRIGger:DCDRatio
TRIGger:DCDRatio:AUTodetect
TRIGger:PLENgth
TRIGger:PLENgth:AUTodetect
TRIGger:TRACking
```

Revision A.05.31, March 2016

Differences from revision A.05.30.

General Comments

- Improved the ability of the 86108A and 86108B to lock clock recovery to PAM-4 signals.

Defects Fixed

- Fixed a defect that could cause the eye diagram to be mis-aligned in Jitter Mode when SIRC or other signal processing was in use.
- Fixed a defect in differential de-embedding when a block was defined as "Dual 2-port" and the second port pair was a combination of sub-circuits.

Revision A.05.30, January 2016

Differences from revision A.05.01.

General Comments

- Documented support for new N1055A TDR/TDT module option FS1 (fast sample rate). Option FS1 is automatically included on new N1055A modules.
- Documented N1090A electrical input connector (N1090A Option EEC).

New Features

- Single-ended and differential de-embedding of TDR/TDT responses
- N1010A FlexDCA can now connect directly to the 86100D's FlexDCA application. As a result, N1010A FlexDCA supports TDR/TDT mode and all mini one-slot modules such as the N1055A TDR/TDT. The firmware version of N1010A FlexDCA and the 86100D's FlexDCA should be the same version (≥A.05.30).
- Draw eye contours on eye diagrams with Eye/Mask mode's Advanced Eye.
- New limit-line tools for creating and editing limit-lines in TDR/TDT and oscilloscope mode. The editor allows you to create and edit limit lines using a graphical user interface rather than directly modifying ASCII limit-line definition files in a text editor.
- Added DI, RN, and TI Advanced Eye measurements for NRZ signals. If the PAM-4 license is also installed these measurements cn also be made on PAM-4 signals.
- For DJ, Jn, RJ, and TJ Advanced Eye measurements added the ability to select an individual eye within an eye diagram on which to perform the measurement. These measurements work with NRZ signals and PAM-4 signals (if fhe PAM-4 license is also installed).
- Simplified selection of TDR/TDT mode's measurement setup. The two setup tools, TDR DUT Based Setup and TDR Basic Control are still available, however the TDR DUT Based Setup has been emphasized while the TDR Basic Control setup can now only be accessed from the menu (click Setup > TDR Basic Control). The TDR DUT Based Setup is the recommended methods to use.
- Display of in-phase and quadrature input waveforms on the setup dialog boxes for precision timebase references such as the 86100D-PTB, 86108B-PTD, and 86107A. To remotely query the waveform data, use the :WAVeform:SOURce command.
- Added to this help nine example programs for controlling FlexDCA. These are Python examples provided for both Python 3.4 and 2.7.

CHANnel Subsystem

```
:CHANnel:BANDwidth:FREQuency (added command form)
:CHANnel:BANDwidth:FREQuency:MAXimum
:CHANnel:BANDwidth:FREQuency:MINimum
:CHANnel:BANDwidth:FREQuency:VSET?
:CHANnel:FSELect:RATe (added command form)
:CHANnel:FSELect:RATe:MAXimum
:CHANnel:FSELect:RATe:MINimum
:CHANnel:FSELect:RATe:VSET?
:CHANnel:WAVelength:VALue (added command form)
:CHANnel:WAVelength:VALue:VSET?
```

DISK Subsystem

```
:DISK:DWIZard:ECResults:SDATa
:DISK:FILE:ASCii:READ?
:DISK:FILE:EXISts?
:DISK:FILE:READ?
:DISK:FILE:SIZE?
:DISK:FILE:WRITe?
:DISK:FILE:BFILe (deprecated)
:DISK:FILE:TFILe (deprecated)
```

DISPlay Subsystem

```
:DISPlay:WINDow:ECLegend
:DISPlay:WINDow:TIME:LEGend:ECEXpand
```

ECONtour Subsystem

```
:ECONtour:BERates
:ECONtour:DISPlay
:ECONtour:PSPec
:ECONtour:RJSTabilize
:ECONtour:RJSValue:EYE
:ECONtour:RNSTabilize
:ECONtour:RNSValue:LEVel
:ECONtour:SOURce
```

LLINe Subsystem

```
:LLINe:SFILe
:LLINe:SFName
```

:MEASure Subsystem (Acquisition)

```
:MEASure:ACQuire:ECOunt?
```

:MEASure Subsystem (Advanced Eye)

```
:MEASure:EYE:DI
:MEASure:EYE:DI:LEVel
```

```
:MEASure:EYE:DI:LOCation
:MEASure:EYE:DI:RNSTabilize
:MEASure:EYE:DI:RNSValue:LEVel
:MEASure:EYE:DI:SOURce
:MEASure:EYE:DI:STATus
:MEASure:EYE:DI:STATus:REASon
:MEASure:EYE:DJ:EYE
:MEASure:EYE:DJ:RJSValue (deprecated)
:MEASure:EYE:DJ:RJSValue:EYE
:MEASure:EYE:JN:EYE
:MEASure:EYE:JN:RJSValue (deprecated)
:MEASure:EYE:JN:RJSValue:EYE
:MEASure:EYE:RJ:EYE
:MEASure:EYE:RJ:RJSValue (deprecated)
:MEASure:EYE:RJ:RJSValue:EYE
:MEASure:EYE:RN
:MEASure:EYE:RN:LEVel
:MEASure:EYE:RN:LOCation
:MEASure:EYE:RN:RNSTabilize
:MEASure:EYE:RN:RNSValue:LEVel
:MEASure:EYE:RN:SOURce
:MEASure:EYE:RN:STATus
:MEASure:EYE:RN:STATus:REASon
:MEASure:EYE:TI
:MEASure:EYE:TI:LEVel
:MEASure:EYE:TI:LOCation
:MEASure:EYE:TI:RNSTabilize
:MEASure:EYE:TI:RNSValue:LEVel
:MEASure:EYE:TI:SOURce
:MEASure:EYE:TI:STATus
:MEASure:EYE:TI:STATus:REASon
:MEASure:EYE:TI:TIBer
:MEASure:EYE:TJ:EYE
:MEASure:EYE:TJ:RJSValue:EYE
:MEASure:EYE:TJ:RJSValue (deprecated)
```

:MEASure Subsystem (PAM 4)

```
:MEASure:EYE:PAM:EHeight:DEFine:EOPening:RJSTabilize
:MEASure:EYE:PAM:EHeight:DEFine:EOPening:RJSValue:EYE
:MEASure:EYE:PAM:EHeight:DEFine:EOPening:RNSTabilize
:MEASure:EYE:PAM:EHeight:DEFine:EOPening:RNSValue:LEVel
:MEASure:EYE:PAM:EWIDth:DEFine:EOPening:RJSTabilize
:MEASure:EYE:PAM:EWIDth:DEFine:EOPening:RJSValue:EYE
:MEASure:EYE:PAM:EWIDth:DEFine:EOPening:RNSTabilize
:MEASure:EYE:PAM:EWIDth:DEFine:EOPening:RNSValue:LEVel
```

:MEASure Subsystem (Limit Tests)

```
:MEASure:LTESt:ACQuire:COUNt?
```

PTIMebase Subsystem

```
:PTIMebase:VPTBsignals
```

RDCA Subsystem

```
:RDCA:CONNect:MODE
:RDCA:CONNect:TSETtings
:RDCA:DISConnect:TSETtings
```

SLOT Subsystem

```
:TRIGger:BRATe
:TRIGger:BRATe:AUTodetect
:TRIGger:DCDRatio
:TRIGger:DCDRatio:AUTodetect
:TRIGger:PLENgth
:TRIGger:PLENgth:AUTodetect
:TRIGger:TRACking
```

SYSTem Subsystem

```
:SYSTem:ERRor:COUNt?
:SYSTem:UTCNow?
```

TDR Subsystem

```
:TDR:DEEMbed:DUT:Enable
:TDR:DEEMbed:DUT:PORT:DPORt
:TDR:DEEMbed:DUT:PORT:FIXTure
:TDR:DEEMbed:DUT:PORT:TPORt
:TDR:FCOMponent:CLEar
:TDR:FCOMponent:LOAD
:TDR:FCOMponent:LOAD:FNAMe
:TDR:DEEMbed:FCOMponent:NOPorts?
:TDR:DEEMbed:FCOMponent:PORDer
:TDR:DEEMbed:FCOMponent:STATus?
:TDR:DEEMbed:FCOMponent:STATus:REASon?
```

TIMebase Subsystem

```
:TIMebase:PTIMebase:VPTBsignals
```

Revision A.05.01, October 2015

Differences from revision A.05.00.

General Comments

- Added 100G-CLR4 FEC mask
- Added TWDP and VECPq demo MATLAB user measurement scripts.
- For the N1090A DCA-M Single Optical Channel Sampling Oscilloscope, replaced the Clock Input Bandwidth specification with Clock Input Frequency. The N1090A can now be used with divided triggers down to 100 MHz, provided that the data rate exceeds 455 MHz. Added the Minimum Slew Rate specification.
- Improved measurement throughput for the N1055A module when FlexDCA is in TDR/TDT mode.
- Improved the accuracy and precision of fixture deskew.
- Added support for 32-bit versions of Windows 7 and 8. Windows XP is not supported.
- Renamed the File menu command “S-Parameter Memories” to “S-Parameter Viewer / Memories”.

Defects Fixed

- Fixed a defect that could cause autoscale to fail when using free-run PTB.
- Fixed a defect that could cause poor horizontal autoscale results when using a differential signal with the constituent channels not displayed.
- Fixed a defect where limit-line violation pixels were not being drawn correctly when the source signal was changed.
- Fixed defect where horizontal signal panning (via touch screen/mouse) did not work on waveform memories whose horizontal tracking was turned off.
- Fixed defect where BER Bathtub and JSA Spectrum graph did not have visible X and Y axis labels with the default black background.
- Fixed a problem preventing an 86107A PTB module from being used in an 86100D with the internal PTB option.
- Fixed defect that prevented help from being displayed when the help button was pressed on the module setup dialog for a USB module such as the N1090A.

Revision A.05.00, July 2015

Differences from revision A.04.53.

General Comments

- FlexDCA A.05.00 cannot be installed on 86100D mainframes running Windows XP. A mainframe upgrade to windows 7 is available.
- When installing FlexDCA on a PC, only 64 bit versions of Windows are supported.
- The VXI-11 server for controlling FlexDCA via SCPI remote commands cannot be enabled on Windows 8.1. SCPI connections via GPIB, Telnet, sockets, and HiSLIP do work with Windows 8.1.
- The skew range for the N1045A modules has been increased. To make use of this additional range, perform a skew calibration, which is available from the Skew tab in the Calibrations dialog box.

New Features

- Support for new N1090A DCA-M Optical Sampling Oscilloscope extended module.
- Ability to perform user optical calibrations on an N1090A extended module within FlexDCA.
- User-defined measurements that are based on Python, MATLAB, and Compiled MATLAB in Oscilloscope, Eye/Mask, and TDR/TDT modes. Requires the N1010A-201 Advanced Waveform Analysis license and the installation of Python or MATLAB.
- User-defined signal processing functions that are based on Python, MATLAB, and Compiled MATLAB. Requires the N1010A-201 Advanced Waveform Analysis license and the installation of Python or MATLAB.
- TDEC measurement in Eye/Mask mode (activated with N1010A-500 Productivity Package License).
- S-parameter memory for saving and viewing multiple S-parameter waveforms.
- Added programming Quick Start Guide with Python examples.
- Switch between black or white backgrounds on all windows that display signals.
- Hide or display the measurement annotations on waveforms.
- Define Waveform pan and zoom behavior. In addition, if FlexDCA is installed on a PC or 86100D with a capacitive display, you can select between mouse control or multi-touch gestures.
- Ability to include metadata in screen captures (jpg, tiff).

Defects Fixed

- Fixed a defect in the signal type detection autoscale algorithm when using PTB and a Free Run trigger.

:CALibrate Subsystem Commands

```
:CALibrate:DARK:CHANnel:DISCard
:CALibrate:OPTical:CONVersion?
:CALibrate:OPTical:USER:CHANnel:OPOWer
:CALibrate:OPTical:USER:CHANnel:STARt
:CALibrate:OPTical:USER:CHANnel:WAVelength
```

DISK Subsystem Commands

```
:DISK:SIMage:IMETadata
:DISK:SPARameter:EADifferenti
:DISK:SPARameter:LFName
:DISK:SPARameter:RECall
:DISK:SPARameter:RECall:DESTination
```

:DISPlay Subsystem Command

