**8903A Audio Analyzer Firmware Revision Information**

**Release Version 2.10.7.0 (23 July 2013)**

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| **Features** | **Notes** |
| Analyzer/Generator | * Changed the minimum output voltage for digital generator in dBFS unit to -140.
* Fixed the THD+N level and THD level measurement error in digital analyzer. The THD+N level and THD+N Ratio readings must be almost the same at 1 FFS generated signal. Same applies to THD Ratio and THD Level. Previous firmware + software have a 6 dB difference for normal mode and 3 dB differences in Precision mode.
* Changed the DSI voltage unit from Vpp to V.
 |
| Graph | * Fixed Defect: [Sweep] The reference trace slot source from file cannot be loaded successfully
* Fixed Log Scale issue when Left Limit is set to a value < 1
* Fixed where graph data is still referencing to an old set of graph entity, despite it being overridden by a new graph entity.
* Fixed issue where the graph preview of the arbitrary waveform is not displayed correctly.
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| GUI | * Limit the Sweep dwell time in GUI to the maximum value of 5000ms
* Fixed issues where Sweep Function change command in sweep does not reflect correctly in GUI
* Fixed issue where changing the graph HOLD settings using SCPI does not reflect in the GUI Side Menu.
* Fixed Defect: Unable to show 0.001% ratio in front panel for Dual waveform.
* Fixed Defect: Unable to change the ratio unit to dB for Dual waveform.
 |
| Enhancements | * Added features on System Page
	1. On System Page, a new soft key to modify the arrow keys will be introduced. There’ll be 2 modes:
	2. Default mode – using ←→ keys to change channel
	3. Custom mode – using ←→ keys to perform generator/analyzer specific functions
* Added features on Analyzer:
	1. Add a shortcut key of 0dB on analyzer first page
	2. Toggle previous pair and current pair of functions using ←→ keys (up to 4 previous set functions for function 2)
* Added features on Generator:
	1. ← or → key activates parameters settings textbox.

Example:In Sine wave config, ← key activates previous textbox to allow user to set frequency; then → key activates next textbox to allow the user to set amplitude* 1. Adding a knob step size setting on generator’s page. Each tick of the knob increases/decreases the value according to the set step size

Example:To set a frequency, if the step size is set to 10Hz, each knob tick increases/decreases the frequency setting by 10Hz. |
| SCPI | * Fixed problem where query amplitude by SCPI command when amplitude is in unit dBm returned wrong Vrms result.
* Fixed Defect: The default amplitude unit is Vrms. However, if sending the SOURce:SWEep:STARt  <start> SCPI command with other unit (e.g. dBu ). It won’t set to unit Vrms.
* Fixed Defect: The display is not changed according to the setting of SCPI for these commands, i.e. SOURce:SWEep:CHANnel, SENSe:SWEEP:CHANnel and MMEMory:LOAD:STATe:PUP
* Fixed Defect: The shared amplitude entity among certain digital waveforms cannot be set with SCPI if the channel parameter in the SCPI command set to D2 only.
* Fixed Defect: [Sweep] SCPI query sweep amplitude stop value return wrong result
* Fixed problem: The instrument hang when user tries to send SCPI commands to the instrument before the side menu pop up disappear.
* Fixed issue where there might be data corruption due to digital and analog graph sharing the same buffer. Separated these 2 to have separate buffers and updated the corresponding SCPI commands to use the correct buffer depending on the interface mode.
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**Release Version 2.10.6.0 (1 October 2012)**

