

VISUAL ANALYZER

Free Download at <http://www.sillanumsoft.com/>

Thanks to Jared for bringing my attention to this free device available on the internet.

Download the Analyzer. Get or plug in a computer microphone. When the Analyzer starts up it will check your sound card settings. When the screen appears, go to the menu box at upper right next to HELP box and select "Microphone" as your input. Now you see that every sound you make is visually represented as in an oscilloscope.

Change the settings to those shown in the first screen on the next page. The Ms/d should be 2.8418 (the green color is hard to make out, so I have highlighted it for you on the screen shot). On the bottom screen. Y-Axis should have nothing checked, but X-axis should be checked at Log, as shown in the screen shot.

Now, check the box above that says Frequ. Meter. This gives you a popup meter for pitch or frequency. Hum (mouth closed, humming through nostrils) a tone. Raise and lower your pitch until the meter reads 180.000. Now sing the same pitch, but open your mouth. The meter should read 360.000 Look at the lower screen. You will see two spikes, one at 180 hz and another at the octave above, 360 hz. – 370 hz. The 180 hz is your Generating Tone and the 370 hz tone is your First Harmonic. When you hum F# with closed mouth, what you "hear" is the Generating Tone. When you sing the same F# with lips tightly drawn in an "O," you "qualify" or emphasize the First Harmonic, but sounds like the same tone to your ears. That is why First Harmonic is the hardest one to create and hear. It sounds like the F# pitch muffled down. But on these meters you can see it. You will never be able to qualify the Generating Tone unless you can do Tuvan throat harmonics ("overtone singing")!

When you have your 370 hz or F# tone well established, minimize or click off the Frequ. Meter. From now on, watch the lower screen. Each harmonic you create, from first to seventh, will manifest as the next spike on the X-axis. However, because artifact "strong" harmonics intrude into certain "weaker" ones, especially the Second Harmonic, you will probably get a little manifestation of the Third Harmonic. But when you create the Third Harmonic, it will spike up and become prominent. Look at the oscilloscope screen on top for each Harmonic to see how it changes shape by adding new wrinkles at the top of the sine wave as each new spike or Harmonic appears in the window below. By printing this out and using it as a guide, you will be able to "see" each Harmonic as you create it, then be able to hear it, and finally to create it at will.

Your starting settings should be as shown here for all values:

The screenshot displays the Visual Analyzer 8.10 software interface, which is overlaid on a Microsoft Word document. The software window is titled "VA -- VisualAnalyser 8.10 -- [Points = 4096] [Sampling freq. = 4096...]" and features a menu bar with options: On, Off, Settings, Phase, Wave, Freq. meter, Filters, Floating Windows mode, HELP, and Microphone.

The main interface is divided into two primary sections:

- Waveform View (Top):** Shows a time-domain plot with a vertical scale from -37.07 to 37.07. The horizontal axis represents time, with a green bar indicating a duration of 0.00 - 9.72ms. The plot shows a flat line at 0.00.
- Spectrum View (Bottom):** Shows a frequency-domain plot with a vertical scale from 851.1 to 8511. The horizontal axis represents frequency in Hz, ranging from 50 to 20000. The plot shows a single peak at 0.00000 Hz with an amplitude of 1893.89 Volt.

Control panels on the right side of the software interface include:

- Channel Settings:** Two channels are visible: "Ch A(L)" and "Ch B(R)". Each channel has a "Vpos Trig" control set to 2.8418 and 0.9473 respectively, and a "Zoom" control set to x1.
- Trigger Settings:** Includes a "Trigger" checkbox, "Slope" options (Positive, Negative), and a "Delta Chz" control set to 25.
- Measurement and Capture Settings:** Includes checkboxes for "Stay on top", "Volt meter", "Freq. meter", "Wave Gen.", "Phase", "THD", "THD + Noise", and "IMD". It also features a "Capture Scope" section with "wait" (94), "req." (100), and "used" (15) values.
- Axis and Display Settings:** Includes "Y-axis" and "X-axis" controls with "Log" and "Lines" options. The "Average" is set to 1 and "Step" is set to Auto. The "Channel(s)" dropdown is set to "Ch A".

The software is running on a Windows desktop environment, as evidenced by the taskbar at the bottom showing the Start button, taskbar icons for "Inbox - Outl...", "Visual Anal...", "Visual Analyz...", and "Microsoft Word", and the system tray displaying the time as 12:23 PM.