```
:DISPlay:GRATicule:CURSor
:DISPlay:MULTitouch:STATe
:DISPlay:SWINdows:INVert:STATe
```

:EMODules Subsystem Commands

```
:EMODules:DCAM:DEVice?
:EMODules:SLOT:CMEThod?
```

LTESt Subsystem

```
:LTESt:ACQuire:SIMage:IMETadata
:LTESt:LLINe:SIMage:IMETadata
:LTESt:MEASure:SIMage:IMETadata
:LTESt:MTESt:SIMage:IMETadata
```

:MEASure Subsystem Commands

```
:MEASure:ANNotations:STATe
:MEASure:EYE:TDEC
:MEASure:EYE:TDEC:LOCation?
:MEASure:EYE:TDEC:OMA:METHod
:MEASure:EYE:TDEC:OMA:VALue
:MEASure:EYE:TDEC:SOURce
:MEASure:EYE:TDEC:STATus?
:MEASure:EYE:TDEC:STATus:REASon?
:MEASure:EYE:USER
:MEASure:EYE:USER:ABBReviation?
:MEASure:EYE:USER:CFILe
```

```
:MEASure:EYE:USER:CFILe:CLEar
:MEASure:EYE:USER:CFILe:RELoad
:MEASure:EYE:USER:CFLoaded?
:MEASure:EYE:USER:COMMents?
:MEASure:EYE:USER:LOCation?
:MEASure:EYE:USER:LSTatus?
:MEASure:EYE:USER:LSTatus:REASon?
:MEASure:EYE:USER:NAME?
:MEASure:EYE:USER:SOURce
:MEASure:EYE:USER:STATus?
:MEASure:EYE:USER:STATus:REASon?
:MEASure:OSCilloscope:USER
:MEASure:OSCilloscope:USER:ABBReviation?
:MEASure:OSCilloscope:USER:CFILe
:MEASure:OSCilloscope:USER:CFILe:CLEar
:MEASure:OSCilloscope:USER:CFILe:RELoad
:MEASure:OSCilloscope:USER:CFLoaded?
:MEASure:OSCilloscope:USER:COMMents?
:MEASure:OSCilloscope:USER:LOCation?
:MEASure:OSCilloscope:USER:LSTatus?
:MEASure:OSCilloscope:USER:LSTatus:REASon?
:MEASure:OSCilloscope:USER:NAME?
:MEASure:OSCilloscope:USER:REGion
:MEASure:OSCilloscope:USER:SOURce
:MEASure:OSCilloscope:USER:STATus?
:MEASure:OSCilloscope:USER:STATus:REASon?
:MEASure:TDEC:HWIDth
:MEASure:TDEC:MNFactor
:MEASure:TDEC:MPNFactor
:MEASure:TDEC:PRESets
:MEASure:TDEC:PRESets:SELections
:MEASure:TDEC:TBER
:MEASure:TDR:USER
:MEASure:TDR:USER:ABBReviation?
:MEASure:TDR:USER:CFILe
:MEASure:TDR:USER:CFILe:CLEar
:MEASure:TDR:USER:CFILe:RELoad
:MEASure:TDR:USER:CFLoaded?
:MEASure:TDR:USER:COMMents?
:MEASure:TDR:USER:LOCation?
:MEASure:TDR:USER:LSTatus?
:MEASure:TDR:USER:LSTatus:REASon?
:MEASure:TDR:USER:NAME?
:MEASure:TDR:USER:REGion
:MEASure:TDR:USER:SOURce
:MEASure:TDR:USER:STATus?
:MEASure:TDR:USER:STATus:REASon?
```

:SLOT Subsystem Commands

```
:SLOT:TRIGger:MODe
:SLOT:TRIGger:MRATe?
:SLOT:TRIGger:SOURce
```

:SPRocess Subsystem Commands

```
:SPRocess:BUSer:ABBReviation
:SPRocess:BUSer:CFILe
:SPRocess:BUSer:CFILe:RELoad
:SPRocess:BUSer:CFLoaded
:SPRocess:BUSer:COMMents
:SPRocess:BUSer:CONTrol:DOUBle
:SPRocess:BUSer:CONTrol:ENUM
:SPRocess:BUSer:CONTrol:FILE
:SPRocess:BUSer:CONTrol:INTeger
:SPRocess:BUSer:CONTrol:STRing
:SPRocess:BUSer:LSTatus
:SPRocess:BUSer:LSTatus:REASon
:SPRocess:BUSer:NAME
:SPRocess:USER:ABBReviation
:SPRocess:USER:CFILe
:SPRocess:USER:CFILe:RELoad
:SPRocess:USER:CFLoaded
:SPRocess:USER:COMMents
:SPRocess:USER:CONTrol:DOUBle
:SPRocess:USER:CONTrol:ENUM
:SPRocess:USER:CONTrol:FILE
:SPRocess:USER:CONTrol:INTeger
:SPRocess:USER:CONTrol:STRing
:SPRocess:USER:LSTatus
:SPRocess:USER:LSTatus:REASon
:SPRocess:USER:NAME
```

:SYSTem Subsystem

```
:SYSTem:MPButton:SIMage:IMETadata
```

:TDR Subsystem Commands

```
:TDR:SPMemory:CLEar
:TDR:SPMemory:DTYPe
:TDR:SPMemory:ENABle
:TDR:SPMemory:LOAD
:TDR:SPMemory:SOURce
```

Revision A.04.54, October 2015

NOTE

Differences from revision A.04.53.
This is the last FlexDCA revision that supports Windows XP.

New Features

- The skew range for N1045A modules has been increased. To make use of this additional range, perform a skew calibration, which is available from the Skew tab in the Calibrations dialog box.
- Improved measurement throughput for the N1055A module when FlexDCA is in TDR/TDT mode.

Defects Fixed

- Fixed a defect in the signal type detection autoscale algorithm when using PTB and a Free Run trigger.

Revision A.04.53, June 2015

Differences from revision A.04.51.

New Features

- Added a new PAM measurement in Eye/Mask Mode: PAM Levels Peak-to-Peak.
- Added Infiniband EDR and FDR masks.
- Added 100 GE-SR4 mask.
- Feedthrough compensation in TDR mode can now be turned off. Feedthrough compensation improves the flatness of the step response, but acquisition is slower.
- Improved reliability of RN/PI measurements in Jitter Mode. The measurement now always searches for locations in the pattern that are minimally impacted by jitter.
- Improved acquisition throughput when making TDR measurements.

Defects Fixed

- Fixed an occasional calibration failure in the N1055A TDR Step Calibration.
- Fixed a defect that would cause vertical calibration to fail for some 86117A modules.
- Fixed a defect that would cause Jitter Mode to under report Sub Rate Jitter (SRJ) in certain situations.
- Fixed a defect that would result in errors in the waveform for certain combinations of data rate, pattern length, and bandwidth when SIRC, De-Embedding, or other Signal Processing operations were active.
- Fixed a defect that could cause TDR waveform charts to stop updating.
- Fixed a rounding error in skew calculations for TDR/TDT calibrations.
- Fixed a problem causing reduced responsiveness in Jitter Mode when working with long patterns.

:ACQuire Subsystem Commands

```
:ACQuire:FEEDthru (new)
```

:MEASure Subsystem Commands

```
:MEASure:EYE:PAM:PP (new)
:MEASure:EYE:PAM:PP:LEVel (new)
:MEASure:EYE:PAM:PP:LOCation? (new)
:MEASure:EYE:PAM:PP:SOURce (new)
:MEASure:EYE:PAM:PP:STATus? (new)
```

```
:MEASure:EYE:PAM:PP:STATus:REASon? (new)
```

Revision A.04.51

Differences from revision A.04.50.

Defects Fixed

- Fixed a defect that could cause user licenses to not be properly detected following a system reboot.

Revision A.04.50, February 2015

Differences from revision A.04.20.

General Comments

- The number of colors available for waveforms has been increased from 12 to 16 colors.

Defects Fixed

- Dark calibration no longer fails if the precision timebase is active.

New Features

- Pulse Amplitude Modulation (PAM-4) measurement capability in both Oscilloscope and Eye/Mask modes. In addition, Jitter analysis can be made on PAM-4 measurements in Jitter mode. Requires options 9FP or 9TP, PAM-N Analysis software license.
- Signals can now be automatically or manually selected be one of three signal types: Unspecified, NRZ format, or PAM4 format. The Signal Type setting is located on the various setup dialog boxes. If options 9FP or 9TP PAM-N Analysis software license is installed, also use the PAM-N Analysis Setup dialog box.
- Autoscale now identifies the signal type of each displayed waveform: Unspecified, NRZ format, and PAM4 format. Signal types can also be manually set.
- Multi-Purpose button on the 86100D's front-panel can now be assigned one of four actions:
  - Capture a screen image to a file.
  - Load an instrument setup file.
  - Play back a SCPI script.
  - Save a Documentation Wizard file.
- New Documentation Wizard that places user-selectable information into a zip file so that you can archive and transport them. The following list shows some of the items that can be placed in the zip file:
  - Screen capture
  - Instrument setup
  - Waveform data
  - Results data shown on measurement panels
  - System information

- Presets, which allow you to save your configuration settings. Presets significantly reduce setup time and are available for the following items:
  - 86108A/B Clock Recovery Configuration.
  - 83496A/B Clock Recovery Configuration.
  - Decision Feedback Equalizer (DFE) function configuration.
  - Continuous Time Linear Equalizer (CTLE) function configuration.
  - Linear Feedforward Equalizer function configuration.
- Limit Line Testing in TDR and Oscilloscope Modes.
- Waveform pixel intensity that makes waveforms easier to see in screen captures or when the display is viewed at a distance, such as during a presentation. Although thin traces and clusters of data points appear thicker and brighter on the display, the acquired data is not changed and all measurements, markers, histograms, saved waveforms, and other items are not affected.
- New Phase measurement in Oscilloscope Mode.
- New Jitter Mode Even-Odd (F/2) measurement, which is labeled F/2 (p-p) on the Jitter measurement results table. You can also add F/2 even-odd jitter to simulated signals.

:CHANnel Subsystem Commands

```
:CHANnel:PROBe:ATTenuation? (new)
:CHANnel:SIGNal:TYPE (new)
:CHANnel:SIGNal:TYPE:AUTO (new)
:CHANnel:SIGNal:TYPE:DETect (new)
```

:CMODe Subsystem Commands (New Subsystem)

```
:CMODe:SIGNal:TYPE (new)
:CMODe:SIGNal:TYPE:AUTO (new)
:CMODe:SIGNal:TYPE:DETect (new)
```

:CRECovery Subsystem Commands

```
:CRECovery:PRESets (new)
:CRECovery:PRESets:SELections? (new)
```

:DIFF Subsystem Commands

```
:DIFF:SIGNal:TYPE (new)
:DIFF:SIGNal:TYPE:AUTO (new)
:DIFF:SIGNal:TYPE:DETect (new)
```

:DISK Subsystem Commands

```
:DISK:DWIZard:AMPLitude:SDATa (new)
:DISK:DWIZard:FNAMe (new)
:DISK:DWIZard:GDELay:SDATa (new)
```

```
:DISK:DWIZard:HISTograms:SDATa (new)
:DISK:DWIZard:JGRaphs:SDATa (new)
:DISK:DWIZard:JITTer:SDATa (new)
:DISK:DWIZard:JSAResults:SDATa (new)
:DISK:DWIZard:JSASpectrum:SDATa (new)
:DISK:DWIZard:LLTResults:SDATa (new)
:DISK:DWIZard:MAGNitude:SDATa (new)
:DISK:DWIZard:MARKers:SDATa (new)
:DISK:DWIZard:MTESt:SDATa (new)
:DISK:DWIZard:PHASe:SDATa (new)
:DISK:DWIZard:RESults:SDATa (new)
:DISK:DWIZard:SAVE (new)
:DISK:DWIZard:SSCReen (new)
:DISK:DWIZard:SSETup (new)
:DISK:DWIZard:SSINfo (new)
:DISK:DWIZard:SSParam (new)
:DISK:DWIZard:TIME:SDATa (new)
:DISK:DWIZard:TOHMs:SDATa (new)
:DISK:DWIZard:TPERcent:SDATa (new)
:DISK:DWIZard:TVOLts:SDATa (new)
```

:DISPlay Subsystem Commands

