



IVCAD Release notes

v3.10.2



Maury Microwave



AMCAD Engineering
Advanced Modeling for Computer-Aided Design

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3.10.2 – 2023/03/14

New features

Measurement

- VNA based Load Pull:
 - Added current auxiliaries stop condition.
 - Added pre-measurement action: skip IV/RF initialization.

Sweep Plan

- Added flag for nestable actions for breaking loop in case of error; same thing for perform measurement action.

Improvements

Measurement

- VNA based Load Pull:
 - Setup option: specified the option "Coupler Behind Tuner" not working with Keysight NVNA setup.

Bug fixes

Measurement

- VNA based Load Pull:
 - Fixed post-action "Keep RF/IV ON after measurement".
 - Fixture was considering twice with coupler behind tuner.
 - Calibration: disabled tuner front and term files if option "Coupler Behind Tuner" is selected.

Export

- Maury:
 - SPL file: fixed issue during export with 4 auxiliaries.

Drivers

- New models supported:
 - LadyBug USB Power Meter: LB480A.
 - R&S oscilloscope: RTM3000, RTA4000.
- Features:
 - Added option tooltips to have more information about the option.
- Improvements:
 - Keithley Generic PS: added options regarding forced / fixed range.
 - Keysight Genetic RF source: added recall state option.
 - Keysight Genetic VNA: added internal hardware check before controlling it.
 - Keysight Generic VNA: added Source Attenuation in advanced options.
 - R&S Generic VNA: added ZNA50 and ZNA67.
- Bug fixes:
 - Boonton PowerMeter: removed *OPC? queries as this made the power meter crash.
 - Generic Multimeter: put default delay back to 0ms (previously forced to 1 for Fast CW measurements with Keithley DMMs).
 - Keysight Genetic PS: fixed addition of 3352XB models.
 - Keysight Genetic PS: fixed waveform selection in instrument.

- Keysight Genetic RF source: removed power boundary left on some models.
- Keysight Genetic RF source: fixed waveform management.
- MTune: fixed issue with s-parameters at harmonic 4.F0. There were never read.
- R&S Generic RF source: fixed external ref command.
- R&S Generic RF source: fixed waveform management.
- R&S Generic RF source: fixed trigger output for SMBV100B.
- R&S Generic RF source: fixed alternative PMOD (waveform signal for pulsed generation).
- R&S Generic RF source: fixed pulsed option parsing.
- R&S Generic VNA: fixed ZVA modulators initialization.
- R&S Generic VNA Generic: fixed trigger initialization.
- R&S Generic VNA Generic: fixed 2Tones capability issue.
- R&S Generic VNA Generic: compensated VNA error term inversion (Load Match).
- R&S Generic VNA Generic: replaced pulse check error by warning.
- R&S NRP2: fixed triggering for pulsed measurements with NRX.
- R&S NRP2: updated automatic range selection for NRX.

3.10.1 – 2022/07/22

Drivers

- New models supported:
 - Keysight Power Supply: Added Agilent 3352xB models.
 - R&S RF Source: Added SMM 100A model.
- Improvements:
 - Keysight VNA Generic: Added option of rear panel output (Port2 to rear).
 - Keysight VNA Generic: Added option of 2nd source redirection to OUT1.
 - Keysight VNA Generic: Added option to use the VNA to generate one tone only even with 2 Tones capabilities (external coupler + 2nd RF Source).
 - Keysight VNA Generic: Reworked pulse option recognition and capabilities assessment.
 - Keysight RF source: Removed max frequencies boundaries checking.
 - CopperMountain VNA: Added option to wait after source turned on for power to achieve the correct level.
 - CopperMountain VNA: Added option to disable Auto Dynamic Range.
 - CopperMountain VNA: Added FAST CW support.
 - R&S VNA Generic: Added REF out 100MHz output control on ZNA.
 - Velox/ProberBench: Reworked move commands (now working properly), added some additional checks to avoid exceptions and added possibility to control Velox directly using MessageServer process (also add network control over it).
- Bug fixes:
 - Mtune: Fixed getSpar function at harmonic for harmonic Load-Pull measurement.
 - Velox/ProberBench: Fixed wafer mapping when configuration is not standard.
 - Keysight VNA Generic: Fixed Fast CW with Harmonics.
 - Keysight VNA Generic: Pulsed settings for auto PRF, auto attenuation and filters.
 - Keysight Infiniium & InfiniiVision: Fixed option parsing issue.
 - RnS Generic VNA: Fixed reset Cal issue.
 - Tektronix Oscilloscope: Fixed option parsing issue.

3.10 – 2022/04/12

Improvements

Measurement

- VNA based Load Pull:
 - Added new setup option: keep RF on before measurement.
 - Updates default active tuning settings: the setting factor is now high by default
- WGVRLP Measurement:
 - Added new setup option: active tuning factor.
- MTune 2.00.31 supported:
 - Nano 5G Tuner supported

Bug fixes

Measurement

- IV Measurement:
 - Fixed UI issue where default IV access were not selected in configuration.
- VNA based Load Pull:
 - Fixed computation of drain efficiency value.
 - Fixed issue with HPR calibration: did not used the good calibration for harmonics.
 - Tuner auto-calibration: fixed frequency list, only tuner frequencies must be listed.
 - Fixed burst measurement index issue.
- Traditional Load Pull:
 - Fixed read gammas at harmonics with tuner in single mode.
 - Fixed computation of Gts in 2-Tones measurement.
 - The loss of fixtures was de-embedded twice when tuners are enabled.
 - Fixed computation of GTs Gamma (Load & Source): fixture was de-embedded twice
 - Fixed computation of PSource power Calibration: fixture was not de-embedded if no source tuner
 - SPL files: fixed “append” feature issue with gammas.
 - SPL files: fixed harmonic count when performing measurement without tuner.

Drivers

- New models supported:
 - Agilent PM: U2063XA
 - RnS Generic Power Supplies: HMC8041G, HMC8042G, NGP802, NGP804, NGP814, NGP822, NGP824
 - R&S NRP2: added NRX model.
- Improvements:
 - RnS Generic Power Supplies: allowed multi-sessions (LAN supported)
 - Agilent VNA Generic: added LFE module.
 - Generic Multimeter: Added multi-session capability
- Bug fixes:
 - PIV driver: fixed external trigger mode when PIV probes are in mixed mode (one in DC, the other in pulsed).
 - PIV driver: fixed an issue with latest firmware update (communication timeout when setting a wrong level).
 - PIV driver: changed default RF delay and width to 1µs.

- MTune: Fixed issue with harmonics s-parameters. When harmonics was not controlled, s-parameters were not read even if there are available in the .tun file.
- Agilent Power Supply: Fixed voltage range on E36xx series
- Agilent VNA Generic: Fixed VNA as RF Source only malfunctions in 1Tone and 2Tones
- Agilent VNA Generic: Fixed IF path attenuations to 0 when NBF & NBF Gated
- Agilent VNA Generic: Fixed ENA E5080A calibration application
- Agilent VNA Generic: Fixed FOM & Harmonic frequency settings
- Agilent VNA Generic: Fixed segment issue in 2-Tones mode
- Agilent VNA Generic: Fixed power and segments settings for Fast 2-Tones measurements
- Agilent VNA Generic: Fixed frequency application when switching to CW with active calibration
- Agilent VNA Generic: Fixed calibration application when all error terms have been sent
- Agilent VNA Generic: fixed pulse generator 0 OFF to ON for pulsed NBF Gated.
- Agilent VNA Generic: fixed frequency segments.
- Agilent VNA Generic: fixed power limits when not using attenuators. Power will not be applied if requested too low.
- Agilent VNA Generic: fixed calibration set definition when loading error terms.
- Anritsu RF Source: Fixed device list typo where MG369XC was missing
- Multimeter: Set default command delay to 1ms (issue with Fast CW & Keithley DMMs)
- Generic Multimeter: fixed burst trigger not being saved.
- RnS NRP2:
 - Fixed pulsed mode with NRX and CW & triggered power sensors
 - Replacement of all old NRP2 commands used by NRX with new RnS dedicated commands for faster use
 - Fixed averaging for NRX
 - fixed “minPower” parsing (1e-10 error pop-up).
 - fixed reset averaging with NRP2017 sensors.
- RnS Generic VNA: Fixed internal / external combiner management in 2Tones mode
- RnS Generic VNA: ZNA active Tuning speed improved
- R&S VNA: added pulse generation capability when detecting pulse modulation options.
- iTest BILT: fixed drain current bias value to return 0 when doing pulsed measurements.
- R&S RF Source: reworked frequency boundaries detection when parsing options.
- VMU Maury: force minimum value at 0 in attenuator algorithm.
- ProberBench: Fixed subdie index returns by driver (now subdie index start from 0 to N and not from 1 to N+1).
- Driver Configurable: fixed function “read power at harmonics” of spectrum driver: frequency was not updated.
- Virtual Tuner: updated .tun file reader to accept new formats.

3.9 – 2021/05/31

Main features of this release

- New Setup: **Wave Guide Vector Receiver Load Pull measurement.**

New features

Measurement

- New Setup: Wave Guide Vector Receiver Load Pull measurement.

- VNA based Load Pull:
 - Quiescent Current Stabilization.
 - Frequency offset (mixer mode).
- Traditional Load Pull:
 - Quiescent Current Stabilization.
 - Frequency offset (mixer mode).

Improvements

Import/Export

- Maury formats: added gammas as data in SWP file.

Measurement

- General:
 - The 'Show Calibration Area' feature (Tuner Manager) use C-Spline instead of B-Spline (pass through points).
 - Changed default weight and radius settings for passive tuners.
- IV Measurement:
 - Perform measurements and screenshot on auxiliaries (now stored output MES files).

Toolbox

- Amplifier Model:
 - Corresponding AutoZRef option added for CST file opening.

Bug fixes

Measurement

- General:
 - Fixed manual mode for passive tuners (UI freeze).
- Tools:
 - Sweep plan: fixed an application freeze while using the bias sweep and script.
 - Sweep plan: no more user interactions when a sweep plan is started from script.
 - Sweep plan: the 'sweepplan.start' now throw an exception if at least one error occurred during process.
- Traditional Load Pull:
 - Added missing PAE data (real-time viewer and output file).
 - Fixed SPL export, IV values was not correctly exported.
 - Fixed ID of Gt(s) data.
- VNA based Load Pull:
 - Fixed frequency filtering in Tuner Auto De-embedding wizard.
 - Fixed tuner calibration area display in configuration panels.

Toolbox

- Amplifier Model
 - Fixed issue about multi-frequency.
 - Fixed error on non-Behavioral CST files.
 - Fixed tuner precision at 2.f0 and 3.f0 (power size).
- Embedding Toolbox:
 - Fixed computation of V2 in intrinsic de-embedding algorithm.

Drivers

- New models supported:
 - Generic Multimeter: Tektronix 4040/4050
 - Giga-tronics Generic Power Meter: 8651B/8652B
 - Keysight Generic Power Supply: E36102B, E36103B, E36104B, E36105B, E36106B, E36231A, E36232A, E36233A, E36234A, E36311A, E36312A, E36313A
 - Keysight Generic RF Source: MXG M9383B, MXG M9384B
 - Keysight Infiniium & InfiniiVision: DSOS054A, MSOS054A, DSOS104A, MSOS104A, DSOS204A, MSOS204A, DSOS254A, MSOS254A, DSOS404A, MSOS404A, DSOS604A, MSOS604A, DSOS804A, MSOS804A
 - Keysight SMU Power Supply: B1500A's mainframes, B1510A, B1511A, B1511B, B1514A, B1517A
 - Maury VMU (Vector Modulation Unit): RF source & IV Power supply.
 - Mini-Circuits Generic Power Meter: PWR-8P-RC
 - Tektronix Oscilloscope: MDO4000C, MDO4000B, MDO4000, MSO4000B, DPO4000B and MDO3000 Series Oscilloscopes.
- Removed models:
 - Keysight SMU Power Supply: E5288A.
- Improvements:
 - Anritsu Generic RF Source: added option for external pulse modulator.
 - CopperMountain VNA: phase control allowed back.
 - CopperMountain VNA: frequency extenders support added.
 - CopperMountain VNA: added option for external pulse modulator.
 - Generic Multimeter: added option to support High Current (1A+, 3A+, 10A+, ...) dedicated port for current measurement.
 - Keysight ENA: added option for external pulse modulator.
 - Keysight Generic Power Supply: Range and Resolution managed dynamically.
 - Keysight Generic Power Supply: added "2-Wire/4-Wire" option
 - Keysight Generic RF Source: option added to support frequency extender N5182BX07.
 - Keysight Generic RF Source: added option for external pulse modulator.
 - Keysight Generic VNA: option added to define receivers' attenuators.
 - Keysight Generic VNA: improved listing models according to their options/capability.
 - Keysight Generic VNA: added option to force External 10MHz.
 - Keysight Generic VNA: added option for external pulse modulator.
 - Keysight Infiniium & InfiniiVision: big improvement on available options:
 - added many options for scaling, zoom and display.
 - added options for each channel: to force impedance; define factor and offset.
 - added option to let the oscilloscope Run in continuous mode when not measuring.
 - added option to force custom scale/offset (apply to every ports (for now))
 - Keysight Infiniium & InfiniiVision: added auto-detection of probe factor for compatible ones.
 - Keysight Legacy VNA: added option for external pulse modulator.
 - Keysight Legacy VNA: definition added for R1 Switch.
 - MTune: de-embedding files are now checked, and non-available frequencies are removed from listing.
 - R&S RF Source: added option for ALC state.
 - R&S RF Source: added option to force External 10MHz.
 - R&S Generic VNA: WBF (and cheated WBF in CW) measurement implemented for ZVA.
 - R&S Generic VNA: AM Modulation implemented for ZNA (requires option -B91).