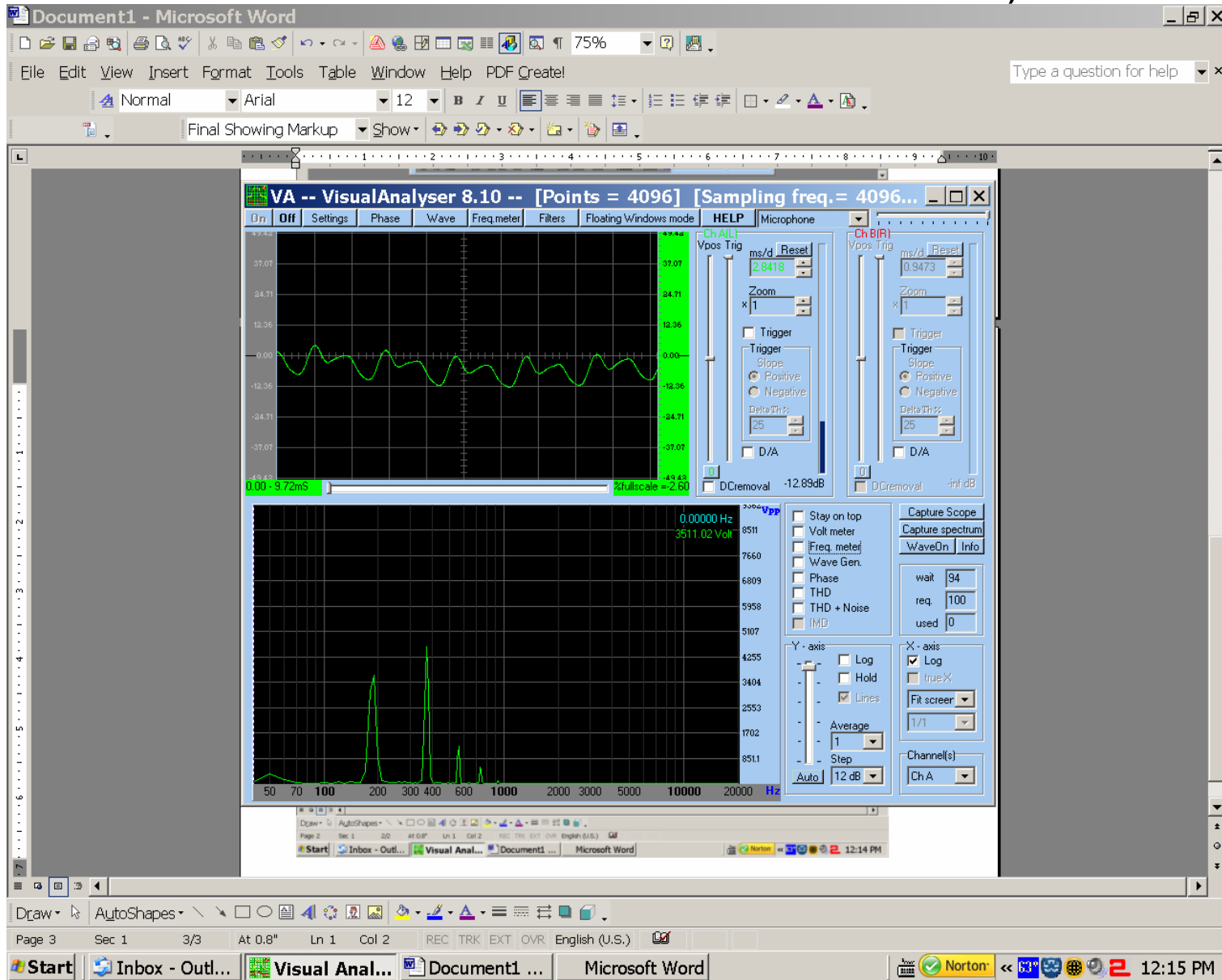
ESTABLISH GENERATING F# PITCH BY HUMMING

The screenshot displays the VisualAnalysers 8.10 software interface. The main window shows a waveform plot with a green signal. The Multifunction Counter window is overlaid, showing a resolution of 10.00 Hz and a frequency reading of 180.0000 Hz. The frequency spectrum plot below the counter shows a prominent peak at approximately 180 Hz. The software interface includes various control panels for settings, phase, wave, frequency meter, and filters. The Windows taskbar at the bottom shows the Start button, open applications (Inbox - Out..., Visual Anal..., Document1..., Microsoft Word), and system tray icons (Norton, network, volume, time: 12:13 PM).

