



What's New in APx500 version 2.5

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.WAV file measurement	3
Custom Report Layouts	3
Dolby TrueHD support.....	3
Independent Signal Generation	3
IMD vs. Level sweeps.....	4
Bandpass Level measurement	4
Auto Gen Level—Target Level.....	4
Capture of raw bitstreams.....	4
Incremental Sequence Execution.....	5
Enhanced file format.....	5
Dolby Digital @ 32 kHz	5
BW52 Support.....	5
Windows 7 Support.....	5
Append frequency sweeps with different signals	5
Signal Analyzer bandwidth control	5
Status Bar Improvements	6
Track specific channel, measure all	6
Added API to import data in to an APx graph.....	6
New FFT lengths	6
Support for legacy adx and atsx files	6
New in the Resource Disc.....	6

APx500 version 2.5 Key Improvements

- Reports can now be completely customized: any format or template you can create in Microsoft Word can become a report layout, automatically populated with measurement settings and results each time you run a sequence.
- APx500 Version 2.5 brings support for the BW52 high bandwidth option (an APx525 Family option) that provides up to 1 MHz FFTs.
- APx500 can now directly analyze .WAV files.

See the topics below for detailed discussions of each of these new features, and more.

On the cover: Two detailed report pages from an extensive multipage DTS compliance report, thrown a bit out of focus to protect the innocent. With the new Microsoft Word reporting capabilities, a layout can be created in any format, with XML tags for each measurement setting and result. Once designed, a report like this can be repopulated with new data each time the sequence is run.

.WAV file measurement

ApX500 2.5 now adds the ability to directly analyze .WAV files. This capability appears in Signal Path Setup where you can now select a file as the input source. This feature is a breakthrough for the APx that addresses several challenging situations:

1. The ability to measure the input of a digital recording device. To test a digital recording device such as a computer, digital voice recorder, or professional hard disk recorder the output of the APx is connected to the input of the device under test, and the file which is recorded is returned to the APx for measurement. Previous techniques required looping the input of a device to its output. Using file analysis the input of the device can be measured independently.
2. The ability to save, recall, and reprocess the output of a device under test. The APx can already be used to capture the output of a device to a .WAV file. With file analysis those files can be post-processed and new measurements can be derived from them. In addition, the output of a device can be saved and emailed to allow partners around the world to solve problems by analyzing the actual signal coming out of a device. Finally, for recordings from the analog inputs, the measurement recorder stores the voltage scale inside the .WAV files it records. When analyzing a .WAV file captured by the measurement recorder, the actual analog scale in Vrms is preserved.
3. The ability to analyze the output of digital filters and signal generators. Customers working purely in the digital domain designing signal processing algorithms can now analyze the output of those algorithms without have to actually pass the signal to an external device.

Custom Report Layouts

By using Microsoft's new XML-based output format, .DOCX, customers can now define their own, completely customizable report layout. You can choose exactly the measurements and the data you want displayed in the report, and you can arrange the results in any way you want. If you have an existing report format you wish to use, the custom XML tags that define where in a Microsoft Word document the results of measurements are placed can be easily added to an existing document. Finally, Microsoft Word is only required to *create* new report layouts. For an existing report layout, ApX500 can create new reports using that layout without having Microsoft Word installed. This is useful for production test customers who do not wish to install Microsoft Word or Office on their production line computers.

Note: Due to a patent dispute between Microsoft and i4i, Microsoft has removed the OpenXML technology used by APx for the custom report layout feature in versions of Word sold after January 15th 2010 in the United States. Customers using a previously purchased version of Word or any version of Word purchased outside the United States should be unaffected. The next version of APx will use a different technology called *structured markup tags* for custom report layouts that is not impacted by the patent dispute.

Dolby TrueHD support

Customers with an APx HDMI or DSIO option can now generate pre-encoded Dolby TrueHD waveforms. In addition, Dolby TrueHD bitstreams can be captured to files, for post processing and off-line analysis, via the HDMI sink or DSIO receiver. Please note that APx will only record bitstreams from the HDMI sink when the source device does not have HDCP content protection encryption enabled.

Independent Signal Generation

In version 2.5, two independent sine wave generators are available. In most measurements with the sine waveform option, you now have the choice of sine split frequency or sine split phase. In split frequency you can generate two signals of two different frequencies; in split phase you can generate two signals with a phase offset. In either case you can choose which signals are routed to which output channels.