```
:DISPlay:PINTensity (new)
:DISPlay:WINDow:AMPLitude:RVMode (new)
:DISPlay:WINDow:JITTer:RVMode (new)
:DISPlay:WINDow:RESults:RVMode (new)
```

:EMEMory Subsystem Commands

```
:EMEMory:SIGNal:TYPE (new)
```

:FUNCtion Subsystem Commands

```
:FUNCtion:SIGNal:TYPE (new)
:FUNCtion:SIGNal:TYPE:TRACking (new)
```

:LLINe Subsystem Commands (New Subsystem)

```
:LLINe:DISPlay (new)
:LLINe:HOFFset (new)
:LLINe:LOAD:FNAMe (new)
:LLINe:SOURce (new)
```

:LTESt Subsystem Commands

```
:LTESt:LLINe:SIMage:FNAMe (new)
:LTESt:LLINe:SIMage:INVert (new)
:LTESt:LLINe:SIMage:MONochrome (new)
:LTESt:LLINe:SIMage:SAVE (new)
:LTESt:LLINe:SIMage:SINClude (new)
:LTESt:LLINe:SIMage:STATe (new)
:LTESt:LLINe:SIMage:WINDow (new)
```

```
:LTESt:LLINe:SSUMmary:FNAMe (new)
:LTESt:LLINe:SSUMmary:STATe (new)
:LTESt:LLINe:SWAVeform:CHANnel:FNAMe (new)
:LTESt:LLINe:SWAVeform:CHANnel:STATe (new)
:LTESt:LLINe:SWAVeform:CHANnel:WMEMory (new)
:LTESt:LLINe:SWAVeform:CMODe:FNAMe (new)
:LTESt:LLINe:SWAVeform:CMODe:STATe (new)
:LTESt:LLINe:SWAVeform:CMODe:WMEMory (new)
:LTESt:LLINe:SWAVeform:DIFF:FNAMe (new)
:LTESt:LLINe:SWAVeform:DIFF:STATe (new)
:LTESt:LLINe:SWAVeform:DIFF:WMEMory (new)
:LTESt:LLINe:SWAVeform:FUNCtion:FNAMe (new)
:LTESt:LLINe:SWAVeform:FUNCtion:STATe (new)
:LTESt:LLINe:SWAVeform:FUNCtion:WMEMory (new)
:LTESt:LLINe:SWAVeform:RESet (new)
:LTESt:LLINe:TEST:MODE (new)
:LTESt:LLINe:TEST:STATe (new)
```

:MEASure Subsystem Commands

```
:MEASure:EYE:PAM:EHeight (new)
:MEASure:EYE:PAM:EHeight:DEFine:EOPening (new)
:MEASure:EYE:PAM:EHeight:DEFine:EOPening:PROBability (new)
:MEASure:EYE:PAM:EHeight:EYE (new)
:MEASure:EYE:PAM:EHeight:LOCation (new)
:MEASure:EYE:PAM:EHeight:SOURce (new)
:MEASure:EYE:PAM:EHeight:STATus (new)
:MEASure:EYE:PAM:EHeight:STATus:REASon (new)
:MEASure:EYE:PAM:ELEVel (new)
:MEASure:EYE:PAM:ELEVel:EYE (new)
:MEASure:EYE:PAM:ELEVel:LOCation (new)
:MEASure:EYE:PAM:ELEVel:SOURce (new)
:MEASure:EYE:PAM:ELEVel:STATus (new)
:MEASure:EYE:PAM:ELEVel:STATus:REASon (new)
:MEASure:EYE:PAM:ESKew (new)
:MEASure:EYE:PAM:ESKew:EYE (new)
:MEASure:EYE:PAM:ESKew:LOCation (new)
:MEASure:EYE:PAM:ESKew:SOURce (new)
:MEASure:EYE:PAM:ESKew:STATus (new)
:MEASure:EYE:PAM:ESKew:STATus:REASon (new)
:MEASure:EYE:PAM:EWidth (new)
:MEASure:EYE:PAM:EWidth:DEFine:EOPening (new)
:MEASure:EYE:PAM:EWidth:DEFine:EOPening:PROBability (new)
:MEASure:EYE:PAM:EWidth:EYE (new)
:MEASure:EYE:PAM:EWidth:LOCation (new)
:MEASure:EYE:PAM:EWidth:SOURce (new)
:MEASure:EYE:PAM:EWidth:STATus (new)
:MEASure:EYE:PAM:EWidth:STATus:REASon (new)
:MEASure:EYE:PAM:LEVel (new)
:MEASure:EYE:PAM:LEVel:LEVel (new)
:MEASure:EYE:PAM:LEVel:LOCation (new)
:MEASure:EYE:PAM:LEVel:SOURce (new)
:MEASure:EYE:PAM:LEVel:STATus (new)
:MEASure:EYE:PAM:LEVel:STATus:REASon (new)
```

```
:MEASure:EYE:PAM:LINearity (new)
:MEASure:EYE:PAM:LINearity:LOCation (new)
:MEASure:EYE:PAM:LINearity:SOURce (new)
:MEASure:EYE:PAM:LINearity:STATus? (new)
:MEASure:EYE:PAM:LINearity:STATus:REASon? (new)
:MEASure:EYE:PAM:RMS (new)
:MEASure:EYE:PAM:RMS:LEVel (new)
:MEASure:EYE:PAM:RMS:LOCation (new)
:MEASure:EYE:PAM:RMS:SOURce (new)
:MEASure:EYE:PAM:RMS:STATus (new)
:MEASure:EYE:PAM:RMS:STATus:REASon (new)
:MEASure:EYE:PAM:SKEW (new)
:MEASure:EYE:PAM:SKEW:LEVel (new)
:MEASure:EYE:PAM:SKEW:LOCation (new)
:MEASure:EYE:PAM:SKEW:SOURce (new)
:MEASure:EYE:PAM:SKEW:STATus (new)
:MEASure:EYE:PAM:SKEW:STATus:REASon (new)
:MEASure:JITTer:FOVer2 (new)
:MEASure:JITTer:FOVer2:LOCation (new)
:MEASure:JITTer:FOVer2:SOURce (new)
:MEASure:JITTer:FOVer2:STATus (new)
:MEASure:JITTer:FOVer2:STATus:REASon (new)
:MEASure:LLINe:FPOints (new)
:MEASure:LLINe:FPOints:STATus? (new)
:MEASure:LLINe:FPOints:STATus:REASon? (new)
:MEASure:LLINe:LINE:FPOints (new)
:MEASure:LLINe:LINE:FPOints:STATus? (new)
:MEASure:LLINe:LINE:FPOints:STATus:REASon? (new)
:MEASure:LLINe:LINE:MARGin (new)
:MEASure:LLINe:LINE:MARGin:STATus? (new)
:MEASure:LLINe:LINE:MARGin:STATus:REASon? (new)
:MEASure:LLINe:LINE:MLOCation (new)
:MEASure:LLINe:LINE:MLOCation:STATus? (new)
:MEASure:LLINe:LINE:MLOCation:STATus:REASon? (new)
:MEASure:LLINe:MARGin (new)
:MEASure:LLINe:MARGin:STATus? (new)
:MEASure:LLINe:MARGin:STATus:REASon? (new)
:MEASure:LLINe:MLOCation (new)
:MEASure:LLINe:MLOCation:STATus? (new)
:MEASure:LLINe:MLOCation:STATus:REASon? (new)
:MEASure:OSCilloscope:PAM:LEVel (new)
:MEASure:OSCilloscope:PAM:LEVel:LEVel (new)
:MEASure:OSCilloscope:PAM:LEVel:LOCation? (new)
:MEASure:OSCilloscope:PAM:LEVel:REGion (new)
:MEASure:OSCilloscope:PAM:LEVel:SOURce (new)
:MEASure:OSCilloscope:PAM:LEVel:STATus? (new)
:MEASure:OSCilloscope:PAM:LEVel:STATus:REASon? (new)
:MEASure:OSCilloscope:PAM:LINearity (new)
:MEASure:OSCilloscope:PAM:LINearity:LOCation? (new)
:MEASure:OSCilloscope:PAM:LINearity:REGion (new)
:MEASure:OSCilloscope:PAM:LINearity:SOURce (new)
:MEASure:OSCilloscope:PAM:LINearity:STATus? (new)
:MEASure:OSCilloscope:PAM:LINearity:STATus:REASon? (new)
:MEASure:OSCilloscope:PAM:RMS (new)
:MEASure:OSCilloscope:PAM:RMS:LEVel (new)
```

```
:MEASure:OSCilloscope:PAM:RMS:LOCation? (new)
:MEASure:OSCilloscope:PAM:RMS:REGion (new)
:MEASure:OSCilloscope:PAM:RMS:SOURce (new)
:MEASure:OSCilloscope:PAM:RMS:STATus? (new)
:MEASure:OSCilloscope:PAM:RMS:STATus:REASon? (new)
:MEASure:OSCilloscope:PHASe (new)
:MEASure:OSCilloscope:PHASe:EDIRection (new)
:MEASure:OSCilloscope:PHASe:ENUMber (new)
:MEASure:OSCilloscope:PHASe:ETHReshold (new)
:MEASure:OSCilloscope:PHASe:LOCation (new)
:MEASure:OSCilloscope:PHASe:REGion (new)
:MEASure:OSCilloscope:PHASe:SOURce (new)
:MEASure:OSCilloscope:PHASe:STATus (new)
:MEASure:OSCilloscope:PHASe:STATus:REASon (new)
:MEASure:PAM:AMPLitude:UNITs (new)
:MEASure:PAM:EYE:ELMethod (new)
:MEASure:PAM:EYE:ESTiming (new)
:MEASure:PAM:EYE:PPERcent (new)
:MEASure:PAM:EYE:TIME:LTDefinition (new)
:MEASure:PAM:EYE:TIME:UNITs (new)
:MEASure:TDR:ECAPacitance:REFerence:TYPE (revised)
:MEASure:TDR:ECAPacitance:REFerence:VALue (new)
:MEASure:TDR:EINDuctance:REFerence:TYPE (revised)
:MEASure:TDR:EINDuctance:REFerence:VALue (new)
```

:SPRocess Subsystem Commands

```
:SPRocess:CTLequalizer:PRESets (new)
:SPRocess:CTLequalizer:PRESets:SELections? (new)
:SPRocess:DFEQualizer:PRESets (new)
:SPRocess:DFEQualizer:PRESets:SELections? (new)
:SPRocess:FFEQualizer:PRESets (new)
:SPRocess:FFEQualizer:PRESets:SELections? (new)
```

:SOURce Subsystem Commands

```
:SOURce:FOTWo:JITTer (new)
:SOURce:FOTWo:STATe (new)
:SOURce:FORMat (new)
```

:STATus Subsystem Commands

Addition of new limit-line event register.