MOUTH OPEN, ESTABLISH FIRST F# HARMONIC (second spike)

The image shows a screenshot of the VisualAnalysr 8.10 software interface. The main window displays a waveform plot with a green signal. The plot has a vertical axis ranging from -24.71 to 37.07 and a horizontal axis with markers at 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. A Multifunction Counter window is overlaid on the plot, showing a resolution of 10.00 Hz and a frequency reading of 370.0000 Hz. The counter window also includes options for Resolution (10.00 Hz, 5.00 Hz, 2.50 Hz, 1.25 Hz, 0.63 Hz, 0.31 Hz, 0.16 Hz), Frequency meter, Periodimeter, Counter, and Hold. The background software interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Table, Window, Help, PDF Create!), a toolbar, and a status bar at the bottom showing the Start button, taskbar icons for 'Inbox - Out...', 'Visual Anal...', 'Document1 ...', and 'Microsoft Word', and a system tray with the time 12:14 PM.

CREATE SECOND HARMONIC (third spike appears—notice artifact fourth spike which makes it almost as difficult as First Harmonic to hear and create)



CREATE THIRD HARMONIC (now fourth spike jumps up—you are “qualifying” that Harmonic)

The screenshot displays the VisualAnalysers 8.10 software interface, which is running within a Microsoft Word document window. The software window is titled "VA -- VisualAnalysers 8.10 -- [Points = 4096] [Sampling freq. = 4096...]" and features a menu bar with options like On, Off, Settings, Phase, Wave, Freq. meter, Filters, Floating Windows mode, and HELP. The main display area is divided into two sections: a top section for waveform analysis and a bottom section for frequency spectrum analysis.

The top section shows a green waveform on a black grid. The vertical axis (Y-axis) ranges from -49.49 to 37.44, with major ticks at -49.49, -37.07, -24.71, -12.36, 0.00, 12.36, 24.71, and 37.44. The horizontal axis (X-axis) represents time, with a scale from 0.00 to 49.49 ms. A green bar at the bottom of the waveform indicates a duration of 9.72ms and a fullscale value of -2.60. To the right of the waveform are two control panels for "Ch A(L)" and "Ch B(R)". Each panel includes a "Vpos Trig" control with a value of 2.8418 for Ch A and 0.9473 for Ch B, a "Zoom" control set to x1, and a "Trigger" section with options for Slope (Positive, Negative) and DeltaThresh (25). There are also "D/A" and "DRemoval" controls.

The bottom section shows a frequency spectrum plot. The vertical axis (Y-axis) represents amplitude in Volts, ranging from 0 to 8511 Vpp. The horizontal axis (X-axis) represents frequency in Hz on a logarithmic scale, with major ticks at 50, 70, 100, 200, 300, 400, 600, 1000, 2000, 3000, 5000, 10000, and 20000. The spectrum shows several peaks, with the most prominent one at 0.00000 Hz, reaching an amplitude of 5368.09 Volt. Other peaks are visible at approximately 200 Hz, 400 Hz, and 600 Hz. To the right of the spectrum plot are various control options, including "Capture Scope", "Capture spectrum", "WaveOn", "Info", "wait" (79), "req" (100), "used" (15), "Y-axis" (Log, Hold, Lines), "X-axis" (Log, true X), "Fit screer", "Average" (1), "Step", "Channel(s)" (Ch A), and "Auto" (12 dB).

The software is running on a Windows operating system, as evidenced by the taskbar at the bottom. The taskbar shows the Start button, several open applications (Inbox - Out..., Visual Anal..., Document1 ...), and the Microsoft Word application. The system tray on the right shows the Norton logo, network status, and the time 12:15 PM.

CREATE FOURTH OR HEART HARMONIC (fifth spike). Note change in wave form above.

The screenshot displays the VisualAnalyser 8.10 software interface. The top window shows a waveform plot with a green signal. The bottom window shows the frequency spectrum with a prominent peak at 0.00000 Hz and a smaller peak at 5516.69 Volt. The software interface includes various control panels for settings, phase, wave, frequency meter, and filters. The status bar at the bottom indicates the current page (Page 5), section (Sec 1), and time (12:16 PM).

VisualAnalyser 8.10 -- [Points = 4096] [Sampling freq. = 4096...]

Ch A(L) Vpos Trig ms/d 2.8418 Zoom x1 Trigger Positive DeltaThx 25 D/A

Ch B(R) Vpos Trig ms/d 0.9473 Zoom x1 Trigger Positive DeltaThx 25 D/A

0.00000 Hz 5516.69 Volt

Page 5 Sec 1 5/5 At 0.8" Ln 1 Col 2 REC TRK EXT OVR English (U.S.)

Start Inbox - Out... Visual Anal... Document1 ... Microsoft Word 12:16 PM

FIFTH HARMONIC (sixth spike). Note change in wave form above.