IMD vs. Level sweeps

Several enhancements have been made to the suite of intermodulation distortion measurements supplied with Apx500. First, MOD, DFD, and SMPTE distortion measurements have been combined together into a single measurement, IMD, with a control to select the IMD type. Second, a new sweep, IMD Level Sweep, which allows engineers to automatically graph IMD ratio against generator or device output level.

Bandpass Level measurement

This new measurement provides an RMS level meter coupled to a selective bandpass filter. The tunable filter provides a wide range of selectivity, from as narrow as the FFT window width, through a series of fractional octave widths (from 1/24 octave to 1/1 octave), to a user defined rectangular band. The measurement returns the RMS level of the energy inside the defined passband.

Auto Gen Level—Target Level

In the Reference Levels, Auto Gen Level function you can now select to set the generator level to achieve a specific output level in the device under test. In addition, in the Regulated Frequency Sweep measurement you can now also select to regulate for a target measured level in addition to a target THD+N ratio.

Capture of raw bitstreams

In the measurement recorder you can now select to save the raw encoded bitstream. When receiving Dolby or DTS data a raw IEC61937 bitstream will be recorded. This included Pa, Pb, Pc, and Pd as well as all the padding bytes.

Incremental Sequence Execution

Sequences can now be executed incrementally. In previous releases of APx500, sequences had to be executed from start to finish, and a partially completed sequence could not be completed at a later time. In this release of software you can:

- Run each measurement in a sequence individually, by right-clicking on the measurement and selecting "Start Measurement".
- Start a sequence at any point by right-clicking on the measurement you want to begin at and selecting "Start Sequence From Here".
- Restart a sequence that you previously cancelled.

The report contains the results of any measurements that have been run. This enhanced functionality allows customers to troubleshoot a problem without losing the results they have already generated, to pause a sequence and restart work on it later, as well the ability to complete a sequence one measurement at a time.

Enhanced file format

The 2.5 release of software is adopting a new file format, .approjx, which more efficiently stores data and significantly improves the file load time. Approjx files load about 60% faster than older proj files.

Dolby Digital @ 32 kHz

The instrument now supports playback of 32 kHz sample rate Dolby Digital (.ac3) test streams.

BW52 Support

APx500 v2.5 is required when operating APx525 family instruments fitted with the BW52 high bandwidth input option. When installed, the BW52 provides a measurement bandwidth of up to 1 MHz for one channel or 500 kHz for two. The expanded input bandwidth choices are accessed via the normal signal path setup bandwidth control.

Windows 7 Support

With this release of software APx500 is officially supported on Windows XP, Vista, and Windows 7 32-bit editions.

Append frequency sweeps with different signals

You can now change the test signal when appending multiple stepped frequency sweep measurements during a sequence.

Signal Analyzer bandwidth control

You can now override the analog input bandwidth control in the advanced settings of the Signal Analyzer measurement.

Status Bar Improvements

Additional information has been added to the status bar when the input or output is analog. This includes the source impedance, input termination, input voltage range, and whether the output is in normal or common mode.

Track specific channel, measure all

In Stepped Frequency Sweep advanced settings the track channel control now controls what input channel to use to track the start and progress of an externally generated signal. In previous versions of APx this control also controlled which channels were measured. In version 2.5 all channels are measured at the same time, regardless of what the Track Channel control is set to.

Added API to import data in to an APx graph

Added two new APIs: `IXYGraph.CreateImportObject` and `IXYGraph.ImportData`. These allow data to be added to an APx X/Y graph programmatically.

New FFT lengths

By popular request 1, 2, and 4K FFT lengths have been added to the FFT spectrum monitor and signal analyzer.

Support for legacy .adx and .atsx files

You can now import AP2700 and ATS software .adx and .atsx files in to the pass/fail limit of a measurement.

New in the Resource Disc

Note: These files are included on the resource disc that ships with a new APx, and will also be available for download at http://ap.com/download/apx#div_category_4

Enhanced Dolby and DTS project files

The Dolby and DTS compliance test projects have been updated to optimize test time, minimize memory requirements, and now use the custom report layout function of APx 2.5 to generate reports in the layouts preferred by Dolby and DTS.

New Generator Waveforms

We are now including pre-encoded test signals in Dolby True-HD, Dolby Digital Plus, and DTS-HD High Resolution format. These waveforms are designed for general audio measurements on Dolby and DTS decoder devices.

PSRR, Damping Factor, and Impedance vs. Frequency

New measurement utilities that automatically compute complex measurements including power supply rejection ratio, power amplifier damping factor, impedance as a function of frequency are now included.