- Removed features:
 - R&S RF Source: removed forced Pulse Mode support on Legacy Models.
- Bug fixes:
 - Anritsu Generic RF Source: fixed pulse mode issue with trigger.
 - Driver Wizard: fixed EVM measurement. ACP was measured twice instead of performing EVM measurement.
 - Generic Multimeter: fixed high current commands and options.
 - Generic Multimeter: no auto range algorithm when in high current with only 1 range.
 - Generic Multimeter: fixed some Fast LP implementation.
 - Generic Multimeter: fixed 34450A implementation.
 - Giga-tronics Generic Power Meter: fixed 8651A Pulsed capability.
 - Giga-tronics Generic Power Meter: default 50ms delay for each command removed.
 - iTest BILT: voltage resolution defined to 0.5 mV.
 - iTest BILT: fixed Drain DC Current applied on eFuse Current Breaker but not on Voltage Source.
 - Keysight ENA: set Continuous sweep mode when powering ON.
 - Keysight ENA: fixed continuous mode command in RF Source.
 - Keysight ENA: fixed calibration application.
 - Keysight Generic Power Supply: fixed E3631A voltage range on port 3 (negative value to 0V).
 - Keysight Generic Power Supply: fixed N87xxA's identification.
 - Keysight Generic Power Supply: fixed voltage resolution and ranges.
 - Keysight Generic VNA: fixed alarm on PNA-X instruments.
 - Keysight Generic VNA: fixed pulse modulation for non-PNA-X.
 - Keysight Generic VNA: fixed autorange option.
 - Keysight Generic VNA: fixed pulse capability when using Alternative Pulse modulation.
 - Keysight Infiniium & InfiniiVision: scale options change to radio buttons choice.
 - Keysight Infiniium & InfiniiVision: fixed waveform/display points count in DC mode (16 for Infiniium (as min), 100 for InfiniiVision (as min)).
 - Keysight Infiniium & InfiniiVision: fixed DC default timing (10 Hz = 100ms and not 100μs).
 - Keysight Legacy VNA: set Continuous sweep mode when powering ON.
 - Keysight SMU Power Supply: fixed no defined level error.
 - Keysight SMU Power Supply: fixed auto-range measurement.
 - Keysight SMU Power Supply: fixed DC measurement mode.
 - MTune: fixed strange error messages when we ask for a non-calibrated harmonic (also fix s-parameters query in latest 2.00.15 release).
 - MTune: fixed detection of latest versions of MTune.
 - Nucleus: fixed an initialization error due to new probe station models.
 - PIV driver: fixed AM3242 probe in reverse mode.
 - R&S Generic Power Supply: "Rohde" name corrected.
 - R&S Generic VNA: "Rohde" name corrected.
 - R&S Generic VNA: fixed phase control (reactivated + fix for new Firmware 2.10).
 - R&S NRP2: "Rohde" name corrected.
 - R&S RF Source: fixed pulse mode issue with trigger.
 - R&S RF Source: "Rohde" name corrected.

3.8.2 – 2020/06/09

New features

Import/Export

- MDIF format: added AWR compatibility mode.

Visualization

- GMDIF Export.

Measurement

- VNA based Load Pull:
 - New stop condition: Pout Max.

Improvements

Installer

- Updated embedded JRE version to Java 8 update 202.

Import/Export

- Maury formats: increased number of exported user data (required for 2-Tones IMD 9).
- Maury formats: added support of impedance sweep in SPL files.
- Maury formats: better support of invalid values.

Visualization

- Graphs are now configurable in LP Time Domain viewer.

Measurement

- The “Automatic power level setting to determine the initial condition of the Active Tuning optimization” is now disabled by default.
- Calibration files of passive tuner hardware is now named T1-4 instead of 1-4.f0 to avoid confusion during tuner configuration (only used by Maury tuners in fact). Calibration files are not linked to number of harmonics anymore.
- VNA based Load Pull:
 - Improved power sweep measurement speed.
- Traditional Load Pull:
 - Added possibility to append measurement (only with SPL file).
 - Added gain compression data: Gt linear compression, Gt max comp, Gp linear comp and Gp max comp.

Bug fixes

Import/Export

- Maury formats: fixed import of 2-Tones curves (missing f1 and f2 parameters).
- Maury formats: swept gamma harmonic is now correctly read and exported in SPL files. Also fixed variable count, now each frequency can have a different number of variables.
- VNA based Load Pull:
 - Fixed optimization when IV and RF are both optimized but without any gamma stabilization.
 - Fixed measurement with more than four harmonics.

Toolboxes

- Fixed Load Pull and Source Pull curve with more than two ports in de-embedding toolbox.

Measurement

- Fixed synchronization issues.

Scripting

- Fixed the script function “tunerctrl.tune” in hybrid mode.

Drivers

- New models supported:
 - Added support of MTune 2.0 library.
 - iTest BILT.
 - Keysight PM: U2053XA, U2054XA, U2055XA, L2051XA, L2052XA, L2053XA, L2054XA, L2055XA, U2064XA, U2065XA, L2061XA, L2062XA, L2063XA, L2064XA, L2065XA, L2065XT.
 - Keysight PS: E5280B, E5281B, E5287A, E5288A.
 - Keysight Generic VNA: N5230A.
 - Keysight Generic RF Source: CXG N5166B, UXG N5191A, N192A, N193A, N5194A.
 - Keithley Generic PS: 2600 series (TSP instead of VISA).
 - R&S Generic VNA: ZNA, ZNB, ZNBT, ZNC, ZND (experimental).
 - Generic Multimeter: Keithley DMM6500.
 - TDK Generic Power Supply: Genesys models.
 - Aim TTI Generic PS.
 - Anritsu Generic RF Source :
MG3691B/MG3692B/MG3693B/MG3694B/MG3695B/MG3696BMG3692C/MG3694C/MG3695C/MG3697C/MG3710E/MG3740A
 - R&S RF Source : SMR20, SMR30, SMR40, SMR50, SMR60
- New features:
 - ATS: updated RF source driver 8360 to allow IP connection (also fixed GPIB connection).
 - Keysight Generic VNA: new option to activate Mathematical Offset on Source attenuation for measurements with Internal couplers (disabled by default).
 - Keysight Generic VNA: new option to specify delay in CW with external trigger.
 - Keysight Generic VNA: new option to control internal switch manually; allow to route RF signal to/from rear panel.
 - Keysight Generic RF Source: new options to allow Pulse modulation using External trigger and to force ALC ON or OFF.
 - Keysight Generic RF Source: new option to force attenuation range at a specific value.
 - Keysight PM: new options to force measurement rate and to select resolution.
 - Keysight PM: new “Legacy Mode” option (old reading method).
 - R&S ZVA: added a new option to avoid checking of external units (ZVAX-24, TRM, etc.).
 - R&S ZVA: phase control.
 - R&S Generic VNA: WBF measurement implemented for ZVx (experimental).
 - R&S RF Source: new option to recall state.
 - CopperMountain VNA: new option to specify 2-Tones (use of an external combiner).
 - Generic Multimeter: new option to force SCPI instead of TSP for Keithley 6500 & 7510 (not recommended).
- Removed features:

- Removed the 'ALC Bypass' command for EXG N5173B and MXG N5183B as not supported (documentation errata).
- Improvements:
 - Optimized frequency segments on almost all VNA drivers.
 - Boonton PM USB: updated to DLL version 2.6.3.
 - Keysight Generic RF Source: frequency spacing limits are now checked for multi-tone.
 - Keysight PM: default measurement rate set to "Fast Mode" (or "Double Mode" if not applicable).
 - R&S RF Source: full implementation of pulse modes (integrated and alternatives: Ext Pukse Gen, AM Modulation, Arbitrary) and their triggers.
 - R&S ZVA: AWREceiver method is back as fixed in ZNA firmware (to be able to do harmonics measurement both in ZVA and ZNA).
 - CopperMountain VNA: RF Source is now initialized in Continuous mode to allow "rf source only"-like behavior.
- Bug fixes:
 - Multiple fixes about VISA sessions (not closed, issue with binary data in some cases, too small buffers with some instruments, ignored connection timeout).
 - Fixed an initialization issue with latest PIV 3100 firmware.
 - Keysight VNA: fixed averaging (clear command added).
 - Keysight VNA: fixed the 'Force Autorange' option.
 - Keysight VNA: fixed VNA as RF Source only receivers FOM (coupled to avoid problems when FOM need to be activated (2-Tones, etc.).
 - Keysight NVNA: fixed UAC writing issue (calibration file is now stored on D drive).
 - Keysight Generic VNA: wait time of 100ms added after "*OPT?" to avoid error with PNA-X -B models.
 - Keysight Generic RF Source: fixed output Trigger for Waveform on some models (N5171B, N5172B, N5173B, N5181B, N5182B, N5183B).
 - Keysight Generic RF Source: fixed output Trigger for CXG ("Sync Out" connector on front face).
 - Keysight PS: fixed measurement operation and modules/ranges management.
 - Keysight Infiniium & InfiniiVision: fixed impedance for SOX2K series (50-ohms instead of 1M-ohms).
 - Keithley Generic PS: fixed a memory leak.
 - CopperMountain VNA: fixed power level on coupled ports.
 - Generic Multimeter: fixed NPLC integration.
 - Generic Multimeter: fixed Keysight 34465A/34470A 'DIG' option included in new firmware.
 - Generic Multimeter: Keithley 6500 and 7510 changed to TSP (fix timeout after several measurements).
 - Generic Multimeter: fixed Aperture error message (aperture driven by Sample Rate).
 - Generic Multimeter: fixed Trigger model depending on mode (DC/Pulsed) and trigger (Int/Ext) (fix delay block position).
 - Generic Multimeter: fixed NPLC call.
 - R&S RF Source: fixed phase.
 - R&S RF Source: fixed some ignored options.
 - R&S NRP2: fixed USB Power Sensors failing to read.
 - R&S NRP2: fixed commands failing due to "Continuous ON" setting.
 - R&S Generic VNA: fixed attenuator RX/SRC options.
 - R&S Generic VNA: fixed averaging implementation.
 - R&S Generic VNA: fixed an issue when only one frequency was set.
 - R&S Generic VNA: fixed memory leaks.

3.8.1 – 2019/04/11

Main features of this release

- **VNA based Load Pull: Coupler behind tuner.**

New features

Measurement

- VNA based Load Pull:
 - Coupler behind tuner.

Bug fixes

Visualization

- Fixed missing 2-tones data for Power Sweep LP/SP curves.
- Fixed decoration issue (axes).
- Extended IV Viewer: fixed header generation in MES export with multiple datasets.

Compact Modeling

- Fixed disabled parameter sliders after an optimization.
- HEMPT Compact Modeling:
 - Fixed multiple UI issues.
 - Linear model parameters (RG, RD and RS) weren't taken into account for custom models; the only way to update these values was to go into the equation editor and to update the equation.

Measurement

- VNA based Load Pull:
 - Fixed LSA calibration usage without the Time Domain option.

Drivers

- New models supported:
 - ATS driver: FSW K96 (VSA) and SMW (RF Source).
 - AIM-TTi programmable PS's.
 - R&S SMA100B, SMB100B, SMF100A, SMU200A.
 - Keysight Modular PS N6785A and N6786A.
 - Keysight N67xxB and N67xxC.
- Improvements:
 - Keysight PS: added an option to select the AWG pulse frame resolution.
 - Keysight AWG 33xxx: improved loading time with resolution options.
 - R&S RF Source: implemented Pulse mode and AM mode.
 - R&S RF Source: added an option to perform Ext Pulse Modulation (pulse shape given to the R&S internal modulator).
- Bug fixes:
 - Fixed some memory leaks in native drivers.
 - PIV driver: fixed a potential measurement issue with 3100 model.
 - PIV driver: fixed current breaker definition for 3100 series in full DC mode.
 - PIV driver: fixed returned waveform information with 3100 series (issue with the PIV Easy Configuration Wizard).
 - ProberBench/Velox driver: fixed end of wafer detection.

- ATS driver: fixed modulation selection error into driver options.
- R&S RF Source: fixed model's options (frequency, power/attenuator, Pulse, AM, etc.).
- R&S ZVA: fixed a crash.
- CopperMountain VNA: fixed power level query for coupled and uncoupled measurements.
- Keysight ENA: fixed issues in models E5070B and E5071B. Continuous trigger needed before calibration, mistyped command "CALC:Parameter", 1x trace needed when clearing traces, format and autoscale commands are different than other ENAs.
- Keysight PS: fixed issues on modular power supplies (channel mask, empty initial object and vmin/vmax/iabs).
- Keysight PS: fixed display name of N6784A, N6783A-BAT and N6783A-MFG.
- Keysight Generic VNA: RF is now ON (continuous trigger) before 1st point measurement.