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| **Features** | **Notes** |
| Firmware Upgrade | * Fixed defect – Firmware upgrade: Upgrade Application firmware together with Analog Controller firmware using the Update All method causing Analog Controller firmware upgrade fails. The failure happens when upgrade from firmware version R2.3.2.0 to R2.10.x.x
 |
| Analyzer/Generator | * Changed the function’s unit implementation in Analog Analyzer & Digital Analyzer. The unit will be remembered for each Function Type.
* Add feature – External Gain under Input Config in Analog Analyzer
* Enable cross interface SNR measurement
* Add THD+N notch filter bandwidth selection for SINAD and THD+N measurement under Meas. Config in Analog Analyzer
* Add SNR delay feature in Analog Analyzer
* Changed the default waveform amplitude is changed from 1 FFS to 100mFFS in Digital Generator
* Changed the default value of Walking One/Walking Zero has changed from 1 to 48000 in Digital Generator
* Changed the default value of Sync Polarity under DSI Configuration from Rising Edge to Falling Edge in Digital Generator
* Changed the default value of Bit Clock Edge Sync under DSI Configuration from Rising Edge to Falling Edge in Digital Analyzer
* Fixed defect - Cannot set DC offset by using %FS unit in Digital Generator
* Fixed defect – The value 10p ohm in dBm reference cannot be retained in Analog Generator
* Fixed defect - Unit is not shown on the Frequency 2 value for Dual waveform in Analog Generator
* Fixed defect - Voltage surge at changing voltage range in Analog Generator
* Fixed defect – Analog Generator waveform setting is not restored during start up even if user selects Last Settings as the Power up state.
* Fixed defect - Analog Analyzer settings are not restored during start up even if user select Last Settings as the Power up state.
* Fixed defect - Digital Filters settings are not restored during start up even if user select Last Settings as the Power up state.
* Fixed defect - Analyzer function’s name did not refresh when user select Reset All in System Page
 |
| Graph | * Changed the default waveform amplitude is changed from 1 FFS to 100mFFS in Digital Generator
* Fixed defect - Sweep View became null after \*RST is called
* Fixed defect - Sweep settings was not properly save/recall
* Fixed defect - Sweep Menu is changed after recall setting
* Fixed defect - ΔHz is represented as "dHz" in Sweep page side menu
* Fixed defect - Wrong Y axis label after auto-scale
* Fixed auto scale issue where the y axis might be incorrect if the graph data set is in the negative region
* Fixed defect - Analog FFT Graph shows additional redundant traces after changing axis settings
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| GUI | * Add HP8903B resolutions settings
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| Interface | * Improved the speed of fetch analog analyzer data after it has been initiated.
* Add QR code at System Page.
* Fixed Local Lockout defect
* Fixed defect - Host name cannot be modified for LAN in System Page.
* Fixed defect - Progress bar does not reflect the progress of the Secure Erase in System Page
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| SCPI | * Add new SCPI commands
	1. INPut:EXTernal:GAIN
	2. INPut:EXTernal:GAIN:UNIT
	3. SENSe:SOURce:INTerface
	4. SENSe:SOURce:CHANnel
	5. SENSe:DIGital:SOURce:INTerface
	6. SENSe:DIGital:SOURce:CHANnel
	7. SENSe:THDN:NOTCh:BANDwidth
	8. SENSe:SNR:DELay
	9. SENSe:DIG:SNR:DELay
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**Release Version 2.10.3.0 (20 March 2012)**

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| **Features** | **Notes** |
| Firmware Upgrade | * Enable AutoUpdate feature using XML
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| Analyzer/Generator | * Add Pink Noise option
* Resolved incorrect sample/step setting for the Monotonicity waveform
* Resolved Digital Phase measurement problem
* Add THD measurement function in Digital Analyzer
* Fixed the Detector type problem
* Change the default bit clock sync polarity to rising for both digital analyzer and digital generator
* Add the bit clock sync polarity value in the digital analyzer state,hence it can be recall from the Saved state.
* Fixed defect where Digital Analyzer returns wrong Vac value by using pk-pk detector
* Fixed defect where Digital Analyzer wrong Error handle in Reference Level
* Fix defect where Digital Generator old error message display for Output Voltage
* Fixed defect where Frequency Domain system is non-responsive occasionally if change trigger source by stop the user from changing trigger source if the measuring is in progress.
 |
| Graph | * Enhanced THD reading in Graph mode.
* Fixed defect in log scale where X and Y axis is wrongly calculated due to incorrect Math formula used.
* Fix defect where the axis switches to phase Y settings whenever the FFT Measurement mode is switch between phase and magnitude
* Fix defect where FFT Graph does not resume in Continuous Running Mode after switching running mode
 |
| GUI | * Fix the display bug on 4-view panel for dual waveform.
* Set the minimum resolution of all references to 1 nano.
 |
| Interface | * Add in the Validity Bit parameter for output AES3/SPDIF interface
* Fix the digital analyzer serial interface issue on the falling edge bit clock sync polarity.
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| SCPI | * Fix SCPI short form defect for commands
	1. INP:DIG:DSI:AUD:WLEN
	2. INP:DIG:DSI:AUD:RES
	3. INP:DIG:DSI:AUD:FORM
	4. SENS:DIG:SAMP:SIZE
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**Release Version 2.10.1.0 (1 September 2011)**