```
:STATus:LLINE:ENABle (new)
:STATus:LLINE:EVENt? (new)
```

:SYSTem Subsystem Commands

```
:SYSTem:MPButton:DOCWizard:BFName (new)
:SYSTem:MPButton:FUNCtion (new)
:SYSTem:MPButton:QSETup:FNAMe (new)
:SYSTem:MPButton:QSPBack:EYE:FNAMe (new)
:SYSTem:MPButton:QSPBack:FNAMe (new)
```

```
:SYSTem:MPButton:QSPBack:JITTer:FNAMe (new)
:SYSTem:MPButton:QSPBack:OSCilloscope:FNAMe (new)
:SYSTem:MPButton:QSPBack:SSCRipt (new)
:SYSTem:MPButton:QSPBack:TDR:FNAMe (new)
:SYSTem:MPButton:SIMage:BFName (new)
:SYSTem:MPButton:SIMage:INVert (new)
:SYSTem:MPButton:SIMage:MONochrome (new)
:SYSTem:MPButton:SIMage:SAVE (new)
:SYSTem:OSYStem (new)
:SYSTem:PERSona:MANufacturer (new)
:SYSTem:PERSona:MANufacturer:DEFault (new)
:SYSTem:PERSona:MODel (new)
:SYSTem:PERSona:MODel:DEFault (new)
:SYSTem:STAutodetect (new)
```

:WMEMory Subsystem Commands

- :WMEMory:SIGNal:TYPE (new)

Revision A.04.20, October 2014

Differences from revision A.04.00.

New Features

- For TDR/TDT mode's Time-Ohms, Time-Volts, and Time-% T-parameter graphs, added the ability to configure the X-axis in distance (meters).

:GRAPh Subsystem Commands (New Subsystem)

```
:GRAPh:T:OHMS:X:DCONstant (new)
:GRAPh:T:OHMS:X:POSition (new)
:GRAPh:T:OHMS:X:SCALe (new)
:GRAPh:T:OHMS:X:UNITs (new)
:GRAPh:T:OHMS:X:VFACtor (new)
:GRAPh:T:PERCent:X:DCONstant (new)
:GRAPh:T:PERCent:X:POSition (new)
:GRAPh:T:PERCent:X:SCALe (new)
:GRAPh:T:PERCent:X:UNITs (new)
:GRAPh:T:PERCent:X:VFACtor (new)
:GRAPh:T:VOLTs:X:DCONstant (new)
:GRAPh:T:VOLTs:X:POSition (new)
:GRAPh:T:VOLTs:X:SCALe (new)
:GRAPh:T:VOLTs:X:UNITs (new)
:GRAPh:T:VOLTs:X:VFACtor (new)
```

:MEASure Subsystem Commands

```
:MEASure:RESults? (new)
```

Revision A.04.00, August 2014

Differences from revision A.03.00.

New Features

- TDR/TDT Mode.
- Support for new N1055A 35/50 GHz TDR/TDT Remote Head module.
- For TDR Mode's S-parameter waveforms, a tracking-marker pair reports the Y values on magnitude, phase, and group delay waveforms for a single common X position. Set one X position value and get three Y values. The Magnitude and Δ Mag values are reported in the Marker results table.
- Common Mode Operator

:CALibrate Subsystem Commands

```
:CALibrate:SLOT:STEP (new)
:CALibrate:SLOT:STEP:STATus? (new)
:CALibrate:SLOT:STEP:STATus:DETails (new)
:CALibrate:SLOT:STEP:STATus:DTEMperature (new)
:CALibrate:SLOT:STEP:STATus:TIME (new)
```

:CHANnel Subsystem Commands (New Subsystem)

:CHANnel:YUNits (command form added)

```
:CMODe Subsystem Commands (new)
:CMODe:COLor (new)
:CMODe:CWINdow (new)
:CMODe:DISPlay (new)
:CMODe:STATus? (new)
:CMODe:UNDEFined:BASe (new)
:CMODe:UNDEFined:DISTal (new)
:CMODe:UNDEFined:MESial (new)
:CMODe:UNDEFined:PROXimal (new)
:CMODe:UNDEFined:TOP (new)
:CMODe:UNAMe (new)
:CMODe:YBOTtom (new)
:CMODe:YOFFset (new)
:CMODe:YSCale (new)
:CMODe:YTOP (new)
:CMODe:YUNits (new)
```

:DIFF Subsystem Commands

```
:DIFF:YUNits (command form added)
```

:DISK Subsystem Commands

```
:DISK:SPARameter:DSDiff (new)
:DISK:SPARameter:DSIoutput (new)
:DISK:SPARameter:DSReciprocal (new)
:DISK:SPARameter:DUT (new)
:DISK:SPARameter:FNAMe (new)
:DISK:SPARameter:FWBehavior (new)
:DISK:SPARameter:PSET (new)
:DISK:SPARameter:SAVE (new)
```

:DISPlay Subsystem Command

```
:DISPlay:WINDow:T:OHMS:DMODe (new)
:DISPlay:WINDow:T:OHMS:LEGend:EXPand (new)
:DISPlay:WINDow:T:OHMS:ZSIGnal (new)
:DISPlay:WINDow:T:PERCent:DMODe (new)
:DISPlay:WINDow:T:PERCent:LEGend:EXPand (new)
:DISPlay:WINDow:T:PERCent:ZSIGnal (new)
:DISPlay:WINDow:T:VOLTs:DMODe (new)
:DISPlay:WINDow:T:VOLTs:LEGend:EXPand (new)
:DISPlay:WINDow:T:VOLTs:ZSIGnal (new)
```

:FUNCtion Subsystem Commands

```
:FUNCtion:FOPerator INTegrate (deprecated argument)
:FUNCtion:FOPerator SUMMation (new argument)
```

:GRAPh Subsystem Commands (New Subsystem)

```
:GRAPh:T:OHMS:AUToscale (new)
:GRAPh:T:OHMS:Y:AUToscale (new)
:GRAPh:T:OHMS:Y:OFFSet (new)
:GRAPh:T:OHMS:Y:SCALe (new)
:GRAPh:T:PERCent:AUToscale (new)
:GRAPh:T:PERCent:Y:AUToscale (new)
:GRAPh:T:PERCent:Y:OFFSet (new)
:GRAPh:T:PERCent:Y:SCALe (new)
:GRAPh:T:VOLTs:AUToscale (new)
:GRAPh:T:VOLTs:Y:AUToscale (new)
:GRAPh:T:VOLTs:Y:OFFSet (new)
:GRAPh:T:VOLTs:Y:SCALe (new)
```

:JSAMemory Subsystem Commands

```
:JSAMemory:JSANalysis:SPECtrum:ASCii:YDATa? (new)
:JSAMemory:JSANalysis:SPECtrum:DOUBle:YDATa? (new)
:JSAMemory:JSANalysis:SPECtrum:FLOat:YDATa? (new)
:JSAMemory:JSANalysis:SPECtrum:PEAKs? (new)
```

```
:JSAMemory:JSANalysis:SPECtrum:PEAKs:ALL? (new)
:JSAMemory:JSANalysis:SPECtrum:POINts? (new)
:JSAMemory:JSANalysis:SPECtrum:XINCrement? (new)
:JSAMemory:JSANalysis:SPECtrum:XORigin? (new)
```

:LTESt Subsystem Commands

```
:LTESt:ACQuire:SWAVeform:CMODe:FNAMe (new)
:LTESt:ACQuire:SWAVeform:CMODe:STATe (new)
:LTESt:ACQuire:SWAVeform:CMODe:WMEMory (new)
:LTESt:MEASure:SWAVeform:CMODe:FNAMe (new)
:LTESt:MEASure:SWAVeform:CMODe:STATe (new)
:LTESt:MEASure:SWAVeform:CMODe:WMEMory (new)
:LTESt:MTESt:SWAVeform:CMODe:FNAMe (new)
:LTESt:MTESt:SWAVeform:CMODe:STATe (new)
:LTESt:MTESt:SWAVeform:CMODe:WMEMory (new)
```

:MARKer Subsystem Commands

```
:MARKer:X:SOURce:DUT (new)
:MARKer:X:SOURce:SPARameter (new)
:MARKer:X:SOURce:TYPE (new)
:MARKer:Y:SOURce:DUT (new)
:MARKer:Y:SOURce:SPARameter (new)
:MARKer:Y:SOURce:TYPE (new)
```

:MEASure Subsystem Commands

```
:MEASure:JSAMemory:DJ? (new)
:MEASure:JSAMemory:DJ:STATus? (new)
:MEASure:JSAMemory:DJ:STATus:REASon? (new)
:MEASure:JSAMemory:RJ? (new)
:MEASure:JSAMemory:RJ:STATus? (new)
:MEASure:JSAMemory:RJ:STATus:REASon? (new)
:MEASure:JSAMemory:TJ? (new)
:MEASure:JSAMemory:TJ:STATus? (new)
:MEASure:JSAMemory:TJ:STATus:REASon? (new)
:MEASure:LTESt:MLIMit:FAILures (new)
:MEASure:LTESt:MLIMit:WAVeforms (new)
:MEASure:TDR:DELTatime (new)
:MEASure:TDR:DELTatime:EDIRection (new)
:MEASure:TDR:DELTatime:ENUMber (new)
:MEASure:TDR:DELTatime:ETHReshold (new)
:MEASure:TDR:DELTatime:LOCation? (new)
:MEASure:TDR:DELTatime:REGion (new)
:MEASure:TDR:DELTatime:SOURce (new)
:MEASure:TDR:DELTatime:STATus? (new)
:MEASure:TDR:DELTatime:STATus:REASon? (new)
:MEASure:TDR:ECAPacitance (new)
:MEASure:TDR:ECAPacitance:LOCation? (new)
:MEASure:TDR:ECAPacitance:REFerence:TYPE (new)
:MEASure:TDR:ECAPacitance:REGion (new)
:MEASure:TDR:ECAPacitance:SOURce (new)
:MEASure:TDR:ECAPacitance:STATus? (new)
```

```
:MEASure:TDR:ECAPacitance:STATus:REASon? (new)
:MEASure:TDR:EINDuctance (new)
:MEASure:TDR:EINDuctance:LOCation? (new)
:MEASure:TDR:EINDuctance:REFerence:TYPE (new)
:MEASure:TDR:EINDuctance:REGion (new)
:MEASure:TDR:EINDuctance:SOURce (new)
:MEASure:TDR:EINDuctance:STATus? (new)
:MEASure:TDR:EINDuctance:STATus:REASon? (new)
:MEASure:TDR:FALLtime (new)
:MEASure:TDR:FALLtime:LOCation? (new)
:MEASure:TDR:FALLtime:REGion (new)
:MEASure:TDR:FALLtime:SOURce (new)
:MEASure:TDR:FALLtime:STATus? (new)
:MEASure:TDR:FALLtime:STATus:REASon? (new)
:MEASure:TDR:LIST:CLEar (new)
:MEASure:TDR:LIST:REMove (new)
:MEASure:TDR:LIST:SELect (new)
:MEASure:TDR:RISetime (new)
:MEASure:TDR:RISetime:LOCation? (new)
:MEASure:TDR:RISetime:REGion (new)
:MEASure:TDR:RISetime:SOURce (new)
:MEASure:TDR:RISetime:STATus? (new)
:MEASure:TDR:RISetime:STATus:REASon? (new)
:MEASure:TDR:TEDGe (new)
:MEASure:TDR:TEDGe:DIRection (new)
:MEASure:TDR:TEDGe:LOCation? (new)
:MEASure:TDR:TEDGe:NUMBer (new)
:MEASure:TDR:TEDGe:REGion (new)
:MEASure:TDR:TEDGe:SOURce (new)
:MEASure:TDR:TEDGe:STATus? (new)
:MEASure:TDR:TEDGe:STATus:REASon? (new)
:MEASure:TDR:TEDGe:THReshold (new)
:MEASure:TDR:TMAXimum (new)
:MEASure:TDR:TMAXimum:LOCation? (new)
:MEASure:TDR:TMAXimum:REGion (new)
:MEASure:TDR:TMAXimum:SOURce (new)
:MEASure:TDR:TMAXimum:STATus? (new)
:MEASure:TDR:TMAXimum:STATus:REASon? (new)
:MEASure:TDR:TMINimum (new)
:MEASure:TDR:TMINimum:LOCation? (new)
:MEASure:TDR:TMINimum:REGion (new)
:MEASure:TDR:TMINimum:SOURce (new)
:MEASure:TDR:TMINimum:STATus? (new)
:MEASure:TDR:TMINimum:STATus:REASon? (new)
:MEASure:TDR:TVOLt (new)
:MEASure:TDR:TVOLt:EDIRection (new)
:MEASure:TDR:TVOLt:ENUMber (new)
:MEASure:TDR:TVOLt:LOCation? (new)
:MEASure:TDR:TVOLt:REGion (new)
:MEASure:TDR:TVOLt:SOURce (new)
:MEASure:TDR:TVOLt:STATus? (new)
:MEASure:TDR:TVOLt:STATus:REASon? (new)
:MEASure:TDR:TVOLt:YVALue (new)
:MEASure:TDR:VAVerage (new)
:MEASure:TDR:VAVerage:AREa (new)
```

```
:MEASure:TDR:VAVerage:LOCation? (new)
:MEASure:TDR:VAVerage:REGion (new)
:MEASure:TDR:VAVerage:SOURce (new)
:MEASure:TDR:VAVerage:STATus? (new)
:MEASure:TDR:VAVerage:STATus:REASon? (new)
:MEASure:TDR:VMAXimum (new)
:MEASure:TDR:VMAXimum:LOCation? (new)
:MEASure:TDR:VMAXimum:REGion (new)
:MEASure:TDR:VMAXimum:SOURce (new)
:MEASure:TDR:VMAXimum:STATus? (new)
:MEASure:TDR:VMAXimum:STATus:REASon? (new)
:MEASure:TDR:VMINimum (new)
:MEASure:TDR:VMINimum:LOCation? (new)
:MEASure:TDR:VMINimum:REGion (new)
:MEASure:TDR:VMINimum:SOURce (new)
:MEASure:TDR:VMINimum:STATus? (new)
:MEASure:TDR:VMINimum:STATus:REASon? (new)
:MEASure:TDR:VTIMe (new)
:MEASure:TDR:VTIMe:LOCation? (new)
:MEASure:TDR:VTIMe:REGion (new)
:MEASure:TDR:VTIMe:SOURce (new)
:MEASure:TDR:VTIMe:STATus? (new)
:MEASure:TDR:VTIMe:STATus:REASon? (new)
:MEASure:TDR:VTIMe:TIMe (new)
```

:SYSTem Subsystem Commands