3.8 – 2018/12/12

Main features of this release

- **64-bit version.**
- **Traditional Load Pull: spurious sweep measurement.**
- **Traditional Load Pull, new wizard: Source Gamma Auto-Cal.**
- **VNA based Load Pull: LSA measurement.**

New features

General

- 64-bit version of IVCAD (the installer contains both versions; the installed version depends of the OS architecture). The 64-bit version can allocate more memory and come with a small speed improvement.

Toolboxes

- De-embedding Toolbox: added capability to proceed an entire directory.

Measurement

- Measurement Tab limiter (configurable in settings).
- Driver Wizard: added support of Spectrum Analyzer and VSA instruments.
- VNA based Load Pull:
 - LSA measurement.
 - Calibration: s-parameters calibration validation, 'power count' option, and e10/e32 computation tweaks.
- Traditional Load Pull:
 - Source Gamma Auto-Cal.
 - Added spurious sweep measurement.
 - Added user data (from VSA driver) into real time viewer and output file.

Scripting

- New script functions: `sweepplan.load` and `sweepplan.start`, `tunerctrl.target` (replace the deprecated `tunerctrl.gamma` function), `tunerctrl.passive`, `tunerctrl.enabled`.
- Inline "if": added support of blocks for "if_true" and "if_false" arguments.

Improvements

Installer

- Updated various documentations and templates (ADS, etc.).

Measurement

- Improved the Active Tuning algorithm.
- Improved the VSWR pattern from Impedance Editor (more adapted to E-PHD measurement).
- VNA screen ON/OFF toggle for calibration process (in settings).
- VNA based Load Pull:
 - Sweep plan: improved the Impedance Sweep action: configuration override ON/OFF (always ON before).
- Traditional Load Pull:
 - Simplification of the setup schematic.
 - Added a de-embedding file into coupler to store “Gamma In” and “Gamma Load”.
 - Improved optimization algorithms.

Scripting

- Renamed the `gamma.vswrcircle` function into `gamma.vswr` (new name and new parameters).
- New parameter (Z0) for other `gamma.*` functions.

Behavioral Modeling

- Amplifier Model updated to version 7.0:
 - CSV Export.
 - Improvement for CST files in ST extraction.
 - Fixed model export with invalid Pdc (especially for MDT files).

Bug fixes

General

- Fixed a critical issue (error 64 when launching IVCAD) when a “All curves” user-data was defined.
- Fixed some memory leaks.
- Spelling corrections.

Visualization

- IV Viewer: fixed an issue with the MDIF export, invalid VAR name (‘Vino’ instead of ‘V1o’ for example).

Measurement

- Various UI fixes.
- The National Instrument implementation wasn't scanned in the Instrument Scanner.
- IV:
 - Fixed an issue in MPS export.
 - Fixed licensing issues when s-parameters was enabled but not in pulsed mode, VNA and RF source were grayed out.
- VNA based Load Pull:
 - Disabled an ugly hack that brakes any VNA except PNAs in calibration.
- Traditional Load Pull:
 - Fixed multiple computation issues.

Scripting

- Fixed the `fopen` function in Append mode ('a'); the BOM character was always inserted, even if the file was not empty.
- Fixed operations simplification; operands are not transformed into the simplest type to avoid issues like this: "a = [1] .+ [2]" should return "a = [3]", not "a = 3"; "a[0]" must work.
- Fixed the `deriv` function; returns an empty array if no input X/Y point and an array with zero if only one point.
- Fixed the garbage collector for vectors and matrices.
- Fixed `upper` and `lower` functions; usage of the current language instead of English.
- Fixed `zeros`, `ones`, `eye` and `rand` functions; if `m == n == 1`, a real number was returned, and that broke array indexing; ex: `m = zeros(1,1); x = m[0];`
- Fixed unwanted type optimizations (vectors or matrices of one element were transformed into a single value).
- Fixed the transpose operator.
- Fixed unwanted rounding to zero with some basic calculus.

Compact Modeling

- Fixed an exception when a parameter value is set to NaN.
- Fixed custom model:
 - Fixed an export issue.
 - Load line support for capacitor models.
 - The OK button also applies changes.
 - Changed the computation mode (now based on the entire curve, was point-by-point before).

Drivers

- New models supported:
 - Keysight VNA N522xB and N524xB.
 - Keysight ENA E5070B and E5071B.
 - Keysight PS 41420A and 41424A.
 - Keysight Infiniium & InfiniiVision: series xSOX3022A, xSOX3024A, xSOX3102A, xSOX3104A, xSOX4000's and xSOX6000's.
 - R&S PS HMP2020, HMP2030, HMP4030, HMP4040, NGE102B, NGE103B, HMC8041, HMC8042 and HMC8043.
 - R&S RF SMA100A, SMB100A, SMC100A, SMBV100A.
 - R&S NRP2: new series added (split former probes in "Z Series" and new ones in "2017+ Series").
 - ATS drivers: PXA instruments, PSG RF source.
 - MPI STANIO® probe station.
- New features:
 - PIV driver: added support of the 31xx series, support to the latest firmware (v2.12) for the 32xx series.
 - Keysight legacy VNA: new option to force the Frequency Offset.
 - CopperMountain VNA: added WBF capability to all models and 2-tones to 4-ports models.
 - R&S ZVA: display, pulsed mode without the "K27" option (to be able to use External Pulse Generators/Modulators).
 - ATS drivers: support of LAN communication for MXA and MXG instruments.
 - Cascade drivers: the Nucleus driver has been completely rewritten (fixed multiple issues in the same time), added support of Velox software in ProberBench driver, and multiple issues also fixed in this driver.

- **Removed features:**
 - CopperMountain VNA: removed COM drivers.
- **Bug fixes:**
 - Split the Keysight VNA driver in two drivers, one for Windows XP, the other for Windows 7.
 - Native drivers: we keep the default RM session alive to avoid unexpected behaviors.
 - PIV driver: fixed the trigger source driver (power state, CW mode) and the DC quiescent area of probe 241V2 (200 series).
 - ATS drivers: fixed VISA/GPIB issues, RF attenuation range, a timeout issue, and the preset command for the ESGD driver.
 - Keysight PS: fixed identification of E5270 and E5273 models, power state setting, some ranges/resolutions definitions and an issue on 811x0A in external trigger mode.
 - Keysight VNA (generic and legacy): power-off in continuous mode.
 - Keysight Generic VNA: fixed identification of E8361A/41423A models, a Keysight App crash due to the default trace and changed the minimum pulse width to 2 times the DSP resolution.
 - iTuner driver: fixed gamma definition when phase is 0°.
 - CopperMountain VNA: fixed the frequency and averaging definition.

3.7 – 2017/11/22

Main features of this release

- **Traditional Load Pull.**
- **Support of the PIV 32xx series.**
- **IVI drivers support.**
- **ATS drivers support.**
- **Active tuners support.**
- **Multi-Auxiliary Supply support (CST format v1.2).**
- **Peak Search (VNA Based LP setup).**
- **Easy Configurator for IV and VNA Based LP setup.**
- **Scripting capabilities into Sweep Plan (measurement).**
- **Custom HEMT models for Compact Modeling.**
- **MTune v1.10.25.**

New features

Installer

- Updated the PIV SDK (Built 200) to version 4.3 (see its documentation for further details).
- MTune has been updated to version 1.10.25 (added support of port characterization and tuners parking).

IVCAD

- Added support of the IVCAD License Server 1.1 (see its documentation for further details).

Import/Export

- CST format v1.2: added support of new 'RFDelay' and 'RFWidth' parameters in "#OPERATING CONDITIONS" (optional). Viewers and the VNA Based LP measurement have been upgraded. Multi-Auxiliary Supply is now supported by this updated format.

Visualization

- Extended IV Viewer, new option: logarithmic time.
- Extended LP Viewer & Source Pull Magic, new property: show interpolated min/max.
- New option for 3-D viewers: Show Interpolated Points (ON by default).

Measurement

- New setup: **Traditional Load Pull**.
- Drivers:
 - New drivers:
 - The PIV 3xxx series is now fully supported (firmware v1.6).
 - IVI drivers (supported types: DC Power Supplies, DC Multimeters, DC Power Meters, RF Sources, Spectrum Analyzers, ACP Analyzers).
 - ATS drivers.
 - AMCAD Trigger Source.
 - Boonton PowerMeters series 55xxx's.
 - Keysight Generic VNA driver:
 - Added support of model E5080A.
 - Now usable as a RF Source driver.
 - Keysight Legacy VNA driver:
 - Now usable as a RF Source driver.
 - Keysight ENA driver:
 - Added support of model E5071C.
 - Keithley Generic Power Supply driver:
 - Added support for models 26xx.
 - Former Pulsed algorithm implemented back for Windows XP VNA firmware (and early Windows 7 ones); for periods <500µs
 - Keysight Power Meter driver:
 - Added support for the Keysight U848xA series.
 - Keysight Infiniium & InfiniiVision drivers:
 - Added new options to force measurements on full vertical scale, and to check & configure probes at initialization.
 - CopperMountain VNA driver:
 - Updated to Firmware v17.3.2.
 - Added support of models C1209, C1220, C2220, S5065 and S6085.
 - New Driver for SCPI implementation (for S2 & S4 firmwares)
 - Models C2209, C4209, C4220 added for COM driver (S2 firmware only).
 - Models 808/1, C1409, C1420, C2409, C2420, C4409, C4420 added for SCPI driver (S2 & S4 firmwares).
 - R&S ZVA driver:
 - Added support of ZVAX-TRM extension units (-24, -40, -50, -67).
 - Focus iTuner driver:
 - Added support of pre-match configuration for PMT tuners.
- Tools:
 - Setup Editor:
 - Easy Configurator: fast setup configuration for PIV 200 and 3000 (in compatible setups).
 - New action for calibrations: "Info about selected calibration(s)" (useful to see calibrated frequencies).

- DUT Biasing:
 - Added increment and decrement buttons (the step can be configured in IVCAD settings).
- Tuner Manager:
 - The “Show Calibration Areas” tool (Tuner Manager) has been greatly improved (the accuracy and the interpolation state are configurable, and progression and estimated time is displayed).
 - Added support for pre-match tuners; the pre-match is configurable from the Tuner Manager.
- Sweep Plan:
 - Added scripting capabilities (a scripting license is required for this action).
- IV setup:
 - The RF power can now be changed from measurement options.
- VNA based Load Pull setup:
 - New features: RF Stress & Peak Search.
 - Added support for active tuners.
 - The attenuation offset in the power meter can now be given by a S2P file.
 - Displayed data can now be configured in IVCAD settings; the default order has been changed.
 - Added a new stop condition about the gamma tolerance.

Compact Modeling

- HEMT modeling: custom models can be defined (with the scripting language of IVCAD).

Scripting

- New functions and syntaxes; see the related documentation file for further details.

Removed features

Measurement

- About drivers:
 - MTune driver:
 - Calibration Wizard: The Fast Cal mode has been removed and the Legacy mode is only available if only one tuner is configured.
 - CopperMountain VNA driver:
 - The model 808/1 has been removed; it was supported only by the S4 software (and not the S2 software).

Import/export

- Updated LP/SP export to support new data (PAE, P_{dc} , etc.).

Visualization

- Improved the 3-D interpolation algorithm, this improves contour curves.
- Renamed some Load Pull data in viewers and measurement ($P_{in} \Rightarrow P_{in\ Delivered}$, $P_{source} \Rightarrow P_{in\ Available}$, etc.).
- 2-tones data related to upper/lower values are now displayed for a specific frequency.

Measurement

- Tools:
 - Setup Editor:

- The “allow interpolation” state of fixtures is now enabled by default; a warning box is displayed at the beginning of the measurement if a frequency is missing (no more fatal error).
 - Updated the default radius and weight in the passive tuner configuration.
 - Tuner Manager:
 - Updated the s-parameters display (in table).
 - Sweep Plan:
 - Improved the ‘Loop’ action; a name can be specified to create named groups.
- Drivers:
 - R&S NRP2:
 - Generic pulse timing measurement commands are now used for USB Power Sensors to improve compatibility.
 - Generic Multimeter:
 - The digitize mode has been added for pulsed measurements for Keithley 7510 (to reduce the integration time to 1 μ s).
- IV setup:
 - Added RF timings to calibration comments (RF source and VNA timings).
 - New header info for SnP/MPS files (timings).
- VNA based Load Pull setup:
 - Added RF timings to calibration comments (RF source and VNA timings).
 - Measurements with power supplies and IV measurement in a different mode are now allowed (DC & pulsed).
 - Auxiliaries are now fully managed (measured and exported in the CST file).
 - Active Tuning with sources, new option for configuring the optimization step.

Scripting

- Better precision for complex ‘abs’ operation (use of ‘hypot’ math function).