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| **Features** | **Notes** |
| Analyzer/Generator | * Add Digital Analyzer and Digital Generator function
* Fix amplitude bug on analog arbitrary file export
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| Self Test | * Fixed Digital Self Test bugs
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| Graph | * Refine Autoscale Y-axis algorithm
* Add checking of waveform for Digital Sweep before start sweeping
* Fixed Sweep issue.
 |
| SCPI | * Removed SCPI command – init:cont:graph and init:cont:dig:graph
* Stop Graph function when SCPI command GraphAutoQuery initiated.
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| Master Clock | * Update External Master Clock table.
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| Front Panel | * Fixed instrument irresponsible when Single Graph Query function selected from Front Panel.
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**Release Version 2.3.2.0 (1 February 2011)**

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| **Features** | **Notes** |
| Graph | * Resolve harmonics related issue (refer to TW's case 101104). First 4 bins of measurements are ignored when analysis harmonics is done. Error message is displayed when only the fundamental frequency is obtained and its corresponding harmonics is out of measurement bandwidth range
 |
| Analyzer/Generator | * Added Fundamental Frequency Lock Feature in Analyzer
* Enhance sweep validation & refine apply change in single channel view.
* Fixed defect: Cannot set frequencies while the generator is DFD.
* Fixed defect: System will shut down when user try to change the frequency and amplitude, but later cancel editing.
 |
| Firmware Upgrade | * Allow user to select the firmware files through the FTP folder. User can put all the firmware files through the FTP and then go to the System page 🡪 Upgrade and then select the appropriate firmware files from the Source “Internal”.
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| HP8903B mode | * Open the HP8903B feature to public for free
* Added "\r\n" at the end of returned result of r2d2 commands.
* Change the implementation for HP-IB Service Request Conditions (22.NSP) to sum of any combination of the weighted conditions below:
	+ 1 - Data Ready
	+ 2 - Command Error / HP-IB error
	+ 4 - Instrument Error

In previous implementation, the condition is not weighted sum value. |
| SCPI | * Added command “SENSE:FUNDAMENTAL:FREQUENCY:LOCK”
* Added command “SYSTem:REMote”, “SYSTem:LOCal” and SYSTem:RWLock”
* Fixed defect: cannot return binblock data (in commands, e.g. : SYSTem:DISPlay:IMAGe?, FETCh:ARRay?) while HP8903B mode is on.
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**Release Version 2.2.8.0 (29 July 2010)**

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| **Features** | **Notes** |
| Graph | * Changed the approximation algorithm to determine the points from using current and next point to using median.
* Resolved issue where turning the knob using fine-tune movement doesn't move the marker in zoomed view
* Corrected the degree label for Y-axis in the Plot and List View.
* Resolved problem of wrong unit (µs) is displayed when user try to set the time 99ms, 98ms etc. in the Time Domain mode
* Fixed overlapped text in graph page when user try to change the analysis mode from time to phase or from magnitude to phase mode using SCPI
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| Sweep | * Resolved the defect that Sweep will still continue running after reset/preset.
* Resolved issue - Output button is not responding when sweep is running
* Disable auto-scale while sweeping
* Resolved problem of unable to save the sweep measurement data into internal storage
* Resolved issue - The header of the saved sweep's csv file for THD+N Ratio is incorrect. The header saved is Vac(dBV), but the Y-axis of graph display has changed to dB
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| Analyzer | * Moving averaging feature added
* Added low pass filter 80kHz
 |
| Analyzer/Generator | * Combine Analyzer and Generator in one page for a single channel
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| Analyzer, Graph and Sweep | * Limited the reference value to not more than 140 V.
* Enabled auto measurement time adjustment when it’s “Gen Track” and the Generator output frequency is more than 100 Hz.
 |
| Front Panel | * Turn off the beep sound when a key is pressed on the front panel
 |
| Generator | * Added dBm and dBu measurement unit
 |
| Firmware Upgrade | * Add power fail safe solution for image update
* Allow user to upgrade all firmware at once
* Add auto-detection of new firmware when a USB flash memory is plug-in
 |
| Self Test | * Fixed self test failure issue
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| SCPI |