```
:SYSTem:BORDer (new)
```

:TDR Subsystem Commands

```
:TDR:ADAPters:CANCel (new)
:TDR:ADAPters:CONNector (new)
:TDR:ADAPters:CONTinue (new)
:TDR:ADAPters:DELay (new)
:TDR:ADAPters:DSPec (new)
:TDR:ADAPters:NAME (new)
:TDR:ADAPters:OVERwrite (new)
:TDR:ADAPters:SCHannel (new)
:TDR:ADAPters:SDONe? (new)
:TDR:ADAPters:STARt (new)
:TDR:AMODe (new)
:TDR:ASNaming (new)
:TDR:CALibration:ATIMebase (new)
:TDR:CALibration:AVERages (new)
:TDR:CALibration:CANCel (new)
:TDR:CALibration:CONTinue (new)
:TDR:CALibration:DRMCal (new)
:TDR:CALibration:DUT:CDATa? (new)
:TDR:CALibration:DUT:CDATa:REASon? (new)
:TDR:CALibration:DUT:LOAD (new)
:TDR:CALibration:DUT:LOAD:FNAMe (new)
:TDR:CALibration:DUT:CDRSet (new)
:TDR:CALibration:DUT:CLEar (new)
```

```
:TDR:CALibration:DUT:CONFig? (new)
:TDR:CALibration:DUT:CONFig:REASon? (new)
:TDR:CALibration:DUT:CRSet (new)
:TDR:CALibration:DUT:DRSet (new)
:TDR:CALibration:DUT:ECAL:ADAPters:A (new)
:TDR:CALibration:DUT:ECAL:ADAPters:B (new)
:TDR:CALibration:DUT:ECAL:CHAR (new)
:TDR:CALibration:DUT:ECAL:MODule (new)
:TDR:CALibration:DUT:ECAL:STATus? (new)
:TDR:CALibration:DUT:ECAL:STATus:REASon? (new)
:TDR:CALibration:DUT:ENABle (new)
:TDR:CALibration:DUT:FDRSet (new)
:TDR:CALibration:DUT:METHod (new)
:TDR:CALibration:DUT:NOCSteps (new)
:TDR:CALibration:DUT:RDUT (new)
:TDR:CALibration:DUT:SENDed:PORT:CKIT (new)
:TDR:CALibration:DUT:SENDed:PORT:CONNector (new)
:TDR:CALibration:DUT:SKAPorts (new)
:TDR:CALibration:DUT:STARt (new)
:TDR:CALibration:SDONe (new)
:TDR:CALibration:STEP? (new)
:TDR:CALibration:STEP:COUNt? (new)
:TDR:CALibration:STEP:SELect (new)
:TDR:CALibration:UCURrent (new)
:TDR:CHANnel:DUT (new)
:TDR:CHANnel:PORT (new)
:TDR:DESKew:CANCel (new)
:TDR:DESKew:CONTinue (new)
:TDR:DESKew:DUT (new)
:TDR:DESKew:FNAMe (new)
:TDR:DESKew:SAVE (new)
:TDR:DESKew:SCHannel (new)
:TDR:DESKew:SDONe? (new)
:TDR:DESKew:STARt (new)
:TDR:DUT:ACMatch (new)
:TDR:DUT:ACONnect (new)
:TDR:DUT:ADPNaming (new)
:TDR:DUT:DIFFerential:NPORt:UNAMe (new)
:TDR:DUT:DIFFerential:PPORt:UNAMe (new)
:TDR:DUT:DIFFerential:SIGNal:UNAMe (new)
:TDR:DUT:DTYPe (new)
:TDR:DUT:ENABle (new)
:TDR:DUT:RISetime (new)
:TDR:DUT:SENDed:PORT:UNAMe (new)
:TDR:DUT:STATus? (new)
:TDR:DUT:STATus:REASon? (new)
:TDR:EXPerience (new)
:TDR:FINCrement (new)
:TDR:STATus? (new)
:TDR:STATus:REASon? (new)
:TDR:STIMulus:CHANnel:AMPLitude (new)
:TDR:STIMulus:CHANnel:METHod (new)
:TDR:STIMulus:CHANnel:POLarity (new)
:TDR:STIMulus:CHANnel:SKEW (new)
:TDR:STIMulus:CHANnel:STATus? (new)
```

```
:TDR:STIMulus:CHANnel:STEP (new)
:TDR:STIMulus:CHANnel:TYPe (new)
:TDR:STIMulus:SLOT:RATE (new)
:TDR:STIMulus:SLOT:RATE:AUTomatic (new)
```

:TRACe Subsystem Commands

```
:TRACe:COLor (new)
:TRACe:CWINdow (new)
:TRACe:DISPlay (new)
:TRACe:DUT (new)
:TRACe:OPERator (new)
:TRACe:PARameter (new)
:TRACe:STATus? (new)
:TRACe:UDEFined:BASe (new)
:TRACe:UDEFined:DISTal (new)
:TRACe:UDEFined:MESial (new)
:TRACe:UDEFined:PROXimal (new)
:TRACe:UDEFined:TOP (new)
:TRACe:UNAMe (new)
:TRACe:XLEFt? (new)
:TRACe:XPOSition? (new)
:TRACe:XREFerence? (new)
:TRACe:XRIGht? (new)
:TRACe:XSCale? (new)
:TRACe:XUNits? (new)
:TRACe:YBOTtom? (new)
:TRACe:YOFFset? (new)
:TRACe:YSCale? (new)
:TRACe:YTOP? (new)
:TRACe:YUNits? (new)
```

Revision A.03.00, May, 2014

Differences from revision A.02.51.

General Comments

- FlexDCA is compatible with Windows XP and Windows 7 but is not compatible with Windows 8.
- The acquisition buttons located on the menu bar are now always displayed. Previously, these buttons could be hidden using the **Show Run/Stop Controls in Title Bar** check box that was located in the **Display Setup** dialog box. This check box has been removed.

New Feature List

- Support for new 86100D-PTB option, an internal precision timebase.
- Perform multiple mask tests at the same time.
- Up to 16 measurement limit tests (including mask limit tests for specific regions of a mask).
- Increased the number of markers. The number of Tracking Markers have been increased from two to four. The number of Manual Line Markers have been increased from four to eight.
- Content windows for displaying Waveform, Magnitude, Phase, and Group Delay waveforms that have incompatible vertical or horizontal units from the primary time-based Waveform window.
- Content window toolbar replaces the toolbar flyout. The new buttons provide tasks such as markers and viewing waveforms as overlapped, tiled, stacked, or zoom tiled.
- Ability to add waveform labels with a meaningful custom user name.

:CALibrate Subsystem Commands

```
:CALibrate:FRAMe:PTIMebase:STARt (new)
:CALibrate:FRAMe:PTIMebase:STATus (new)
:CALibrate:FRAMe:PTIMebase:STATus:DETails (new)
:CALibrate:FRAMe:PTIMebase:STATus:DTEMperature (new)
:CALibrate:FRAMe:PTIMebase:STATus:TIME (new)
:CALibrate:FRAMe:TIMebase:STATus (new)
:CALibrate:FRAMe:TIMebase:STATus:DETails (new)
:CALibrate:FRAMe:TIMebase:STATus:DTEMperature (new)
:CALibrate:FRAMe:TIMebase:STATus:TIME (new)
:CALibrate:TIMebase:SLOT:STARt (new)
:CALibrate:TIMebase:SLOT:STATus (new)
:CALibrate:TIMebase:SLOT:STATus:DETails (new)
```

```
:CALibrate:TIMebase:SLOT:STATus:DTEMperature (new)
:CALibrate:TIMebase:SLOT:STATus:TIME (new)
:CALibrate:FRAMe:STATus? (deprecated)
:CALibrate:FRAMe:STATus:DETails? (deprecated)
:CALibrate:FRAMe:STATus:DTEMperature? (deprecated)
:CALibrate:FRAMe:STATus:TIME? (deprecated)
```

:CHANnel Subsystem Commands

```
:CHANnel:CWINdow (new)
:CHANnel:UNAMe (new)
```

:DIFF Subsystem Commands

```
:DIFF:CWINdow (new)
:DIFF:UNAMe (new)
```

:DISK Subsystem Commands

```
:DISK:SIMage:GONLy (deprecated)
:DISK:SIMage:WINDow (new)
```

:DISPlay Subsystem Commands

```
:DISPlay:FDOMain:LEGend (new)
:DISPlay:GRATicule:MCONtrols (removed)
:DISPlay:LOCation:LSECondary:AWINdow (new)
:DISPlay:LOCation:PRIMary:AWINdow (new)
:DISPlay:LOCation:RSECondary:AWINdow (new)
:DISPlay:TBControls (removed)
:DISPlay:TDOMain:LEGend (new)
:DISPlay:TMASk (new)
:DISPlay:WINDOW:GDELay:DMODe (new)
:DISPlay:WINDOW:GDELay:ZSIGnal (new)
:DISPlay:WINDOW:MAGNitude:DMODe (new)
:DISPlay:WINDOW:MAGNitude:ZSIGnal (new)
:DISPlay:WINDOW:PHASe:DMODe (new)
:DISPlay:WINDOW:PHASe:ZSIGnal (new)
:DISPlay:WINDOW:TIME:DMODe (new)
:DISPlay:WINDOW:TIME:ZSIGnal (new)
```

:EMEMory Subsystem Commands

```
:EMEMory:CWINdow (new)
:EMEMory:UNAMe (new)
```

:FUNCtion Subsystem Commands

```
:FUNCtion:CWINdow (new)
:FUNCtion:UNAMe (new)
```

:GRAPh Subsystem Commands (new)

```
:GRAPh:GDELay:AUToscale (new)
:GRAPh:GDELay:X:AUToscale (new)
:GRAPh:GDELay:X:CENTer (new)
:GRAPh:GDELay:X:SPAN (new)
:GRAPh:GDELay:X:STARt (new)
:GRAPh:GDELay:X:STOP (new)
:GRAPh:GDELay:Y:AUToscale (new)
:GRAPh:GDELay:Y:OFFSet (new)
:GRAPh:GDELay:Y:SCALe (new)
:GRAPh:MAGNitude:AUToscale (new)
:GRAPh:MAGNitude:X:AUToscale (new)
:GRAPh:MAGNitude:X:CENTer (new)
:GRAPh:MAGNitude:X:SPAN (new)
:GRAPh:MAGNitude:X:STARt (new)
:GRAPh:MAGNitude:X:STOP (new)
:GRAPh:MAGNitude:Y:AUToscale (new)
:GRAPh:MAGNitude:Y:OFFSet (new)
:GRAPh:MAGNitude:Y:SCALe (new)
:GRAPh:PHASe:AUToscale (new)
:GRAPh:PHASe:X:AUToscale (new)
:GRAPh:PHASe:X:CENTer (new)
:GRAPh:PHASe:X:SPAN (new)
:GRAPh:PHASe:X:STARt (new)
:GRAPh:PHASe:X:STOP (new)
:GRAPh:PHASe:Y:AUToscale (new)
:GRAPh:PHASe:Y:OFFSet (new)
:GRAPh:PHASe:Y:SCALe (new)
```

:JDMemory Subsystem Command

```
:JDMemory:CWINdow (new)
```

:LTESt Subsystem Commands

```
:LTESt:ACQuire:SIMage:WINDow (new)
:LTESt:MEASure:MLIMit:FAILures (new)
:LTESt:MEASure:MLIMit:FREGion (new)
:LTESt:MEASure:MLIMit:LLIMit (new)
:LTESt:MEASure:MLIMit:SOURce:LOCation (new)
:LTESt:MEASure:MLIMit:SOURce:TYPE (new)
:LTESt:MEASure:MLIMit:STATe (new)
:LTESt:MEASure:MLIMit:ULIMit (new)
:LTESt:MEASure:MLIMit:UPACtion (new)
:LTESt:MEASure:SIMage:WINDow (new)
:LTESt:MTESt:MRESult:FAILures (new)
:LTESt:MTESt:MRESult:STATe (new)
:LTESt:MTESt:SIMage:WINDow (new)
:LTESt:ACQuire:SIMage:GONLy (deprecated)
:LTESt:MEASure:AMPLitude:LOCation:FAILures (removed)
:LTESt:MEASure:AMPLitude:LOCation:FREGion (removed)
:LTESt:MEASure:AMPLitude:LOCation:LLIMit (removed)
:LTESt:MEASure:AMPLitude:LOCation:STATe (removed)
```