Behavioral modeling

- Updated MCR to version 2014a.
- M-code updated (static netlist).

Bug fixes

IVCAD

- Fixed the JVM detection code (when JRE update number is greater than 99), and improved the CPU architecture detection (32 or 64 bit).
- Fixed small memory leaks.
- Fixed an issue with selectable trees when a branch was collapsed and mouse is over a selectable item after scrolling.
- Fixed The focus of the default button in message boxes.
- Spelling corrections.

Import/Export

- Fixed the SWP export, tuner’s gammas are now correctly exported.
- Fixed SPL export, number of source and load gamma is now based on tuner gammas, not on the curve harmonic count.

Visualization

- Fixed visualization of 5-Ports and 6-Ports LP curves (aux3 & aux4).
- Fixed a small issue in 2-D Graph settings (marker position in rad).
- Load Pull Viewer: fixed the preselected frequency for 2-tones curves.

Measurement

- Tools:
 - Setup Editor:
 - Fixed the SnP filter of the Files Manager.
 - Fixed the non-centered 'New Setup' dialog.
 - Fixed the out of range validation at 0V for power supplies (for minimum and maximum voltage).
 - I(V) Screenshot:
 - Fixed an issue when two different drivers were used for voltage and current, and when the time base was different.
 - DUT Biasing:
 - Fixed an issue when the 'Power Supplies' block is enabled but all accesses are disabled inner it.
 - Tuner Controller:
 - Fixed an issue with gamma returned by the Tuner Controller (it was the user gamma, not the real gamma).
- Drivers:
 - PIV Server driver:
 - Fixes for the BILT 200 and the PIV Server (50 ohms resistance for triggers).
 - Fixed an issue with external measurements.
 - MTune driver:
 - Fixed recovery of s-parameters.
 - Fixed the frequencies listing in multiplexed mode (only calibration data of the TUNER1 [f0] must be taken into account).
 - CopperMountain VNA driver:
 - Fixed an issue with the version checker (shows the expected firmware and not the installed one).
 - Keysight Generic VNA driver:
 - Fixed old VNAs, the DSP resolution is determined by Pulse0 width and no more by the DSP version.
 - Keysight Legacy VNA driver:
 - Removed the Burst mode support.
 - Keysight ENA driver:
 - The @reset command has been added to force Source ON between each sweep.
 - Keysight Generic RF Source:
 - Fixed the trigger output signal for N51xxB models.
 - Keysight Power Supply driver:
 - The N67xx's current limit is changed back to the 'CURRent' command.
 - Keysight Infiniium & InfiniiVision:
 - Fixed multiple memory leaks.
 - Fixed ID on xSO-X instruments.
 - R&S NRP2 driver:

- Multiple issues fixed in order to support USB power sensors.
- R&S ZVA driver:
 - 'One source attenuation' command fixed.
- Focus iTuner driver:
 - Fixed support of PMT models.
 - Fixed an issue with negative job IDs.
 - Fixed an issue with the 'LOADCAL' and 'DUMP' commands.
- Auriga driver:
 - Fixed error messages and an initialization error in DC mode.
- Load Pull setup (all types):
 - Fixed blank windows in manual tuning (passive tuners).
 - Fixed an issue with the Prober temperature (x-parameters measurements).
 - Fixed an issue in the real-time viewer; at the end of a measurement, when frequency is changed, the displayed data come from the last point (instead of the first).
- IV Setup:
 - S-Parameters frequencies are now correctly reset when calibration is changed between a bench shutdown and a new initialization.
 - Fixed a small UI glitch in the Frequency Sweep configuration panel.
- VNA based Load Pull setup:
 - Fixed a Null Pointer Exception in the tuner auto de-embedding wizard.
 - Fixed traces for the tuner auto-deembedding wizard; the reference port has been changed into the generation port (the VNA output port for source tuner); required for some VNAs like the CopperMountain which put their ports ON depending on the traces definition.
 - Fixed a graph legend issue during calibration.
 - Fixed 2-tones measurements, an offset of -3 dB is applied.
 - The 2-tones optimization now uses the same data that the VNA optimization.
 - Fixed the VNA optimization in 1-tone.
 - Fixed the active tuning optimization with RF sources, for the load side.
 - Changed the behavior of the Tuner Manager; user-defined gammas are not replaced by real gammas when tuner is moved during a measurement (to avoid unexpected gamma shifting during a Sweep Plan measurement for example).
 - Fixed an issue in the Tuner Manager when active tuning is enabled (active or hybrid): gammas cannot be read.
 - Fixed stop conditions in Impedance Sweep; if a stop condition is triggered, the measurement tries the next impedance.
 - Fixed the PNA display during the VNA calibration process (frequencies was not updated).

Scripting

- Fixed some NullPointerException with NaN.
- Fixed infinity in arithmetic operations.
- Fixed power operation with NaN, zero or integer powers greater than two.

Compact modeling

- Fixed refreshment of Cold FET V_{gs} min/max graphs.
- Fixed empty graphs when user click on the 'Compute' button in Cold Fet V_{gs} min (Linear Modeling).
- 'gdgd' and 'gdgs' parameters have been removed from the linear model (HEMT & LDMOS).
- HEMT: fixed the GDS model (now correctly added to the plug-ins tree).

3.6 – 2016/08/30

Main features of this release

- Full support of Windows 10 and compatible with Terminal Server (only for server licenses).
- MES and CST format: upgraded to version 1.1 (new information and added support of probe plan [CST]).
- Fast Load Pull.
- New drivers: Auriga PIV System, TSK UF Series prober and ProberBench prober.
- New models are supported in generic multi meters and power supplies drivers.
- Prober: Wafer Plan and temperature support.
- DUT Biasing crossed optimization (V2/I1 and V2/I2).
- Load Pull measurement: Raw power calibration, Intrinsic De-Embedding and Move tuner to optimum.
- Sweep Plan: possibility to activate/deactivate actions and SCPI commands support.
- Compact Modeling: output breakdown model.
- PIV SDK has been updated to version 4.2 (see the SDK documentation for further information).

New features

Toolboxes

- De-embedding toolbox: intrinsic de-embedding.

Measurement

- About drivers:
 - Auriga PIV System driver: new driver (supported model: AU4750 & AU4850).
 - Giga-tronics power meter driver: new driver (supports models 8651A and 8652A).
 - TSK UF Series probers: new driver.
 - ProberBench driver: new driver (supported version: 7+).
- DUT biasing: crossed optimization (V2/I1 and V2/I2). This includes a new action for sweep plan.
- Prober manager: added support of wafer plan and temperature. This includes new actions for sweep plan and new measurement options.
- Sweep Plan: added new actions to send SCPI commands.
- Specific to Load Pull setup:
 - Fast Load Pull.
 - Raw power calibration.
 - Intrinsic de-embedding.
 - Post-action to move tuner to a specific optimum (impedance sweep).
 - Stability circles display.

Compact Modeling

- LDMOS modeling, new model: output breakdown model.

Removed features

Measurement

- The auto-calibration button (IV Power Supplies configuration window) has been removed.

Improvements

Installer

- Upgraded the embedded JRE (Java 7 update 80).

- Updated MTune to version 1.10.23.

PIV SDK

- Updated to version 4.2 (see the SDK documentation for further information).

IVCAD

- Windows 10 is now fully supported.
- Now compatible with Terminal Server (only for server licenses).
- Memory limit ('-m' argument) has been raised to 1536 MB.
- UI improvements in multiple plug-ins.

Import/export

- MES format: upgraded to version 1.1 (information storage have been improved).
- CST format: upgraded to version 1.1 (information storage have been improved, added support of probe plans).

Visualization

- Wafer mapping chart: many improvements (rendering optimizations, new 'center on grid' option, new theme and better tooltips).
- 3-D charts: some keyboard and mouse actions have been disabled/re-assigned to be more intuitive and to avoid unexpected behaviors.
- 2D viewers: new coloration style: 'one color by datasource'.
- LP Extended Viewer & Source Pull Magic: current selection is saved when content is refreshed.

Toolboxes

- TRL Calibration Toolbox: a picture shows the orientation of fixtures ports.

Measurement

- IV instruments support up to 10 channels.
- Editor:
 - All references to Agilent have been replaced by Keysight.
 - Added load and save buttons in frequency editors.
 - Units are displayed in optimization strategies.
- Measurement:
 - Improved the power OFF action (DUT Biasing, Sweep Plan, script, and end of measurement), level is set to 0V when generator is powered OFF.
 - Improved the stability of real time viewers when measurement is too fast.
 - DUT biasing: buttons are enabled or disabled depending of power state.
 - Prober manager: display of progression (red=in progress, green=done).
- Sweep plan:
 - Actions can be deactivated.
 - Actions list is scrollable (useful for small screens).
 - Big stability, memory and CPU improvement, no more memory leak during long sweep plans.
 - Progression is now displayed in the setup manager task bar.
 - New information fields (IV & LP): operator and transistor periphery. Temperature can now be given by prober.
 - Real time visualization can be disabled by unchecking 'Show viewer' in 'Change configuration' action (small speed improvement).

- Drivers:
 - MTune driver:
 - Added support of MTune 1.10.23 (the STOP button is now disabled to avoid focus issues).
 - Generic Multi-meter driver:
 - Added temporary option to force the measurement range.
 - Gated measurements are now performed on the lower closest integration time (speed improvement).
 - Copper Mountain VNA driver:
 - Updated to firmware 16.2.1.
 - Added External 10MHz to be able to synchronize the reference from another instrument.
 - Improved stability (software verifications).
 - Generic Multimeter driver: added support of these models:
 - Keysight: 34450A, 34460A, 34461A, 34465A and 34470A.
 - Keythley: 7510.
 - Full support of 344xxA models.
 - Keysight Power Supply driver: added support of these models:
 - Keysight: B29xxA.
 - Keysight SMU: 4142B, E5270 and E5273.
 - PIV Server driver:
 - Added support for latest PIV SDK (4.2).
- Specific to Load Pull setup:
 - Editor:
 - Z0 can be modified when passive tuner is manually controlled from the Setup Editor.
 - New option: 'use a Trigger Box'. When enabled, the VNA is set in continuous mode when bench is initialized, and remains in this mode until bench shutdown.
 - Calibration:
 - Unsexed calibration: added possibility to save/load standards measurement.
 - Tuner auto de-embedding: display of progression.
 - Measurement:
 - Updated file format (#DC PATH, #QUIESCENT COMMAND, #QUIESCENT POINT, #PULSE COMMAND, #PULSE POINT).
 - Tuner Manager: added a reset button (reset all fields to [0; 0°]).
 - New option: 'ignore first levels errors'. When enabled, optimization errors are ignored until the first valid measurement.
 - Impedance Sweep: improved contours computing speed.
 - Sweep plan:
 - Only valid frequencies are displayed once setup is initialized (mono-setup > frequency sweep).

Scripting

- Script Server: new default settings: port = 8887; output character = Unix.
- Speed improvement when importing big script files.
- New/Updated functions, constants, enumerations and properties. See the "IVCAD MT930L Scripting Language - Changes.pdf" documentation for additional details.
- Improved arrays assignment, now matrices are accepted. Example: [a, b; c, d] = [1, 2; 3, 4];
- 'sscanf' function: better parsing, no more '%w' but spaces have been improved, better performances, fixed and improved '%s'.

Compact Modeling

- When exiting application, added a confirmation message box when a model is loaded.
- The maximum optimization loop count can now be customized.

Behavioral Modeling

- M-code updated to version 4.8.3.

Bug fixes

IVCAD

- Launcher:
 - Fixed the detection of first dongle when multiple dongles are connected.
- User interface:
 - Fixed memory leaks and potential thread locks (user interface).
 - Docking system: fixed an issue when layout is saved once views are closed and reopened, when this layout is opened again it fails.
 - Fixed some issues in user interfaces (clipping, colors, etc.).
 - Spelling correction.

Import/Export

- Generic export (CSV/MDIF/etc.): complex part and format are preselected to 'Both' and 'Re/im' to avoid export issues with complex data.
- MDIF Export: fixed the export format, now it generates Generic MDIFs. Complex data are supported (type 3) and only variables with different values are kept (and only numeric values) to avoid big legends.
- Fixed S1P/S2P import and export when 'R' is not defined at 50 ohms.
- MES import: fixed import of files with a wrong charset ('μs' was not correctly parsed).
- Maury export: added missing exported data and fixed SPL export (fixed choice of the sweep variable).