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| * Resolved problem of setting Calculate:Format:Ratio DELTa causes wrong sweep results
* Add contrains to command SENS:REF:LEV/FREQ/RAT to disallow user to set INF value as reference
* Resolved issue - SENSe:REF:MEAS RAT, Ch<n>,(@<n>) takes INF measurement as reference value
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| * Resolved issue - Sweep results for RATIO measurement does not refer to the reference value of ratio
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| * Resolved VEE timeout error that caused by remote mode changed when an INIT command is sent.
* Added commands support for HP8903B audio analyzer for backward compatibility purpose.
* Added INIT:CONT:ANALyzer command for continuous mode measurement in analyzer
* Added moving average feature
* Added SYST:DISP:IMAGe? to get the print screen image data through SCPI
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**Release Version 1.2.0.5 (29 December 2009)**

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| **Features** | **Notes** |
| Frequency Domain Graph | * Resolved the bug where the labels not changed after reset.
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| Sweep | * Resolved the bug where the labels not changed after reset.
* Disabled the crosstalk measurement.
 |
| Analyzer | * Resolved the bug where the value for second function messed up when multichannel function failed to change to single channel function.
* Pop out warning message when filters are set in high bandwidth and measurement time > 1/4s.
* Resolved the problem of measurement failure while making change in auto query mode.
* Resolved the bug where filters are disabled after graph query is performed.
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| Self Test | * Resolved the null reference exception when measurement failed in self test.
* Added error handling for cal factor command failed.
* Resolved the bug where the self test’s side menu display wrongly when customized test is selected.
* Added error handling for customized test when no test is selected in the list view.
* Resolved the problem of measurement failure after self test is performed.
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| Module Card Detection | * Resolved the fake extra module card detection.
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| User Interface | * Enabled all the list view and combo box drop down list to be scrolled using the knob.
* Filtered unimportant error message to eliminate unnecessary pop out.
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| System Settings | * Resolved the inconsistency problem of the GPIB address update and power up state.
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| Calibration | * Resolved the inconsistency problem of cal factor status query via SPCI command.
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| Firmware Update | * Enabled the filter firmware to be updated again when it is corrupted.
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| Filter | * Improved the CCITT on low frequency response.
 |
| Analyzer | * Change the side menu item name, ‘Reference’ to ‘Rel/Ref’.
* Added the relative voltage measurement, reference frequency measurement and relative THD ratio measurement features.
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| SCPI | * Added commands SENSe:REFerence:MEASured, SENSe:REFerence:FREQuency, SENSe:REFerence:RATio, CALCulate:FORMat:LEVel, CALCulate:FORMat:FREQuency, CALCulate:FORMat:RATio, DIAGnostic:CONFig:SET
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| Graph (Sweep, Time and Frequency Domain) | * Showed grid values at the X and Y axis.
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| LAN Connection | * Enabled the LAN address to be set manually when the unit does not get the assigned address from the server.
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| Sweep | * Allowed relative measurements in Sweep. The reference value and the measurement data format which are set in Analyzer mode will bring forward to Sweep mode.
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| Graph | * Resolved the bug where the metric in axis settings does not handle correctly.
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| Self Test | * Increased Delay when busy timeout to 200ms (default).
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| Analyzer | * Added delay after pausing/resuming the auto mode to avoid command crashed.
 |
| Reset | * Enabled the factory settings to be read from the writable configure file after factory reset.
 |
| Self Test | * Used different delay for self test retries.
 |
| Help | * Associated Help to Ref/Rel feature.
 |
| SCPI | * Exposed the command to overwrite the factory setting configuration.
 |
| Save/Recall | * Resolved the bug where the “Page 1” and “Page 2” text showed incorrectly at the side menu of the mode recall page.
* Added the reference settings of Analyzer in the Save/Recall.
 |
| Reset | * Resolved the bug where the references of Analyzer are not being reset when performing reset mode/factory reset.
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| Analyzer | * Fixed the exception thrown when changing the reference settings too rapidly.
* Disallowed changes on reference mode if neither measurement function supports the reference parameter.
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**Release Version 1.0.0.2 (13 October 2009)**

Initial release.

Please refer to "U8903A Firmware Upgrade Procedures" as in “www.agilent.com/find/audioanalyzer" for the firmware upgrade procedures.