```
:LTESt:MEASure:AMPLitude:LOCation:ULIMit (removed)
:LTESt:MEASure:AMPLitude:LOCation:UPACtion (removed)
:LTESt:MEASure:CRECovery:LOCation:FAILures (removed)
:LTESt:MEASure:CRECovery:LOCation:FREGion (removed)
:LTESt:MEASure:CRECovery:LOCation:LLIMit (removed)
:LTESt:MEASure:CRECovery:LOCation:STATe (removed)
:LTESt:MEASure:CRECovery:LOCation:ULIMit (removed)
:LTESt:MEASure:CRECovery:LOCation:UPACtion (removed)
:LTESt:MEASure:EYE:LOCation:FAILures (removed)
:LTESt:MEASure:EYE:LOCation:FREGion (removed)
:LTESt:MEASure:EYE:LOCation:LLIMit (removed)
:LTESt:MEASure:EYE:LOCation:STATe (removed)
:LTESt:MEASure:EYE:LOCation:ULIMit (removed)
:LTESt:MEASure:EYE:LOCation:UPACtion (removed)
:LTESt:MEASure:JITTer:LOCation:FAILures (removed)
:LTESt:MEASure:JITTer:LOCation:FREGion (removed)
:LTESt:MEASure:JITTer:LOCation:LLIMit (removed)
:LTESt:MEASure:JITTer:LOCation:STATe (removed)
:LTESt:MEASure:JITTer:LOCation:ULIMit (removed)
:LTESt:MEASure:JITTer:LOCation:UPACtion (removed)
:LTESt:MEASure:MTESt:LOCation:FAILures (removed)
:LTESt:MEASure:MTESt:LOCation:FREGion (removed)
:LTESt:MEASure:MTESt:LOCation:LLIMit (removed)
:LTESt:MEASure:MTESt:LOCation:STATe (removed)
:LTESt:MEASure:MTESt:LOCation:ULIMit (removed)
:LTESt:MEASure:MTESt:LOCation:UPACtion (removed)
:LTESt:MEASure:OSCilloscope:LOCation:FAILures (removed)
:LTESt:MEASure:OSCilloscope:LOCation:FREGion (removed)
:LTESt:MEASure:OSCilloscope:LOCation:LLIMit (removed)
:LTESt:MEASure:OSCilloscope:LOCation:STATe (removed)
:LTESt:MEASure:OSCilloscope:LOCation:ULIMit (removed)
:LTESt:MEASure:OSCilloscope:LOCation:UPACtion (removed)
:LTESt:MEASure:SIMage:GONLy (deprecated)
:LTESt:MTESt:FAILures (deprecated)
:LTESt:MTESt:SIMage:GONLy (deprecated)
:LTESt:MTESt:STATe (deprecated)
```

:MARKer Subsystem Commands

```
:MARKer:REFerence (new)
:MARKer:IXDelta? (deprecated)
:MARKer:IXDelta:STATus? (deprecated)
:MARKer:IXDelta:STATus:REASon? (deprecated)
:MARKer:XDELta? (deprecated)
:MARKer:XDELta:STATus? (deprecated)
:MARKer:XDELta:STATus:REASon? (deprecated)
:MARKer:YDELta? (deprecated)
:MARKer:YDELta:STATus? (deprecated)
:MARKer:YDELta:STATus:REASon? (deprecated)
```

:MEASure Subsystem Commands

```
:MEASure:MARKer:IDX? (new)
:MEASure:MARKer:IDX:STATus? (new)
```

```
:MEASure:MARKer:IDX:STATus:REASon? (new)
:MEASure:MARKer:DX? (new)
:MEASure:MARKer:DX:STATus? (new)
:MEASure:MARKer:DX:STATus:REASon? (new)
:MEASure:MARKer:DY? (new)
:MEASure:MARKer:DY:STATus? (new)
:MEASure:MARKer:DY:STATus:REASon? (new)
```

:MTESt Subsystem Commands

```
:MTESt:ALIGnment:X (new)
:MTESt:ALIGnment:X:METHod (new)
:MTESt:ALIGnment:Y (new)
:MTESt:ALIGnment:Y:METHod (new)
:MTESt:AMEThod (deprecated)
:MTESt:SMODe (deprecated)
:MTESt:YALign (deprecated)
```

:SPRocess Subsystem Commands

```
:SPRocess:FFT:DISPlay (revised
:SPRocess:FFT:PREFerence (new)
:SPRocess:FFT:PREFerence:TORigin (new)
:TIMebase Subsystem Commands
:TIMebase:PTIMebase:QPHase (new)
:TIMebase:PTIMebase:RFRequency (new)
:TIMebase:PTIMebase:RFRequency:AUTo (new)
:TIMebase:PTIMebase:RMEThod (new)
:TIMebase:PTIMebase:RTReference (new)
:TIMebase:PTIMebase:STATe (new)
```

:TRIGger Subsystem Commands

```
:TRIGger:MODe (new)
:TRIGger:BWLimit (removed)
```

:WAVeform Subsystem Commands

```
:WAVeform:XYFormat:POINts:CLIPped:HIGH? (new)
:WAVeform:XYFormat:POINts:CLIPped:LOW? (new)
:WAVeform:XYFormat:POINts:HOLes? (new)
:WAVeform:YFormat:POINts:CLIPped:HIGH? (new)
:WAVeform:YFormat:POINts:CLIPped:LOW? (new)
:WAVeform:YFormat:POINts:HOLes? (new)
:WAVeform:YFormat:WORD:ENCoding:CHIGh? (revised
```

:WMEMory Subsystem Command

```
:WMEMory:CWINdow (new)
:WMEMory:UNAMe (new)
```

Revision A.02.51, January, 2014

Differences from revision A.02.50.

General Comments

An improved phase detector gain algorithm was implemented that allows for more accurate JSA measurements.

New Feature List

Support for N108xA-Series IEEE 802.3 Ethernet KR/CR Compliance and Debug Application.

Revision A.02.50, October, 2013

Differences from revision A.02.02

General Comments

- Edited the 86118A module specification topic for adjusted 86118-H01 the channel skew specification and for information added concerning 86118-H02 module's 1 mm input connectors.
- Added specifications for the 86105D-281 module.
- Added specifications for the 86115D-282 module.

General Defects Fixed

- Fixed a memory leak in the precision timebase synchronization. This leak would cause the instrument to report insufficient memory error messages after several days.
- Fixed a bug that prevented use of the knobs on the 86112A-HBW module.
- Improved the precision timebase synchronization to be less sensitive to signal drift.

New Feature List

- New Jitter Spectrum Analysis (JSA) memory and ability to save JSA data files (*.jsax). This allows JSA data to be viewed offline.
- When the jitter database is saved to disk, JSA is included if Clock Recovery Emulation (CRE) is active.
- New tail fit method available in Jitter Mode, which enables the following new scalar measurements:
- BUI (rms) for ones and zeros
- BUI (δ-δ) for ones and zeros
- BUJ
- BUJ (rms
- Ability to measure TJ (Total Jitter), DJ (Deterministic Jitter), RJ (Random Jitter), J2, J5, and J9 on long patterns such as PRBS31. This is accomplished within FlexDCA with an option 401 license but without the use of the option 401 spreadsheet. A new Advanced Eye tab is enabled in Eye/Mask Mode. This feature requires the option 401 Advanced Eye Analysis Software license.

New Command Subsystem

```
:JSAMemory
```

New :DISK Subsystem Programming Command

```
:DISK:JSANalysis:FNAMe
:DISK:JSANalysis:RECall
:DISK:JSANalysis:RECall:DESTination
:DISK:JSANalysis:SAVE
```

New :DISPlay Subsystem Commands

```
:DISPlay:JITTer:CCEdge
```

New :MEASure Subsystem Commands

```
:MEASure:AMPLitude:BIROnes
:MEASure:AMPLitude:BIROnes:LOCation
:MEASure:AMPLitude:BIROnes:SOURce
:MEASure:AMPLitude:BIROnes:STATus
:MEASure:AMPLitude:BIROnes:STATus:REASon
:MEASure:AMPLitude:BIRZeros
:MEASure:AMPLitude:BIRZeros:LOCation
:MEASure:AMPLitude:BIRZeros:SOURce
:MEASure:AMPLitude:BIRZeros:STATus
:MEASure:AMPLitude:BIRZeros:STATus:REASon
:MEASure:AMPLitude:BUIOnes
:MEASure:AMPLitude:BUIOnes:LOCation
:MEASure:AMPLitude:BUIOnes:SOURce
:MEASure:AMPLitude:BUIOnes:STATus
:MEASure:AMPLitude:BUIOnes:STATus:REASon
:MEASure:AMPLitude:BUIZeros
:MEASure:AMPLitude:BUIZeros:LOCation
:MEASure:AMPLitude:BUIZeros:SOURce
:MEASure:AMPLitude:BUIZeros:STATus
:MEASure:AMPLitude:BUIZeros:STATus:REASon
:MEASure:AMPLitude:ISIHist:SAMPles?
:MEASure:AMPLitude:RNPIhist:SAMPles?
:MEASure:AMPLitude:SMEThod?
:MEASure:AMPLitude:TIHist:SAMPles?
:MEASure:EYE:DJ
:MEASure:EYE:DJ:RJSTabilize
:MEASure:EYE:DJ:RJSValue
:MEASure:EYE:JN
:MEASure:EYE:JN:RJSTabilize
:MEASure:EYE:JN:RJSValue
:MEASure:EYE:JN:SJN
:MEASure:EYE:RJ
:MEASure:EYE:TJ
:MEASure:EYE:TJ:RJSTabilize
:MEASure:EYE:TJ:RJSValue
:MEASure:EYE:TJ:TJBer
:MEASure:JITTer:BUJ
```

```
:MEASure:JITTer:BUJ:LOCation
:MEASure:JITTer:BUJ:SOURce
:MEASure:JITTer:BUJ:STATus
:MEASure:JITTer:BUJ:STATus:REASon
:MEASure:JITTer:BUJRms
:MEASure:JITTer:BUJRms:LOCation
:MEASure:JITTer:BUJRms:SOURce
:MEASure:JITTer:BUJRms:STATus
:MEASure:JITTer:BUJRms:STATus:REASon
:MEASure:JITTer:DDJHist:SAMPles?
:MEASure:JITTer:DEFine:SMEThod
:MEASure:JITTer:LJMode
:MEASure:JITTer:RJPJhist:SAMPles?
:MEASure:JITTer:SMEThod?
:MEASure:JITTer:TJHist:SAMPles?
```

Revision A.02.02, May, 2013

Differences from revision A.02.00.

General Comments

- Improvements added to eye measurement algorithms.
- Support added for N1012A OIF CEI 3.0 Compliance and Debug Application version 2.00.

New Feature List

- Skew calibration added for 86118A H01 modules.
- Fixture deskew added for 86118A H01 modules.
- Ability to open legacy Color Grade-Gray Scale memory files (.cgs).

Revision A.02.00, January, 2013

Differences from revision A.01.80.

General Comments

- FlexDCA is now the 86100D's default user interface. The 86100D can be placed in one of three configuratons: Standard, Hybrid, or Legacy.
- For working offline, the DCA's data simulation state is now integrated with standard live channels. Open FlexDCA normally without using a command-line switch.
- Added two example programs for performing calibrations. Each program illustrates a different method of controling execution timing.

NOTE **FlexDCA is compatible with Windows XP and Windows 7 but is not compatible with Windows 8.**

New Feature List

- Ability to use one-slot mini modules.
- Added new N1045A one-slot mini-module with two or four remote electrical heads.
- Extended Module feature to control supported external instruments (via LAN) such as the N4877A clock data recovery and demultiplexer.
- Added automatic fixture deskew.
- Added Skew Calibration to remove difference in electrical length between the remote sampling heads on N1045A and 86118A-H01 modules.
- Added automatic differential deskew to apply Hardware Skew to two differential channels.
- Added probe support and setup to Standard configuration.
- In Standard configuration, the 86100D supports SCPI connectivity via GPIB, VXI--11 LAN, Telnet, Sockets, and HiSlip.
- Ability to adjust the 86100D front-panel calibration output (DC Cal) voltage.
- Added Absolute and Square Root math operators.
- Added Decision Feedback Equalizer and Sin(X)/X signal-processing operators.
- Support for the N1014A SFF-8431 Compliance Application.
- Added Undo, Redo, and History.
- Added new Ethernet Mask: 100G-SR10 10.3125

- Added new OIF-CEI masks and SFF-8431 masks.

CALibrate Subsystem Programming Commands