Visualization

- Core:
 - Fixed unit conversions "To 10*log" and "To 20*log", they was not assigned to good units.
 - Fixed VSWR, Pin (mW) and Pin (dBm) [2-tones], invalid level definition.
 - Fixed Pdc (mW): "1000 * (abs(V1*I1) + abs(V2*I2))" is now "1000 * abs((V1*I1) + (V2*I2))".
 - Fixed 2-tones data: Lower IIP, Upper IIP, Lower IIP Min, Upper IIP Min, Lower OIP, and Upper OIP.
 - B-Spline interpolation algorithm: polynomial degree is automatically reduced when curve has no enough point and fixed small issues.
- 2-D display:
 - Curves were not updated after changes in the settings window.
 - Fixed plots selection when a curve is selectable but not all plots.
 - Fixed markers creation and title/description duplication.
 - Fixed the magnetism of invisible plots.
 - Fixed magnetic markers, name and description are not changed when a plot is hovered.
 - Fixed the y-value of markers when they are moved on a plot that is on the y-right axis.
 - Fixed auto scale of Smith charts when graph width is smaller than graph height.
 - Contours visualization: fixed an exception when X and Y data are identical.
 - Contours visualization: fixed an issue that make min/max visible outside the contours area.
 - Contours visualization: fixed an issue when min and max are very close.
- 3-D display:

- Fixed lighting, clipping and wireframe rendering issues.
- Fixed rare Java heap space issues.
- Fixed rendering in X/Y mode.
- Fixed marker information when there are two z-data or more (3-D viewers).
- Fixed a display issue with a Y-Smith charts and surfaces (3-D viewers).
- Specific to some plug-ins:
 - Load Pull Viewer: fixed an issue with menu “Unselect filtered curves...”.
 - S-Parameters Stability Viewer: fixed an error when an invalid curve is passed.
 - IV Wafer Mapping: fixed job conflicts.
 - LP Time Domain PS Viewer: fixed 2-tones display.

Toolboxes

- TRL Calibration Toolbox: fixed the Z0 if this one if not set to 50 ohms.
- IV toolbox: fixed point insertion when sweep is in descending order.

Measurement

- Editor:
 - Fixed a bug when the output power supply is unselected and I/O measurement remains linked.
 - Fixed the activation state of the ‘Description’ button in driver configuration (inverted).
- Calibration:
 - Vector calibration: fixed issues with Wincal.
- Measurement:
 - Fixed resistive networks (error with voltage and current independency when Rp1 is small).
 - Fixed resistive networks when the Rg resistance is equal to 0 ohm (case of Keysight generators).
 - Fixed a rare issue concerning the interpolation of S2P files (fixtures).
 - IV Traces Screenshot: each trace is now associated to only one color.
- Sweep plan:
 - Fixed the DUT Biasing Sweep action, the custom step was not saved.
 - Sweep plan was marked as modified even if some actions remained unchanged.
- About drivers:
 - PIV driver:
 - Fixed minimum current limit for the AM241 probe (0.25 A).
 - Fixed the MPER error (measurement period is too short).
 - Changed the default delay (0.5 μ s \rightarrow 1 μ s). This should fix potential issues when external trigger is used with probes that are heavy corrected (probe calibration).
 - Keysight Power Supply driver:
 - Fixed current limit on N67xxy series.
 - Fixed the output state definition when there are multiple channels.
 - Keysight Generic RF Source:
 - The AM Modulation must be in pulsed mode (and disables ALC and set power search to manual).
 - Fixed the manual attenuation command.
 - Keysight Generic VNA:
 - Fixed pulse timings.
 - Keysight PNA N52xxA NVNA:
 - Driver fixed to allow multi-frequencies and multi-harmonics (required for MPT auto de-embedding).

- Copper Mountain VNA driver:
 - 814/1 models are now identified through their S/N.
 - 814/1 models have been fixed to allow frequency offset.
- Cascade Nucleus driver:
 - Fixed the origin reference (should be the opposite of positive side).
- R&S NRP2 driver:
 - The maximum frequency limit has been changed to 110 GHz.
- Specific to IV setup:
 - Measurement:
 - Fixed measurement shutdown, input power is not set to 0V before to be restored to its original value.
 - Fixed levels setting, 0V was applied on swept controller before a new curve.
 - The “IV power supplies cannot be pulsed when RF source is in CW mode” check has been removed.
- Specific to Load Pull setup:
 - Editor:
 - Some settings (SET file and CFG file) have been renamed in order to fix an issue with the scripting language. Old SET and CFG remain compatible.
 - Impedance editor patterns are now updated when focus is lost (text fields).
 - Impedance editor components are now grayed when they are disabled.
 - Impedance Editor arc pattern has been fixed (when minimum and maximum magnitudes are identical).
 - Calibration:
 - Tuner auto-calibration wizard: implemented a fix for some MPT tuner models, gamma must be defined twice to avoid wrong positions.
 - Measurement:
 - Source and load tuning stations are initialized before the RF source and the VNA to avoid issues when active sources use VNA sources.
 - Fixed a selection issue in the tuner manager when there is only one frequency.
 - Impedance Sweep: fixed the z-value name and unit.
 - Fixed front de-embedding (tuner) when fixtures are available and when a frequency is only available the fixture.
 - Fixed the “fundamental frequency not available” error when active tuning is enabled.
 - Fixed 2-tones formulas: IIP, IIP min, OIP (for each: upper and lower).
 - If all power supplies are in DC mode, RF source is used to determine the quiescent measurement position (if this one is available and in pulsed mode).
 - Sweep plan:
 - Frequency Sweep: Fixed the rounding precision.
 - Move Tuner & Impedance Sweep: calibration frequencies are now saved to avoid frequencies reset each time editor is closed.
 - Impedance Sweep: fixed handling of multiple nested actions.

Scripting

- Fixed IS files export, wrong line return (\r\r\n).
- Fixed unwanted arrays optimizations. For example "a = [1]; a[0]" was optimized into "a = 1; a[0]" so evaluation was invalid. Arrays optimizations are only performed when a vector contains at least two elements that are sub vectors of one element. Example: [[1], [2], [3]] == [1, 2, 3]; But [[1], [2], 3] != [1, 2, 3].

- Now an array with one element is horizontal (ex: [1]). Without that, [[1], [2], [3]] == [1, 2, 3] was not working.
- Fixed 'fopen' and 'tmpfile' functions, they now support the BOM character (only for UTF-8/16/32).
- Fixed the 'ytog' function, wrong formula.
- Fixed the 'ivcad.data.get' and 'ivcad.data.value' functions, arguments error.

Compact Modeling

- Fixed refresh of tuning sliders when the 'lock' check box state changes.

Behavioral Modeling

- Amplifier model: fixed export issues.
- Amplifier model: fixed the HB simulation in 2-tones.

3.5 – 2015/04/03

Main features of this release

- **Active Tuning: better speed and accuracy, more comprehensive optimization strategies.**
- **Load Pull measurement speed improved.**
- **Calibration areas with multi-harmonic tuners.**
- **Mono-Setup Sweep Plan.**
- **MTune Tuner Characterization tool.**
- **PIV SDK 4.1 and PIV Server.**
- **Data Editor (user-defined mathematical data).**
- **Profiles management (viewers, export).**
- **HEMPT and LDMOS Compact Modeling.**
- **Behavioral Modeling.**
- **License Server.**

New features

IVCAD

- New tool: License Server.
- New plug-in: Data Editor (to define user-defined mathematical data).
- Profiles management (viewers and export).

Import/Export

- Maury Export: support of SPL files.

Visualization

- S-Parameters Stability Viewer: added constant gain circles.

Measurement

- About drivers:
 - New driver for Copper Mountain VNAs. Supported models: 304/1, 804/1, 808/1, 814/1, S5048, S7530.
 - AMCAD PIV System driver, new option: 'Scope range mode' (IV Measurement driver).
 - Keysight Power Supplies driver: added support for modules N6783A-BAT and N6783A-MFG.
 - Keysight Power Supplies driver: new transition timings option.
 - Keysight Power Meters driver: added support of U2041/42/43/44/49XA.

- Keysight Generic RF Source driver: added support of EXG N5173B and MXG N5183B.
 - Keysight Generic RF Source driver: new option to avoid power limitation checks.
 - Keysight Generic VNA driver: PNA-X N5249A added.
 - Keysight NVNA driver: pulsed I-V support.
 - R&S NRP2 driver: new options, S-Parameters and averaging added.
 - R&S ZVA driver: new options added.
- MTune tuner calibration: new tool.
- The Sweep Plan tool has been integrated into the Setup Manager (the standalone Sweep Plan tool is now called “Sweep Plan (multi-setup)”). It is linked to the opened setup, so the sweep plan configuration can depend of the setup configuration.
- Specific to Load Pull setup:
 - Added the “Pmax” field in calibration wizards (coaxial and unsexed).
 - New data in the real-time visualization: Drain Efficiency.
 - Re-activated the WBF Gated filter (in the VNA configuration).
 - New options: ‘Keep RF ON after measurement’ and ‘Keep RF ON between two curves’ (in measurement options tab).
 - New option in the passive tuner hardware: ‘Power OFF RF sources before moving’.

Compact Modeling

- New plug-ins: HEMPT and LDMOS Analytical Modeling (the HEMPT plug-in replaces the legacy FET Modeling plug-in).

Behavioral Modeling

- New plug-in: Amplifier Modeling.

Scripting

- All modifications are referenced in the “IVCAD MT930L Scripting Language – Changes.pdf” document.

Removed features

Visualization

- Removed the SPL export from the Extended Load Pull Viewer (replaced by the Maury SPL Export plug-in).

Measurement

- Removed support of the Frequency Sweep in X-Parameters measurements (not working).

Improvements

Installer

- MTune upgraded (v1.10.16).
- Embedded JRE upgraded (Java 7 update 75). Now the embedded JRE is forced during the installation process to avoid issues with some installations.
- JNA library upgraded (v4.1.0).
- Mysql Connector/J upgraded (v5.1.32).

IVCAD

- Full support of Java 8 (supports Java 6, 7 and 8).
- Invalid path in the recent files list is automatically removed when IVCAD is started.

- Structure of the IVCAD home directory has been moved and improved (settings, logs and profiles are now stored here).

Import/export

- Maury Export: a warning is displayed when there are more than 25 user parameters, VARS are now correctly supported, and added support of the Am/pm data.

Visualization

- 2-D contours: computation speed improvement (requires a CPU with a least 4 cores, not available with other CPU).
- 2-D contours: interpolated minimum and maximum are now displayed. Available in: LP viewer, Extended LP, Source Pull Magic, and LP Measurement (Impedance Sweep viewer).
- 3-D viewers: contours use human-readable steps (multiple of 1, 2, 5 or 10), like 2-D viewers. In addition, the “Label count” property has been replaced by the “Label density” property (one label for n contours).
- Added an input box to give a name to markers that are manually added.
- IV viewer and S-Parameters viewer: the graph limit has been raised to 10 (before it was 4).

Toolboxes

- Embedding/De-Embedding toolbox: added support of Source Pull curves, better user interface.
- Conversions toolbox: new conversions, better user interface.

Measurement

- About the PIV SDK:
 - Upgraded to version 4.1, and now installed with the IVCAD installer (full installation). See the document named ‘piv-sdk.pdf’ for more information.
- About drivers:
 - VISA4J library: auto-detection of binary data (fastest queries), and only one session is opened by implementation/address/timeout to reduce initialization time and memory footprint (non-native drivers only).
 - Maury MTune driver: saves the last initialization state between a bench shutdown/initialization (to avoid new initializations each time the bench is initialized).
 - Maury MTune driver: the tuner detection is now performed on demand.
 - Focus iTuner driver: better compatibility with legacy iTuners and some firmwares.
 - Keysight Generic RF Sources driver: pulse modulation allowed for old ESG series (using EXT2).
 - Keysight Generic VNA driver: DSP v5 support.
 - Keysight Generic VNA driver: new option that allows to force the port 1 reference mixer switch to external (IV and S-Parameters measurements).
 - R&S NRP2 driver: auto-averaging performed through NSR conditions.
- Improved measurement settings (menu > Tools > Settings).
- Setups are now locked when they are initialized (to forbid modifications), same modification for measurement tools when a measurement is in progress.
- Improved the loading time of big setups (with many embedded files).
- Multi-threaded bench initialization and shutdown (no more UI freezes).
- Better IV and LP setup schematics, dynamic schematics and better design.
- ‘Save’ and ‘Save As’ are now two different actions (Setup Manager and Sweep Plan).
- Sweep Plan: all errors encountered during the process are now displayed when the sweep plan is finished.
- Sweep Plan: modifications are now detected and a confirmation message box is displayed when a sweep plan is modified.

- The user interface layout is kept between two sessions of IVCAD.
- Specific to Load Pull setup:
 - Better measurement speed.
 - The latest displayed data is saved and restored for the next measurement (same thing for the legend visibility, hidden by default).
 - Tuner Manager: display of calibration points and areas; calibration data, de-embedding files and Z0 are now taken into account. Also support cascaded tuners (only display a calibration areas in this case), only work with Maury tuners.
 - Tuner Manager: single frequency list for all tuners (only common frequencies are kept).
 - Impedance Editor: bug fixes, configurable Z0, profiles support, multi-patterns support, display of calibration areas and user-defined impedances.
 - Active Tuning: new algorithm, better speed, accuracy and more comprehensive optimization strategies.
 - Active Tuning Spy: all measured points can be kept during a measurement (can be enabled/disabled in IVCAD settings, disabled by default).
 - Added a test before each measurement to check the difference between tuners and measurement frequency (f0).
 - The optimized frequency is automatically selected at the measurement beginning.
 - Power Calibration: better algorithm, linearity is computed with corrected receivers measurement compared to power meter value. Displays measurement of raw receivers and the linearity error.
 - The Tuner Auto De-embedding wizard link is now always displayed; it uses the active calibration.
 - Improved configuration files (.cfg) and sweep plan files (.isp), impedance patterns are now completely saved (impedances and tabs configuration).
 - The “Connect standard” information message box (unsexed calibration) can be skipped.