```
:CALibrate:CHAN:ENABled (new)
:CALibrate:CHAN:STATus (new)
:CALibrate:CHAN:STATus:DETails (new)
:CALibrate:CHAN:STATus:DTEMperature (new)
:CALibrate:CHAN:STATus:TIME (new)
:CALibrate:OUTPut (new)
:CALibrate:SKEW:SLOT:STARt (new)
:CALibrate:SKEW:SLOT:STATus? (new)
:CALibrate:SKEW:SLOT:STATus:DETails? (new)
:CALibrate:SKEW:SLOT:STATus:DTEMperature? (new)
:CALibrate:SKEW:SLOT:STATus:TIME? (new)
```

:CHANnel Subsystem Programming Commands

```
:CHANnel:BANDwidth:FREQuency (new)
:CHANnel:FSELect:RATE (new)
:CHANnel:PROBe (new)
:CHANnel:WAVelength:VALue (new)
```

:CRECovery Subsystem Programming Commands

```
:CRECovery:CFRequency? (new)
:CRECovery:TDENsity? (new)
:CRECovery:OUTPut:DMODe (new)
```

:DISPlay Subsystem Programming Commands

```
:DISPlay:JITTer:GRAPh:TYPE (new)
:DISPlay:JITTer:GRAPh? (deprecated)
:DISPLay:MDISplay:DOCK (new)
```

:EMODules Subsystem Programming Commands (new)

```
The :EMODules extended modules subsystem controls the connection of
extended and simulated modules.
:EMODules:CRECovery:SADDress (new)
:EMODules:CRECovery:VADDress (new)
:EMODules:REConnect (new)
:EMODules:SIMulator:SRATe (new)
:EMODules:SLOT:ADDRess (new)
:EMODules:SLOT:CONNect (new)
:EMODules:SLOT:DISConnect (new)
:EMODules:SLOT:SELection (new)
:EMODules:SLOT:STATe (new)
```

:PTIMebase Subsystem Programming Commands

```
:PTIMebase:RIPRogress (deprecated)
```

:SIMulator Subsystem Programming Commands (deprecated)

```
This entire subsystem has been deprecated. Use the :SOUR subsystem
instead.
```

:SOURce Subsystem Programming Commands (new)

The new :SOURce subsystem configures the source signal of extended and simulated modules.

```
:SOURce:AMPLitude (new)
:SOURce:DIFFerential (new)
:SOURce:DRATe (new)
:SOURce:FILTer:CUToff (new)
:SOURce:FILTer:STATe (new)
:SOURce:FILTer:TYPe (new)
:SOURce:FNAMe (new)
:SOURce:FUNCtion (new)
:SOURce:INVert (new)
:SOURce:JITTer:RJ (new)
:SOURce:JITTer:STATe (new)
:SOURce:NOISe:RN (new)
:SOURce:NOISe:STATe (new)
:SOURce:OENable (new)
:SOURce:OFFSet (new)
:SOURce:PATTern (new)
:SOURce:WTYPe (new)
```

:SPRocess Subsystem Programming Commands

```
:SPRocess:DFEQualizer:BANDwidth (new)
:SPRocess:DFEQualizer:BANDwidth:AUTo (new)
:SPRocess:DFEQualizer:CLKDelay (new)
:SPRocess:DFEQualizer:DWAVeform (new)
:SPRocess:DFEQualizer:TAPS (new)
:SPRocess:DFEQualizer:TAPS:AUTo (new)
:SPRocess:DFEQualizer:TAPS:COUNt (new)
:SPRocess:DFEQualizer:TAPS:RECalculate (new)
:SPRocess:DFEQualizer:TARGet:AUTo (new)
:SPRocess:DFEQualizer:TARGet:LOWer (new)
:SPRocess:DFEQualizer:TARGet:UPPer (new)
```

:SYSTem Programming Commands Subsystem

```
:SYSTem:FCONfig (new)
:SYSTem:GTLocal (new)
:SYSTem:LAUNch (new)
:SYSTem:TEMPerature (new)
:SYSTem:UAUToscale (deprecated)
:SYSTem:UDEFault (deprecated)
```

Revision A.01.80, June, 2012

Differences from revision A.01.70.

General Comments

- FlexDCA requires Agilent IO Libraries 16.2 or later. If you have a prior version installed, it will be upgraded to version 16.2.
- FlexDCA requires the Agilent licensing system 4.3 or later. This includes "Agilent License Manager", "Agilent ACCL Licensing", and "Agilent Host Processor Platform".
- Removed the Control menu. The Auto Scale, Run, Stop, Single, and Clear functions can more easily be accomplished by clicking the buttons that are shown to the right of the menu bar. The Undo Auto Scale command has been moved to the top of the Setup menu.

New Feature List

- Ability to use 86100D DCA-X applications. Added the Apps menu to the menu bar for launching applications.
- Support for the N1012A OIF CEI Compliance 3.0 Application and N1019A User Defined Application Tool. The new menu also supports user-added shortcuts to files and Windows applications.
- FlexDCA now includes the ability to take into account the effect of external devices such as attenuators or transducers. With this feature, FlexDCA will report waveform and measurement results referenced to the input of the external device instead of the input of the oscilloscope channel. Additionally, if you have configured external attenuator or transducer settings in the 86100C/D firmware, they will be transferred to FlexDCA when using "Transfer Basic" on connection to the DCA.
- New copy-to-clipboard buttons on the shortcut menus for pasting waveform images or measurement data to external applications.
- Ability to find a bit sequence in a pattern waveform.
- Ability to select one of four color schemes for displaying color-grade persistence waveforms. This includes a color scheme that matches the classic 86100A/B/C/D firmware.
- Ability to select color or monochrome display of gray-scale persistence waveforms.
- The remote SCPI interface is fully supported on 64-bit operating systems.
- The bandwidth of a differential signal can be configured from a single drop-down in the GUI.

- The message area can now be "docked" so that it is permanently visible. To enable this feature, access the "Display Setup" dialog from the "Setup" menu. Near the bottom of the "Appearance" tab is a checkbox called "Dock Message Area".

General Defects Fixed

- Changed the default trigger bandwidth on the 86100D-STR frame from "Filtered Edge" to "Standard Edge".
- The waveform save feature will only allow you to save waveforms that are currently displayed. Previously, waveforms that had been acquired but not displayed could also be saved, which made it easy to accidently save the wrong waveform.
- Fixed the remote command ":DISK:SIMage:SINClude" in eye mode.
- Fixed a defect that caused Precision Timebase Synchronization to take a very long time to complete when a PRBS 23 pattern was in use.

Common Programming Commands

```
*IDN? (revised
```

:ACQuire Subsystem Programming Commands

```
:ACQuire:RLENgth:AUTo (deprecated)
:ACQuire:RLENgth:MODE (new)
:ACQuire:SPBit:AUTo (deprecated)
:ACQuire:SPBit:MODE (new)
```

:CHANnel Subsystem Programming Commands

```
:CHANnel:ATTenuator:DECibels (new)
:CHANnel:ATTenuator:RATio (new)
:CHANnel:ATTenuator:RESet (new)
:CHANnel:ATTenuator:STATe? (new)
:CHANnel:TRANsducer:GAIN (new)
:CHANnel:TRANsducer:OFFSet (new)
:CHANnel:TRANsducer:STATe (new)
:CHANnel:TRANsducer:UNITs (new)
```

:CRECovery Subsystem Programming Commands

```
:CRECovery:JSANalysis:SPECtrum:PEAKs? (new)
```

:DISPlay Subsystem Programming Commands

```
:DISPlay:CGSPectrum (new)
:DISPlay:GSSPectrum (new)
```

:SYSTem Subsystem Programming Commands

```
:SYSTem:MODel? (revised
```

:TIMebase Subsystem Programming Commands

```
:TIMebase:FIND:NEXT (new)
:TIMebase:FIND:SEQuence (new)
:TIMebase:FIND:SIGNal (new)
```

Revision A.01.70, April, 2012

Differences from revision A.01.61

New Feature List

- Support for 86108B Precision Waveform Analyzer module.
- Added Measurement Regions in Oscilloscope Mode.
- Improved Signals Palette with three display modes: Full, Compact, and Mini.
- Jitter Spectrum Analysis and Software Clock Recovery Emulation.
- Added new Ethernet Mask: OTU4 G.959.1
- Improvements to precision timebase synchronization.

New and Changed :CALibrate Subsystem Programming Commands

```
:CALibrate:CRECovery:{SLOT[1:4] | LMODule | RMODule}:STARt? (deprecated)
:CALibrate:CRECovery:{SLOT[1:4] | LMODule | RMODule}:STATus? (deprecated)
:CALibrate:CRECovery:{SLOT[1:4] | LMODule | RMODule}:STATus:DETails?
(deprecated)
:CALibrate:CRECovery:{SLOT[1:4] | LMODule | RMODule}:STATus:TEMPerature?
(deprecated)
:CALibrate:CRECovery:{SLOT[1:4] | LMODule | RMODule}:STATus:TIME?
(deprecated)
:CALibrate:DARK:CHAN<N>:STATus:DTEMperature? (new)
:CALibrate:DARK:CHAN<N>:STATus:TEMPerature? (deprecated)
:CALibrate:MODule:{SLOT[1:4] | LMODule | RMODule}:STARt (deprecated)
:CALibrate:MODule:{SLOT[1:4] | LMODule | RMODule}:STATus? (deprecated)
:CALibrate:MODule:{SLOT[1:4] | LMODule | RMODule}:STATus:DETails?
(deprecated)
:CALibrate:MODule:{SLOT[1:4] | LMODule | RMODule}:STATus:TEMPerature?
(deprecated)
:CALibrate:MODule:{SLOT[1:4] | LMODule | RMODule}:STATus:TIME?
(deprecated)
:CALibrate:SLOT[1:4]:CRECovery? (new)
:CALibrate:SLOT[1:4]:CRECovery:STATus? (new)
:CALibrate:SLOT[1:4]:CRECovery:STATus:DETails? (new)
:CALibrate:SLOT[1:4]:CRECovery:STATus:DTEMperature? (new)
:CALibrate:SLOT[1:4]:CRECovery:STATus:TIME? (new)
:CALibrate:SLOT[1:4]:ENABled (new)
:CALibrate:SLOT[1:4]:STARt (new)
:CALibrate:SLOT[1:4]:STATus? (new)
:CALibrate:SLOT[1:4]:STATus:DETails? (new)
:CALibrate:SLOT[1:4]:STATus:DTEMperature? (new)
:CALibrate:SLOT[1:4]:STATus:TIME? (new)
:CALibrate:SLOT[1:4]:PTIMebase (new)
:CALibrate:SLOT[1:4]:PTIMebase:STATus (new)
```

```
:CALibrate:SLOT[1:4]:PTIMebase:STATus:DETails (new)
:CALibrate:SLOT[1:4]:PTIMebase:STATus:DTEMperature (new)
:CALibrate:SLOT[1:4]:PTIMebase:STATus:TIME (new)
:CALibrate:SLOT[1:4]:VERTical (new)
:CALibrate:SLOT[1:4]:VERTical:STATus? (new)
:CALibrate:SLOT[1:4]:VERTical:STATus:DETails? (new)
:CALibrate:SLOT[1:4]:VERTical:STATus:DTEMperature? (new)
:CALibrate:SLOT[1:4]:VERTical:STATus:TIME? (new)
:CALibrate:VERTical:{SLOT[1:4] | LMODule | RMODule}:STARt (deprecated)
:CALibrate:VERTical:{SLOT[1:4] | LMODule | RMODule}:STATus? (deprecated)
:CALibrate:VERTical:{SLOT[1:4] | LMODule | RMODule}:STATus:DETails?
(deprecated)
:CALibrate:VERTical:{SLOT[1:4] | LMODule | RMODule}:STATus:TEMPerature?
(deprecated)
:CALibrate:VERTical:{SLOT[1:4] | LMODule | RMODule}:STATus:TIME?
(deprecated)
```

New and Changed :DISPlay Subsystem Programming Commands

```
:DISPlay:SPALette:MODE (new)
:DISPlay:SPALette:COMPact (deprecated)
```

:CRECovery, :DISPlay, and :MEASure Subsystem Option JSA Commands

```
:DISPlay:JSANalysis:SGRaph (new)
:CRECovery[1:4]:JSANalysis:ACQuire (new)
:CRECovery[1:4]:JSANalysis:FFTMagnitude:ECOunt (new)
:CRECovery[1:4]:JSANalysis:FFTMagnitudeSMOothing (new)
:CRECovery[1:4]:JSANalysis:INTegrate:F (new)
:CRECovery[1:4]:JSANalysis:PLLorder:FGAIn (new)
:CRECovery[1:4]:JSANalysis:PLLorder:FPOLe (new)
:CRECovery[1:4]:JSANalysis:PLLorder:FZERo (new)
:CRECovery[1:4]:JSANalysis:PLLorder:JTF:BWIDth (new)
:CRECovery[1:4]:JSANalysis:PLLorder:JTF:PEAKing (new)
:CRECovery[1:4]:JSANalysis:PLLorder:MODE (new)
:CRECovery[1:4]:JSANalysis:PLLorder:OJTF:BWIDth (new)
:CRECovery[1:4]:JSANalysis:PLLorder:OJTF:DFACtor (new)
:CRECovery[1:4]:JSANalysis:PLLorder:ORDer (new)
:CRECovery[1:4]:JSANalysis:RJCorrection (new)
:CRECovery[1:4]:JSANalysis:SPECtrum (new)
:MEASure:CRECovery[1:4]:DJ (new)
:MEASure:CRECovery[1:4]:RJ (new)
:MEASure:CRECovery[1:4]:TJ (new)
```

:MEASure Subsystem Region Commands

```
:MEASure:AMPLitude:BERLimit (revised)
:MEASure:REgions:COUNt (new)
:MEASure:REgions:REGion (new)
:MEASure:REgions:STATe (new)
```

General Defects Fixed

- For programming commands that have discrete parameters, (for example, :ACQuire:SMOothing) the :DEFault, :VSET, :NEXT, and :PREV child commands are no longer documented.
- For programming commands that have numerical values, the :DEFault, :MINimum, and :MAXimum child commands are no longer documented.
- Added programming topics for :SOURce, :LOCation, :STATus, and :STATus:REASon child commands to the measurement commands within the :MEASure subsystem.

Known Issues

- The remote SCPI interface is limited to the HiSLIP, Telnet, and Sockets protocols when running on a 64-bit Windows OS. To make use of this functionality, the program "Agilent.N1000.x86.exe" needs to be launched instead of the default "Agilent.N1000.exe".

Revision A.01.61, February, 2012

Differences from revision A.01.60.

General Comments

- Connecting to a remote instrument requires 86100C/D firmware A.10.60 or later.

New Feature List

- Added an “Auto Scale” button to top of the main GUI.

General Defects Fixed

- Resolved a defect that prevented Jitter Mode measurements if SIRC and Precision Timebase were active.
- Fixed a defect that would cause jitter mode to poorly auto scale differential signals causing Amplitude Analysis measurements to be made at the wrong time.
- Extended the "Transfer Basic" option of FlexDCA to bring over the following categories of settings from the remote instrument:
  - Channel configuration (including bandwidth, wavelength, and reference filter).
  - Timebase scale configuration.
  - Trigger source and bandwidth configuration.
  - Pattern Lock configuration.
  - Precision Timebase configuration.
  - Clock Recovery configuration (86108A and 83496A/B).
  - Differential signal (if the remote instrument has a subtract math function on a differential pair).
- Fixed a defect that would cause the results of "Transfer Basic" to vary based on the prior configuration.
- Resolved a number of usability issues when performing calibrations of the 86108A.
  - The "Relock" dialog will no longer come up when the user is instructed to disable signals as part of the calibration.
  - At the end of calibration, the user is instructed to reconnect signals, clock recovery is re-locked, and precision timebase is synchronized automatically.
- Resolved a defect that would cause clock recovery modules to have the wrong loop bandwidth when defining loop bandwidth as a rate divisor.

Known Issues

- The remote SCPI interface is limited to the HiSLIP, Telnet, and Sockets protocols when running on a 64-bit Windows OS. To make use of this functionality, the program "Agilent.N1000.x86.exe" needs to be launched instead of the default "Agilent.N1000.exe".

Revision A.01.60, December, 2011

Differences from revision A.01.50.

General Comments

- Connecting to a remote instrument requires 86100C/D firmware A.10.60 or later.

New Feature List

- Added a Continuous Time Linear Equalizer (CTLE) math function. The CTLE requires option 201, Advanced Waveform Analysis.
- Added a Delay math function. The Delay function adds a customizable time delay to the input waveform.
- Added an Align math function. The Align function delays one input waveform to align it with a second input waveform.
- Added support for Option 500, Productivity Package, which includes Rapid Eye. Rapid Eye significantly reduces the time required to acquire eye-diagram samples. If several eye diagrams are displayed, Auto Scale can be configured to apply software skew to align all of the eye diagrams.
- Eye Tuning enables a variable persistence display in Eye/Mask mode. Eye Tuning can be used to tune a device while simultaneously watching changes to the eye diagram and eye diagram measurements.
- Eye mask margins can now be based on a user-specified target Hit Ratio.
- When saving screen captures, added the capability to select one out of many displayed waveforms to include in the saved graphics file.
- Added comprehensive capability (approximately 800 commands) to remotely control FlexDCA via SCPI programming commands.
- Added an Uncorrelated Noise measurement to Jitter Mode.
- Added the ability to align waveforms on the display, similar to the Horizontal Skew capability of the 86100D firmware. This Time Delay setting is available from the Channel Setup dialog box's Advanced tab.
- The RJ/RN compensation feature can now be used with signal processing operators, such as de-embedding.
- Added mask files for OTU2 and OTU2e.

General Defects Fixed

- Fixed a problem where the continuous loop bandwidth setting for clock data recovery hardware could be set to values less than 15 kHz.
- Fixed an occasional crash when using a precision timebase.
- When Jitter Mode is used to measure a clock, the clock frequency is reported in unit of Hertz instead of bits-per-second.
- Fixed unreliable detection of the precision timebase reference frequency in Pattern Lock.

Known Issues

- The remote SCPI interface is limited to the HiSLIP, Telnet, and Sockets protocols when running on a 64-bit Windows OS. To make use of this functionality, the program "Agilent.N1000.x86.exe" needs to be launched instead of the default "Agilent.N1000.exe".

Revision A.01.50, September, 2011

Differences from revision A.01.03.

New Feature List

- Ability to apply SIRC (System Impulse Response Capability) correction data for 86105C, 86105D, 86115D, or 86116C optical modules. SIRC data corrects for a module's specific response.
- Perform vertical module calibrations and dark calibrations from within FlexDCA, as well as view the calibration status.
- FlexDCA now has a remote SCPI interface.
- When running on an 86100D mainframe, FlexDCA can be controlled using the HiSLIP, Telnet, or Sockets protocols.
- When running on a 32-bit Windows operating system, FlexDCA can be controlled using HiSLIP, Telnet, VXI-11, Sockets, GPIB, or USB (hardware permitting).
- New tools to explore and learn the SCPI command set:
- A new SCPI Recorder control that records and displays the equivalent SCPI commands as the user interacts with the graphical user interface.
- A new Interactive SCPI Command Tree that allows the user to explore the entire SCPI command set and execute individual commands directly from the tree view.
- New optical channel measurements added:
- Average Power (Oscilloscope mode
- Average Power (Eye/Mask mode
- Extinction Ratio (Eye/Mask mode
- Ability to apply RJ and RN compensation factors to compensate for the measurement system's intrinsic RJ and RN. It is not yet available in conjunction with

signal processing operators, such as de-embedding.

- New Amplify and Square math functions.
- Added the following Fibre Channel masks:
- 4.25 Gb/s Fibre Channel Delta R
- 4.25 Gb/s Fibre Channel Delta T
- 4.25 Gb/s Fibre Channel Delta T (Norm
- 8.5 Gb/s Fibre Channel Delta R
- 8.5 Gb/s Fibre Channel Delta T
- 16x Fibre Channel Delta R
- 16x Fibre Channel Delta T
- The 83496A/B/C and 86108A clock recovery modules now support an additional front panel clock sub-rate of divide-by-32, as well as new super-rates of x2, x4, and x8.
- Added new standard bit rate 41.25 Gb/s (40Gb Ethernet) selection for pattern lock triggering and clock recovery, external precision timebase frequency, and horizontal (timebase) scale units of bits.
- Added CPRI and OBSAI bit rates to the standard rate selection lists.
- Optimized waveform graticule size to fill its available space. Towards this end, the marker control-panel button has been moved inside the graticule area (upper right-hand corner). The acquisition limit status and smoothing status annotations now reside directly below the top menu area and, as before, are visible when the associated feature is active.
- Sharper mini signal waveforms (displayed in the signals palette and the source select dialog).

General Defects Fixed

- Differential skew values from the 86118A-H01 are properly transferred from the instrument to FlexDCA.
- Fixed a defect that would cause the waveform jitter to increase when using pattern lock at large horizontal position values.
- Waveforms files can be loaded from Agilent real-time oscilloscopes, if they were saved in verbose text formats (header included).
- The Message Log Viewer dialog is now fixed width, which prevents the width from potentially jumping around as the user scrolled through a list of messages.
- The on-screen keyboard is no longer invoked when the user clicks on a read-only or disabled textbox widget.
- The RN/PI amplitude histogram now displays a legend when simultaneously displaying both the zero-level and one-level data.
- Fixed the 39.8 Gb/s OC-768 mask.

Known Issues

- The new RJ/RN compensation feature cannot be used with signal processing operators, such as de-embedding
- The remote SCPI interface is limited to the HiSLIP, Telnet, and Sockets protocols when running on a 64-bit Windows OS. To make use of this functionality, the program "Agilent.N1000.x86.exe" needs to be launched instead of the default "Agilent.N1000.exe".

Revision A.01.03, April, 2011

Differences from revision A.01.02

General Comments

- FlexDCA now requires Microsoft .NET Framework version 4.0. If it is not already installed, FlexDCA will install the Microsoft .NET Framework 4.0 Client Profile.
- There is now a free version of FlexDCA available. The free version does *not* require the following items:
- Agilent Licensing system
- Agilent IO Libraries
- MATLAB Compiler Runtime

The free version does *not* enable any of the licensed features, such as:

- Jitter Mode,
- De-Embedding filters, or
- connecting to a remote DCA.

What is enabled in the free version is basic oscilloscope and eye diagram measurements using the built-in waveform simulator or the Agilent SystemVue product.

New Feature List

- Data simulation and analysis are now able to take advantage of multi-core CPUs.
- Waveform and eye memories can be cleared.
- Support for the 86115D-004 module's B channels.
- The data simulator now loads pattern waveforms that are stored in the .wfmx format as well as the .csv format.
- The data simulation rate can be reduced to avoid 100% CPU usage whenever the data simulator is running. This is available from the Data Simulator Setup dialog.
- Waveform Signal Processing functionality is now available from a new, translucent slide-up panel accessed via the new Math button in the lower right-hand corner of the application.
- Annotations have been added to the upper right-hand corner of the Jitter Measurement Results window to denote large jitter mode (LJM) and jitter measurements on signal processed waveforms (SP).

General Defects Fixed

- Fixed a bug that allowed multiple conflicting instances of FlexDCA to be launched at the same time.
- Improved the performance of Jitter Mode on long patterns.
- Improved the reliability of autoscale.
- Fixed an alignment issue with certain masks.
- Fixed a defect that prevented pattern waveform saves from remembering the last saved location.
- Fixed a defect that could, under certain conditions, result in an empty measurement toolbar after the application had been manually resized.
- Fixed a defect that could cause the application to crash if a jitter graph in an undocked window was double-clicked.
- Fixed a bug that prevented jitter measurements from being made on a function of a waveform memory (partial results only).
- Added annotation to the RJ and RN measurements when the values are fixed by the user.
- Fixed a limit tests defect in Jitter Mode. Limit tests now report out-of-limit failures.
- Fixed a defect that prevented a remote FlexDCA session from being able to end a different active FlexDCA session that is connected to the same 86100 DCA.