Scripting

- About functions:
 - *pause*: added support of nanosecond times (the accuracy of this function depends of the system).
 - *contour2d*, *contour3d*: these functions have been updated in accordance with changes done in 3-D viewers (see related documentation in Script Language Programming Guide).
 - *printf*, *sprintf* and *fprintf*: added support of binary representation (for integer numbers): %b. This flag replaces the Boolean flag. New Boolean flags are %z and %Z.
 - *visa.open*: the first two parameters have been inverted, the VISA library first then the VISA address.
- Now the script editor reads and writes UTF-8 files (with BOM), the global encoding setting is not longer used.
- All snippets have been removed (some snippets are problematic with keyboard shortcuts), undo operations don't undo the initial text content and the tabulation is no more replaced by four spaces.
- The properties usage is more strict (non-existing properties, wrong accesses or wrong values generate an exception).
- The ‘null’ value usage has been restricted to objects. Before, ‘null’ was also accepted for strings.

Bug fixes

IVCAD

- Fixed the events viewer (correctly scrolled down).
- Fixed the “Reset dialogs choices” option (global settings).
- Fixed some UI issues when there is more than one screen.

- The scroll gesture has been disabled to avoid issues when using a graph in a scrollable panel (by using the mouse middle button).
- Spell corrections.

Import/Export

- Temporary disabled the import and export of *SnP* files (S1P, S2P, etc.) when the characteristic impedance is not set to 50 ohms, there are issues in the import process. Will be fixed in the next release.
- Focus Import:
 - Fixed import of LPC/LPD files with tab characters in columns header.
 - Fixed the recognition of some complex numbers ($A + -Bj$ for example).
 - NaN and Infinite values are now allowed.
 - Fixed a potential resource leak.
- Maury Import: fixed the SPL files import when the frequency is in Hertz.
- Maury Export: fixed the 2-tones export (bad f_0 value) and the export of LP/SP files for Microwave Office.
- MDIF Export: fixed VARs (0) and (1) in header.
- Maury/LPD/MDIF/CSV Export: fixed export of data with only one value (Gamma Source for example), this value is now duplicated to fill all columns (same thing for data that have more than one value but have less values than other data).
- Maury/LPD/MDIF/CSV Export: fixed export of complex numbers with “Real/Magnitude” or “Imaginary/Phase”.
- MDM Export: only select curves are now exported, and sweeps order is now forced to: Freq > Vds > Vgs/Ig.

Visualization

- Drain efficiency formula (Load Pull), V1 and I1 are now taken into account.
- 3-D viewers: fixed the 3-D meshes clipping when the “Extrapolation” property is unchecked.
- IV Extended Viewer: fixed networks color when there is more than one marker (red and green markers).
- S-Parameters Viewer: the predefined data selection was lost when the curve type or the curve family was changed.
- LP Extended Viewer & Source Pull Magic: fixed the gradient render in 3-D views.
- Load Pull viewers: fixed computation of values that use Gamma Source if the selected harmonic in the gamma selection is different from the selected harmonic in the data selection.
- Fixed the PDF export when markers are present (2D graphs).

Measurement

- About drivers:
 - VISA: fixed support of binary data.
 - PIV driver: fixed an error when trying to initialize the bench with an external trigger (“measurement start is too low” error).
 - Maury MTune and MLibTuners drivers: fixed the driver description (empty dialog box).
 - Maury MTune driver: fixed the pre-match mode.
 - Focus MPT driver: Fixed the frequencies comparison method (sometime, some frequencies are not recognized, this is a rounding issue). Also fixed a memory leak when the tuning object cannot be created (COM error).
 - Configurable driver: fixed an issue with IV channels.
 - Keysight Power Supplies driver: always select the 1st module causes an error in the bias definition per channel.
 - Keysight Power Supplies driver: separation of models 33220 and 33250 (different timing values).

- Keysight Generic Multi-meter driver: the 34411A instrument is no more identified as 34410A. Memory leaks have been fixed.
- Keysight Generic RF Sources driver: fixed old ESG IDNs and memory leaks.
- Keysight Generic and Legacy VNA drivers: fixed the screen splitting.
- Keysight Generic VNA driver: fixed the output trigger width when using the VNA-part alone.
- Keysight Generic VNA driver: in WBF mode, the IF Gain is now set to maximum (15 dB).
- Keysight NVNA driver: fixed the DUT biasing after a measurement (ports are OFF after a measurement, the DUT biasing always fails). 'SourceOn' fixed. Memory leaks have been fixed.
- Keysight ENA driver: bug fixes.
- R&S ZVA driver: bug fixes.
- Driver Wizard: fixed an issue with the RF mode selection.
- Timings were not applied if the chronograms tab has been opened and if the configuration has been changed from the schematic.
- Fixed the "Initialize" button state, it should be disabled when the bench is initialized.
- The Screenshot button is disabled when the temporized refresh is enabled to avoid unexpected issues.
- Fixed the restoration of settings in the DUT Biasing tool when it is reloaded after a measurement.
- Fixed the management of cancellations, they are not taken as an error; power supplies are not powered OFF when user cancels a measurement.
- Fixed the refresh of measurement tools after a cancellation (DUT Biasing, Tuner Manager, etc.).
- If there is no prober defined, the prober manager is now empty.
- Fixed the computation of measurements duration (all user interactions are now removed from the final duration).
- The RF source is now shutdown when user clicks on 'Back' on the 'VNA calibration' page to avoid potential crashes.
- Fixed an issue in all wizards (IV & LP), the back button is no more available on the last page, but the cancel operation is activated if the finish action fails the first time.
- Fixed an issue in all wizards (IV & LP): back, next and cancel buttons state (enabled or not) are not correctly restored when an operation fails.
- Specific to Load Pull setup:
 - Measurement of raw VNA receivers (calibrations): fixed the power calculus and curves color.
 - Fixed long delays during the unsexed calibration (standards measurement).
 - Fixed the Sweep Plan Impedance Sweep action (now overrides the current configuration to avoid problems, only if the selected orientation is different from the optimization type).
 - Fixed the frequencies list in the Tuner Auto De-embedding Wizard with Maury tuners and with more than one harmonic.
 - Fixed the invalid frequency list in the Tuner Manager when source and load frequencies are different.
 - Fixed the Tuner Auto- Deembedding wizard, the frequencies filter is not working in some cases (harmonics are listed for example).
 - Fixed the Tuner Auto-Deembedding wizard in NVNA mode.
 - Fixed coaxial and unsexed calibrations. At the VNA calibration step, now the RF power is also applied on the VNA output port (some drivers need that).
 - Fixed the Impedance Sweep display (freezes when there are too many points, now multi-threaded).
 - Fixed RF power states (source and active RF sources).
 - Fixed the 'calkits.ckts' file (bad descriptions of some calibration kits and some DUT connectors).
 - Fixed invisible errors (no error message) during calibrations (when a division by zero occurs).

- In the passive tuner hardware configuration, the option 'Power OFF generators before moving' is now named 'Power OFF IV generators before moving' and it has been fixed (no effect before).
- Fixed the calibration process when an external RF source is used (the trigger was forced to internal mode).
- Fixed the activation state of option 'Move Gamma Source to first Gamma In' when the source tuning station is disabled (field is now disabled).

Scripting

- About functions:
 - *contourmap*: fixed the invalid reference error.
 - *graph2d.autoscale*: not working well, fixed.
 - *printf*, *sprintf* and *fprintf*: some flags are not working and sometime integer numbers are recognized as floating numbers.
- Fixed the drag and drop of a script files into IVCAD when the Script Editor is not yet opened.
- Fixed the garbage collector when a value is only stored in an array and not directly in a variable.
- Fixed try/catch/finally: the FINALLY block was not executed in some circumstances (when a RETURN, EXIT, BREAK or a CONTINUE was executed in the TRY block).
- Fixed the 'visible' property of a Window object. If user interfaces are forbidden, the window will remain hidden.

3.4.2.0 – 2014/02/27

New features

Installer

- New installer.

IVCAD

- Added support of Windows 8.1 and Windows Server 2012 R2.
- Standardization of working directory. Now IVCAD uses a directory named "IVCAD" (located in the user home directory) for storing scripts, measurements, etc.

Import/Export

- Added support of *.SAT file format.
- Template for MDM Export plug-in : input sweep order and input/output variables name

Visualization

- Enable export of MES/MPS files from Extended IV Viewer plug-in.
- Enable support of CST, LP/SP and SPL export and predefined configurations in Extended Load Pull Viewer plug-in.
- Enable visualization of upper and lower C/I, IIP, and OIP data for 2-tones load pull.
- "Improve rendering speed" option into the Traces Viewer plug-in (but inaccurate so only for noiseless traces).

Measurement

- About drivers:
 - New drivers: Boonton power supply and Agilent HP437B/E5072A.
 - Full support of probes AM212 and AM241 for the AMBILT PIV System.

- Support of MTune V6 and V7.
- Behavioral Transistor model available for virtual demo of VNA based load pull measurements Load (virtual driver)
- Sweep Plan, a tool to perform automated measurements.
- Driver Wizard, a tool to create your own drivers for IVCAD.
- Maury calibration kits embedded into the database.
- Tuner manager can now display calibration points when they are available (only for Maury tuners).
- “Allow interpolation” option into the fixture S parameter block file.
- Allows measurement without specifying a measurement file name.
- Specific to Load Pull setup:
 - Enable harmonic LP measurements up to 9.f0.
 - Customizable reference impedance Z0 for Source and Load Smith chart.
 - Enable frequency sweep in x-parameters measurements.
 - New stop conditions: PAE compression and $|\Gamma_{in}| \geq 1$.

Removed features

Installer

- Removed MLibTuners from the installer (outdated and not supported anymore by Maury, use MTune instead).

Improvements

Installer

- Updated Java Runtime Environment (JRE) to version 7 update 51.
- Updated MySQL Java Connector to version 5.1.26.
- Upgraded MTune to version 6.

IVCAD

- Improvement of loading time.
- Improvement of error messages when the loading fails.
- Improvement of the temporary file management.
- Improvement of “Files > Import from file...” action, now multiple files can be opened.

Measurement

- Improved some drivers:
 - PIV library: added a test to forbid the combination of AM211 and AM241 probes (they are not compatibles).
 - iTuner driver: don't use the OCX anymore (not stable).
 - MPT driver: Improved check of invalid settings, tuner is now re-initialized only if important settings have been changed (never the first time).
 - Virtual driver: configuration is simplified using a configuration window
 - Virtual driver: the virtual tuner driver can now loads TUN files.
- If a driver's upload fails, it doesn't stop the loading of the other drivers and modules.
- Setup Editor Improvement, when a new setup is created or loaded, and if the previous setup is compatible, the measurement configuration is kept active.
- Intermediate “Save in ...” message was removed when saving an existing setup. Now a “Save as...” dialog box is directly displayed.

- Trace definition is now disabled in the chronogram editor when IV is not pulsed to avoid loss of settings (because this setting is not modifiable in this case).
- Pause during an optimization loop is now possible: IV, RF, active tuning, etc.
- When a measurement is finished, control tools are now automatically refreshed (DUT biasing, Tuner Manager and Prober Manager).
- No more NaN displayed.
- Specific to IV setup:
 - When the bench is initialized and if there is no frequency definition in the s-parameters field (measurement settings), this field is filled with frequencies taken by default from the active calibration.
- Specific to Load Pull setup:
 - Tweaked RF measurements (noise reduction).
 - Improvement of the bench initialization duration.
 - Improvement of the Impedance Editor (show number of impedances, limited to 100,000 impedances, improvement of 'circle' and 'arc' patterns...).
 - The tuner frequency can be defined after the setup initialization, no need for further re-initialization when changing the measurement frequency.
 - The Tuner Manager is opened after the bench initialization (such as the DUT Biasing).
 - Added a warning message when "append" option is checked, if the file will record a mix of measurement data between Power Sweep and Impedance Sweep, or vice-versa.
 - Improved measurement configuration editor, 2-tones frequencies field contains only the values that match the delta and IMD order.
 - Removed confirmation of tuners initialization at the beginning of a calibration process when the tuner is already initialized.
 - DUT Reference Plane option has been split into two different options: input and output DUT reference plane voltage control.

Scripting

- See "IVCAD MT930L Scripting Language – Changes.pdf" document.

Modeling

- Changed extension of netlist files: ".netlist" (before it was ".xml").

Bug fixes

IVCAD

- Fixed the license check order:
 - 1. License file specified with **--license** argument if available.
 - 2. Connected dongle.
 - 3. Predefined paths.
- Fixed the dongle license update procedure to avoid unexpected date manipulation errors.
- Fixed the detection of license directory when updating a license file.
- Fixed ACL on Windows Vista+ when installing a new license file (when installed for all users).
- Fixed bad icons for files associated with IVCAD.
- Many spell correction.
- Fixed save/restore IVCAD layouts.
- Fixed "About" window. Import and export plug-ins are now in the good branch.
- Fixed message boxes choices are not properly saved.

Import/Export

- Fixed import of CST files when there is more than one gamma source/load in 2-tones mode (more than one harmonic).
- Fixed export of CST files, #GAMMASOURCE, #GAMMALOAD and #QUIESCENT PULSE POINT lines are not correctly exported.
- Fixed import of MES files with empty laboratory string (line that only contains “! “).
- Maury Import/Export: fixed LP/SP and SWP formats for ATS.
- Maury Import: fixed import of files with num_src_harmonics=0 and num_ld_harmonics=0.
- Maury Export: fixed export when the input curve is not a CST curve (wrong data selection).

Visualization

- Fixed the 3D Graph renderer, in some cases some 3D lines can be skipped when 3D scene is painted (for example when Z filtering is enabled).
- Fixed the default displayed values for some curves type.
- Fixed non-default coloration styles in 2D curve viewers.
- Fixed viewers when an empty curve is selected with non-empty curves, empty curve will be skipped to avoid empty graphs.
- Fixed empty contours with some Impedance Sweep curves.
- Fixed default levels for contours X and Y and for 2-tones curves in Load Pull Extended Viewer (before it was always 'f2-f1').
- Fixed the mouse position was not correctly displayed when it was over an unstable area.
- Fixed computation of Zin, Zsource and Zload (need to be referenced at 50 ohms, always).
- Fixed display of Gamma Source in the Load Pull Viewer. Now it can be displayed at all frequencies.

Measurement

- Fixed some drivers:
 - Fixed some memory leaks.
 - PIV library: fixed the "Unterminated input string (maxtime)" error.
 - PIV library: fixed the "Gate Current Breaker" issue on some 211 probes.
 - Agilent PS: fixed modular power supplies with empty slot.
 - Agilent PM: removed “Auto Range ON” if none specified.
 - Agilent N52xxA NVNA: fixed pulsed mode.
 - MPT driver: fixed the “SMPT instead of SSMPT” mode and now allowed even with LpEx > 1.6.
 - MPT/iTuner drivers: fixed set of adapter/termination to non measured frequencies.
- Fixed some memory leaks.
- Fixed attenuator offset of Power Meter.
- Fixed the “Restore default” button in IVCAD settings > Measurement System.
- Fixed the driver selection panel (some refresh bugs).
- Fixed ‘VISA library’ setting not correctly restored in Setup Editor.
- When IV measurement configuration is switched into DC mode (Setup Editor), trigger is now forced to internal to avoid problems.
- Fixed custom pulse timings fields that are not correctly hidden (in IV measurement configuration).
- Fixed the Frequency Editor when trying to inject 2-tones when a delta sweep is activated.
- Fixed IV measurement and IV screenshots when input and output measurement drivers use different instruments.
- Fixed the IV Trace Screenshot: unexpected warning that says time steps are different.
- Fixed choice of VNA window and RF Source window in the chronogram editor.

- Specific to IV setup:
 - Fixed wait times, now waits at the beginning of a curve/point, after the level is applied and before the measurement.
 - RF was not shutdown after a measurement.
 - Fixed missing main header in generated MES file when custom step or adaptive step is used (missing header).
 - Fixed output port power state of the VNA when measuring s-parameters and when internal RF sources of the VNA are used (not set to auto).
 - Fixed wrong opened file at the end of a measurement when file is defined at the end (no output file in measurement settings).
 - Fixed s-parameters values that disappear from table when frequency is changed.
- Specific to Load Pull setup:
 - Fixed TUN files reader, now support empty date/time.
 - Fixed a thread deadlock in the Tuner Manager.
 - Active sources are not properly powered ON/OFF.
 - Fixed some errors in measurement process when RF is ON when it should be OFF at some steps.
 - Fixed PAE display, no more display when the PAE is negative.
 - Fixed the RF source control at the amplitude calibration (last step of the coaxial/unsexed calibration).
 - In the coaxial/unsexed calibration, at the amplitude calibration step, now the operator needs to click on next to finish the calibration.
 - In the power calibration, the VNA measurement is now done before the RF Power Meter, and after a SINGLE.
 - Fixed the hybrid tuning mode.
 - Fixed the mismatch measurement (active or hybrid tuning). Now active RF sources are OFF.
 - Fixed computation of source mismatch (for Source active tuning).
 - Gamma Source is now always computed when > f0.
 - Fixed computation of Operating Gain, PAE, Pdis and Gamma Source in 2-tones mode.
 - Fixed read of tuners gammas in active/hybrid mode.
 - Fixed the restoration of fundamental frequency after a shutdown/initialization.
 - Fixed data table in Measurement Viewer, gammas and impedances don't use the custom Z0.

Script

- Fixed 'arcgamma', 'circlegamma', 'rectgamma' and 'vswrcirclegamma', now an exception is thrown when an incorrect parameter is passed.
- Fixed a bug in 'sscanf' function with '%o' and '%x' flags.
- Fixed the syntax checker, current directory was wrong.

3.4.1.0 – 2013/05/22

New features

Main

- Added support for Windows 8 and Windows Server 2012.
- The script engine has been entirely reworked:
 - Full documentation.
 - Better performances (at least two times faster).

- Scripts are now pre-compiled to speed up evaluation process.
- New keywords (functions, constants, etc.), but some keywords have been removed and some other renamed.
- Errors management has been reworked (support of TRY/CATCH blocks).
- Support of objects properties (ex: *mygraph.title* = "My title").
- Better editor (integrated debugger, real-time error checker with errors highlighting and better documentation viewer).
- Old scripts are incompatibles, but script help file contains a section that list all changes and workaround to update a script.
- All script examples have been updated to follow changes in script language.
- Added JVM crashes interceptor (to avoid IVCAD silent crashes when a native driver fail).
- New buttons under plug-ins and data sources trees: "expand all" and "collapse all".

Import/Export

- Added ability to import files directly from data sources tree (right click on it).
- Added recognition of "#Z0", "#Z0SOURCE" and "#Z0LOAD" in CST import.

Visualization

- Added ability to edit gradient color of ISO contour curves (2-D and 3-D data viewers, and Extended LP Viewer and Magic Source Pull plug-ins).
- Added ability to create Y Smith charts in 3-D viewer.
- Added ability to choose X data in IV Extended Viewer.
- Added choice of displayed X and Y data in ISO contours graph (Magic Source Pull and Extended LP Viewer plug-ins).

Measurement

- New plug-in, TRL/LRM calibration (in Load Pull Toolbox), available when license allow Load Pull measurement or IV measurement with s-parameters.
- New driver: Rohde & Schwarz ZVA.
- PIV driver: added support for new probe 212.
- MTune driver: added partial support of MTune V6 (without automatic detection of LXI and serial tuners).
- Agilent PM driver: added HP header for identification.
- Agilent PS driver: added 663xA models in legacy.
- Agilent PS driver: added models 81150A and 81160A in pulsed generators and trigger sources.
- Agilent Generic RF Source driver: added ESG old series (E44xxA/B models).
- R&S NRP2 driver: added USB PowerSensors NRP-.*.
- Added "Debug drivers" and "Debug optimizations" options in Measurement System settings (settings dialog box). These options only appear in debug mode (-debug).
- Added ability to select VISA instruments directly from driver configuration panel (only first scan is required, for others last scan result is used).
- Added ability to control prober directly from its configuration dialog box (with "Control" button).
- Added ability to move tuners (with Tuner Manager Tool) to specific gammas (default mode) or impedances (new mode).
- Added Maury 8770x calibration kits to main CKTS file.
- **Specific to IV setup:** added ability to set limits to "DUT reference plane" option and to disable fixed value optimization.

- **Specific to Load Pull setup:** TUN files are now read in passive tuner configuration (to find available frequencies in selected calibration files and limits the f0 choice to one of these frequencies).
- **Specific to Load Pull setup:** added ability to control passive tuner directly from its configuration dialog box (with “Control” button).
- **Specific to Load Pull setup:** added ability to manually stop amplitude calibration process.
- **Specific to Load Pull setup:** added a stop condition when modulus of “Gamma In” is greater or equal to 1 when “Pin” is optimized.
- **Specific to Load Pull setup:** added ability to perform source active tuning.
- **Specific to Load Pull setup:** added custom step mode for RF powers and DC sweep.

Removed features

Measurement

- Removed “Restore driver default values” in Setup Editor (useless and not working properly).
- Removed “Average step” field from logarithmic step editor (useless).
- Removed “WBF gated” filter from VNA configuration (not usable for the moment).
- **Specific to Load Pull setup:** removed amplitude calibration end page for coaxial and unsexed calibration processes (useless information and source of mistakes).
- **Specific to Load Pull setup:** removed “Pmax” field from coaxial/unsexed calibration wizards, source of mistakes.
- **Specific to Load Pull setup:** removed “Z0” and “Move tuner to Z0 to set bias” options for “Measurement options” tab.

Improvements

Main

- Updated all documentations.
- Improved error messages when IVCAD fails to launch. When there is no license, a license file can directly installed without to have to launch License Updater.
- Improved License Updater tool (more intuitive).
- Now value of JVM option named “-Xmx” is automatically determined from available physical memory (\geq 2GB: 512MB, \geq 1GB: 256MB, otherwise 128MB). Before it was always 256MB.
- Moved “Full screen mode” into “View” menu.
- Splash screen is no more “always on top” when displayed.
- Simplification of events viewer filters (no more levels).
- ESC key can cancel most of dialog boxes.
- Improved compatibility with computers with outdated versions of DirectX and video card drivers (hardware acceleration is now disabled by default); this should fix unpainted dialog boxes.
- “About” window now display Java version.
- Now environment variables in log file are sorted.

Visualization

- Updated engineering notation of numbers when there is no floating part (1.0e+00 \Rightarrow 1e+00).
- Renamed some data: “Power gain” is now “Operating gain” and “Transducer power gain” is now “Transducer gain”.
- When a new data is added to a 2-D data viewer, the new data is assigned to Y-right axis.

- Plots shape and color are memorized in all viewers to keep same decoration even if some curves are added or removed. Memory is cleared when all curves are removed.
- “a1”, “b1”, “a2” and “b2” data unit are set to \sqrt{W} .
- An auto scale is automatically performed when 2-D graph window is incorrect.
- Changed formula of Gamma Source data: now set to 0 (50 Ω) when data file doesn't has this information.
- Improvement of 2-D and 3-D data viewers: no more popup menus, so multiple actions can be done without to have to re-enter into the menu.
- Improved IV example files, now there are two examples. One with s-parameters only and another with complete IV traces.
- Improved legend in IV Extended Viewer when two markers are displayed.
- Small speed improvement in IV Extended Viewer graph render (curves are not magnetic anymore).
- Post-treatments list are updated when data is changed in IV Wafer Mapping Viewer (no more invalid post-treatment in the list).
- Load Pull Time Domain Viewers: ‘Continuous Zoom’ changed to ‘Vectorial Zoom’, changed refresh button icon.
- Load Pull Time Domain Viewers: auto scale now works with vectorial zoom feature.
- Load Pull Time Domain Viewers: now pressing ENTER key in options validate them.
- Load Pull Time Domain PS: X & X' references changed to X1 & X2.
- Load Pull Time Domain IS: A shape has been added to curves to differentiate them (when colors are too close).

Measurement

- Agilent Legacy VNA driver: increased default timeout.
- Agilent PNA N52xxA - NVNA driver: Combiner path forced to Combiner.
- Agilent PNA N52xxA - NVNA driver: Source before/after measurement forced to ON.
- Plug-ins tree modification in “Measurement System” branch: “Edition” is now “Measurement” and “Measurement” is now “Hardware control”.
- Improvement if virtual drivers: code cleaning, persistent data, number assignation simplification (with “num=n” option).
- Instrument scanner now uses an infinite animation during scanning process.
- When Instrument Scanner is opened from hardware configuration dialog box, and if a scan is started and window closed, scan operation is now canceled.
- Calibration ID is now set to zero when all calibrations are removed in Setup Editor.
- Replaced “VISA implementation” by “VISA library”.
- Wizard dialog boxes have been resized (slightly larger).
- Trigger source hardware is now visible in timing editor (Setup Editor).
- When a measurement is aborted the final error message is skipped (to avoid two message boxes).
- Improved steps editor (ability to perform sweeps from maximum to minimum, unsorted sweeps, etc.).
- Added an error event when IV optimization cannot set a level (for debugging).
- **Specific to IV setup:** improved measurement editor, now when a configuration is not possible due to some restrictions in your setup (for example when input or output power supply is disabled), invalid fields are grayed.
- **Specific to IV setup:** small speed improvement (removed useless optimization of fixed value after first point of a curve).
- **Specific to IV setup:** “S-Parameters measurement” check box is now disabled by default and its state never change when bench is initialized.

- **Specific to IV setup:** when adaptive step is selected, sweep type is automatically set to “Output sweep”.
- **Specific to IV setup:** reduced right S2P graph margin and legend is now hidden by default.
- **Specific to Load Pull setup:** improvement of MTune driver, removed multiple initializations requirement. Only one initialization is required by IVCAD launch.
- **Specific to Load Pull setup:** simplification of active tuning configuration (“harmonic count” field has been removed and Tuner Manager Tool has been simplified: an active RF source is now associated to a specific harmonic directly in the Setup Editor to avoid mistakes and complicated settings).
- **Specific to Load Pull setup:** improved passive tuner schematic, now s-parameters blocks are more detailed: FRONT, MUX or BACK is displayed in the block.
- **Specific to Load Pull setup:** improved tuner auto de-embedding wizard, reduced number of steps and click count to perform all auto de-embedding process (more automatic), and generates termination de-embedding files.
- **Specific to Load Pull setup:** f0 and central frequency are memorized between a shutdown and an initialization (Load Pull VNA based measurement configuration).
- **Specific to Load Pull setup:** changed limits of resolutions in impedances edition.
- **Specific to Load Pull setup:** improved optimization process (DC input optimization is replaced by a DC output optimization and dual optimization between DC input and output has been removed).

Modeling

- Updated core of Amplifier Model plug-in and loaded values are now interpolated before they are displayed.
- Changed limits of some parameters in linear FET modeling:
 - Ri min: -20.0 to 1e-9.
 - Tau min: -2e-9 to 1e-5.
 - Rgd min: -200.0 to 1e-6.

Bug fixes

Main

- Fixed error 300 when try to run IVCAD directly from the installer.
- Fixed a crash in the installer when tries to select a license file (at the end of the install process).
- Some spell corrections.
- Fixed initial location of all dialog boxes/frames (now centered on parent frame when available, center of screen otherwise).
- Fixed some UI problems.

Import/Export

- Fixed some unhandled exceptions.
- MDM export: use of constant value "CON" instead of linear sweep "LIN" to avoid Not-a-Number errors (0-divisions).
- MDM export: fixed S-Parameters export when a traces file is available (MTP file).
- Fixed name of curves imported with Maury, Focus and SAT imports. Before it was “Unnamed”, now it’s the file name.

Visualization

- Fixed Y axis description in 3-D data viewer (X data name showed, should be Y data name).
- Magic Source Pull plug-in: fixed missing X/Y axis description, the interpolation starts from the end (no more ‘jumps’), can perform a data selection in one click and auto scale is now enabled when switching to X/Y graph.

- Extended LP Viewer plug-in: fixed missing X/Y axis description, the interpolation starts from the end (no more 'jumps'), can perform a data selection in one click.
- Fixed empty graphs in 2-D and 3-D data viewers when empty curves are selected.
- Fixed post-treatments, now only displayed when compatible values are available (for example the "10*log10(v)" post-treatment is no more available when negative values are passed).
- Fixed duplicated axis descriptions in 2-D data viewers (for example when try to display multiple data in S-Parameters Viewer > Predefined data).
- Fixed curves always displayed even if these curves are unselected in data sources tree (Load Pull Viewer).
- Fixed invisible Gamma Source with LP files in Load Pull viewer.
- Fixed invalid scale of some Smith chart when they are displayed for the first time.

Measurement

- Fixed some recognitions of "default" VISA library.
- Fixed some cases where "Enable drivers validation" is not taken into account.
- Fixed double precision on frequencies in some drivers.
- Power meter drivers: user power limit is now taken into consideration.
- Trigger source drivers: fixed some of them to allow continuous mode.
- PIV driver: invalid probe rising edge ratio, 0.0 -> 2.0.
- PIV driver: now minimum period can be set to 1.7 μ s (7.3 μ s before).
- Agilent PS driver: fixed N67xx (now fully supported).
- Agilent Generic/Legacy VNA drivers: back to macro pulse for pulsed measurement and power limits don't take auto-range option into account.
- Agilent Generic VNA drivers: fixed set different frequencies on each sources.
- Anritsu ML248xB/ML249xA and R&S NRP2 drivers: fixed trigger definition in CW Mode.
- R&S NRP2 driver: fixed a bug when switch between two measurement modes (CW/pulsed).
- Fixed hardware name in error messages when try to initialize a bench (for example "Fixture" will become "Input fixture" or "Output fixture").
- Fixed unavailable measurement functions (script editor) even if local scripting option is available in license.
- **Specific to IV setup:** fixed "Ain" and "Aout" labels in configuration tab: must be "lin" and "lout".
- **Specific to IV setup:** fixed "step by step" when minimum is equals to maximum or if step is set to zero.
- **Specific to Load Pull setup:** fixed MTune driver when de-embedding files are enabled when disabled in another bench initialization session, measured gamma and s-parameters are invalid.
- **Specific to Load Pull setup:** fixed MTune driver, sometimes drivers are not correctly detected (empty list).
- **Specific to Load Pull setup:** fixed passive tuner schematic is not correctly displayed.
- **Specific to Load Pull setup:** when a trigger source is chosen (formerly chopper) during the VNA calibration, all modulators are now ON.
- **Specific to Load Pull setup:** removed errors that are out of context when try to start a measurement (only true errors remain).
- **Specific to Load Pull setup:** fixed RF is not powered OFF when amplitude calibration fails.
- **Specific to Load Pull setup:** fixed ghost curve.
- **Specific to Load Pull setup:** gammas with a magnitude that is greater than one are not removed from impedance editor when templates are saved or loaded.

3.4.0.2 – 2012/10/26

New features

- New plug-in: [S] parameters to I-V converter (replaces the removed functionality of SnP import plug-in). Available with [S] parameters toolboxes and FET modeling license modules.
- Added 2-tones support in Load Pull Time Domain Power Sweep and Impedance Sweep plug-ins.
- Added curve selection in Load Pull Time Domain Power Sweep plug-ins (asks a little more processing time).
- Added 'db/phase' and 'db/unwrapped phase' visualizations in Amplifier Model plug-in.
- Added 'Pdc' parameter in Amplifier Model plug-in.
- Added an 'auto scale' checkbox in I-V trace screenshot tool (measurement part).
- Added frequencies auto-filling in coaxial and unsexed calibration wizards (reads frequencies from tuners configuration).
- Re-added 'Drivers validation' option in measurement system settings, but disabled by default and text is more explicit about instabilities of this option (experimental feature).
- Added ability to cumulate more than one data in 3-D graphs (Load Pull Viewer, Extended Load Pull Viewer and Source Pull Magic plug-ins).
- New viewable data: b2/a1 ratio (for Load Pull curves only).
- New option in 2-D graphs: negative (only available in some viewers).
- Added supports of AM241 probe (1000V - 30A) for PIV system.

Removed features

- SnP import plug-in no longer offers choice of import format (between [S] and I-V curve); see new plug-in for this functionality (the goal is to avoid the interruption of an import by a user choice).

Improvements

- New curves in 2-D and 3-D curves viewers can be manually edited (titles / descriptions / colors / shapes / etc.).
- Now when IVCAD is launched in debug mode, events viewer panel will have the debug filter set to level 3 from the beginning.
- Improved some user interfaces in order to look better with some look'n'feels.
- Improved performances in Load Pull Time Domain Power Sweep plug-in (fewer calls to algorithms).
- Updated "AMCAD PIV Gate and Drain Probe Heads Specifications" documentation.
- Updated "IVCAD OM Visualization MT930B" documentation.
- Improved minimum tolerance in optimization strategies (setup editor), now set to 1e-6.
- RF is now powered OFF between each curve of a power sweep (VNA based Load Pull measurement).
- Updated embedded Java Runtime Environment (JRE) to version 7 update 21.
- Restructuring of the examples directory ("is" to "scripting" and "is/resources" to "measurement").

Bug fixes

- Fixed a critical bug in tuners de-embedding files reader (cannot find requested frequency or used S1P/S2P data of a bad frequency).
- Fixed some translation problems, for example "Annuler" must be "Cancel".
- Fixed level definition in PIV driver when DC mode is defined.
- Fixed high range level definition (> 120V) with probe 221 when PIV is powered OFF then powered ON.
- Fixed PIV driver initialization process: trigger edge definition is not restored to default value (rising edge).
- Fixed DUT reference plane when we try to optimize at the extremum in PIV driver.

- Fixed some memory freeing problems in some drivers.
- Fixed some null pointers accesses in some drivers.
- Fixed ESG tolerance (0.02 dB instead of 0.01 dB) in Agilent Generic RF Source driver.
- Do not checks anymore waveform option settings if not used in Agilent Generic RF Source driver (avoid the “not-a-double data to parse” error).
- Now option 503 is no more used instead of option 502 in some cases (Agilent Generic RF Source driver).
- Two-tones/multi-tones now asked only with compatible RF sources (Agilent Generic RF Source driver).
- Fixed bad GPIB order for E3631A instrument (Agilent Generic Power Supply driver).
- Fixed NBF IFBW (applied again after pulse definition) in Agilent Generic VNA driver.
- Pulsed mode is no more reset when Agilent Generic VNA driver call firmware instruction “Disabled Auto Timing”.
- Fixed “remove calibration” action (Agilent Generic VNA driver).
- Fixed 3.3.9 setup files import, VISA implementations are not correctly imported.
- Fixed settings not taken into account when user doesn’t go into dedicated panel before initialize the bench.
- Fixed “always on top” bug.
- Fixed showing of P1 (W) and P2 (W) in extended I-V viewer.
- Added missing “Z data” in 3-D curves viewers.
- Fixed occasional freeze when IVCAD is starting.
- Fixed some security exceptions when application is launching.
- Fixed auto scale problem in FET modeling configuration panel when an I-V curve contains only one point.
- Fixed a bug when cancel action is selected in dialog boxes of Amplifier Model and Mixer Model plug-ins.
- Fixed UTF-8 conversion error with 4-bytes characters in IVCAD core (when Unicode code $\geq 0x10000$).
- Fixed a bug in random number generator code in IVCAD core (some array indexes are out of bounds).

3.4.0.1 – 2012/09/12

New features

- Installer now includes all required runtimes and libraries (Java Runtime, Visual C Runtime and MTune Library). Installation of these elements is only done if it not found or outdated.
- Added a ‘Browse’ button in fixture configuration dialog box (in IV and LP setup schematic).
- New Keithley Generic Power Supply driver (it will replace SM-2425 and SM-2430 drivers).
- Added a new feature in some drivers, ‘Force Identification As...’. Involved drivers: R&S NRP2, Agilent PM/PS/RF/VNA, generic Multi Meter, Infiniium & InfiniiVision.
- Two new demonstration scripts:
 - `msys_ivmeas_longpulse.is`: Perform a long pulse measurement (stress test of a device).
 - `msys_ivmeas_screenshot.is`: Perform an IV screenshot directly from script.
- Added filters in events viewer.
- Agilent PS driver: added support of Agilent N6700s/N8700s/E3631A models
- Agilent PS driver: new option: ‘Custom trigger level’.
- Agilent Generic RF Source driver: added support of Agilent ESG E4428C and E4438C models.
- Tektronix DPO7054 driver: added Auto-Differential & Auto-Hall probes ranges and manual mode is forced for low and high differential/hall probes ranges.
- Tektronix DPO7054 driver: new option added: ‘Custom trigger level’.
- Amplifier Model plug-in: new filter, ‘a11’.

Removed features

- Removed R&S SM-2425 driver (replaced by Keithley Generic Power Supply driver).
- Remove some demonstrations scripts about basic operations of script language (now integrated in embedded documentation).

Improvements

- Improved error handling at application startup (best identification of rare errors about some path request).
- VISA communication code: enlargement of initial buffer size for receiving responses from 1024 bytes to 4096 bytes.
- Merged Agilent Infiniium & InfiniiVision drivers into one driver and added some new options.
- Small changes in splash screen.
- Upgraded embedded script functions documentation.
- Changed some texts in Setup Editor in order to be more explicit.
- Some code cleanup and optimization.
- Amplifier Model plug-in: now store last opened file path.
- Amplifier Model plug-in: changed algorithm when “linked simulator” option is enabled (identification and export parts).

Bug fixes

- PIV driver: fixed DC mode for probes 211 and 223.
- PIV driver: fixed ‘measurement window is too small’ error.
- R&S NRVS driver: fixed code.
- Agilent Generic/Legacy VNA drivers: fixed calibration definition (port conversion).
- Agilent Generic VNA driver: pulse modulator is no more reinitialized if ‘Disabled Auto Timing’ option is used.
- Agilent Infiniium/InfiniiVision drivers: fixed offset and range management.
- Fixed multi-threading usage of 2-D graphs (fixed some concurrent modification exception when a graph is used in the script in a parallel call).
- Fixed some unclosed streams.
- Fixed a freeze when performing [S] parameters Screenshot (IV setup) after choosing to load the screenshot after measurement process.
- Fixed fixtures validation (IV and LP setups), now we checking if specified file is valid.
- Fixed recognition of some probes in IV measurement virtual driver (differential and hall).
- Fixed some potential 'Null Pointer Exception' in Script Editor.

3.4.0.0 – 2012/07/27

Initial release of this document.