The screenshot displays the VisualAnalyser 8.10 interface, which is overlaid on a Microsoft Word document. The software window is titled "VA -- VisualAnalyser 8.10 -- [Points = 4096] [Sampling freq. = 4096...]" and features a menu bar with options like "Off", "Settings", "Phase", "Wave", "Freq. meter", "Filters", "Floating Windows mode", and "HELP".

The main display area is divided into two sections:

- Top Section:** A waveform plot showing a periodic signal. The vertical axis ranges from -37.07 to 37.07. A green bar at the bottom of the plot indicates a time interval of "0.00 - 9.72mS" and a full-scale value of "%fullscale = 2.60".
- Bottom Section:** A frequency spectrum plot. The horizontal axis is labeled "Hz" and ranges from 50 to 20000 on a logarithmic scale. The vertical axis is labeled "Vpp" and ranges from 8511 to 0.00000. A prominent peak is visible at 5630.57 Hz with a voltage of 5630.57 Vpp.

Control panels on the right side of the software interface include:

- Ch A (I) Vpos Trig:** Settings for the first channel, including a "ms/d" value of 2.8418, a "Zoom" of x1, and trigger options (Slope: Positive, Negative; Delta Ch: 25).
- Ch B (I) Vpos Trig:** Settings for the second channel, including a "ms/d" value of 0.9473, a "Zoom" of x1, and trigger options (Slope: Positive, Negative; Delta Ch: 25).
- Measurement and Capture Settings:** Includes checkboxes for "Stay on top", "Volt meter", "Freq. meter", "Wave Gen.", "Phase", "THD", "THD + Noise", and "IMD". It also features a "Capture Scope" section with "wait" (93), "req." (100), and "used" (16) values, and a "Y-axis" section with "Log", "Hold", and "Lines" options.

The Windows taskbar at the bottom shows the Start button, several open applications (Inbox - Out..., Visual Anal..., Document1..., Microsoft Word), and the system tray with the date and time (12:16 PM).

SIXTH HARMONIC (seventh spike).

The screenshot displays the VisualAnalysers 8.10 software interface. The main window is titled "VA -- VisualAnalysers 8.10 -- [Points = 4096] [Sampling freq. = 4096...]" and features a menu bar with options like On, Off, Settings, Phase, Wave, Freq. meter, Filters, Floating Windows mode, and HELP. The interface is divided into several sections:

- Waveform View:** The top section shows a green waveform on a black grid. The vertical axis ranges from -49.49 to 37.44. A time marker at the bottom left indicates "0.00 - 9.72ms" and "%fullscale = -2.60".
- Channel Controls:** Two control panels are visible for "Ch A(L)" and "Ch B(R)". Each panel includes a "Vpos Trig" slider (set to 2.8418 and 0.9473 respectively), a "Zoom" control (set to x1), and trigger settings (Trigger, Slope, Positive, Negative, DeltaThresh: 25, and D/A).
- Frequency Spectrum:** The bottom section shows a frequency spectrum plot with a logarithmic x-axis ranging from 50 to 20000 Hz. The y-axis is labeled "Vpp" and ranges from 8511 to 9511. A prominent peak is visible at approximately 200 Hz, with a smaller peak at approximately 1200 Hz.
- Settings and Capture Scope:** The right side of the interface contains various settings, including "Capture Scope" (with options for Volt meter, Freq. meter, Wave Gen., Phase, THD, THD + Noise, and IMD), "wait" (93), "req" (100), "used" (0), and axis settings (Y-axis: Log, Hold, Lines; X-axis: Log, true X, Fit screer, 1/1).

The software is running on a Windows operating system, as evidenced by the taskbar at the bottom, which shows the Start button, taskbar icons for "Inbox - Out...", "Visual Anal...", "Document1 ...", and "Microsoft Word", and a system tray with the time "12:17 PM".

SEVENTH HARMONIC (eighth spike, four octaves above Generating Tone).

The screenshot displays the VisualAnalyser 8.10 software interface, which is overlaid on a Microsoft Word document. The software window is titled "VA -- VisualAnalyser 8.10 -- [Points = 4096] [Sampling freq. = 4096...]" and features a menu bar with options like "On", "Off", "Settings", "Phase", "Wave", "Freq. meter", "Filters", "Floating Windows mode", and "HELP".

The main display area is divided into two sections. The upper section shows a time-domain waveform in green on a black grid. The vertical axis ranges from -49.43 to 37.07, and the horizontal axis shows a time interval of 0.00 to 9.72mS. The waveform exhibits a complex periodic signal. The lower section shows a frequency spectrum plot with a logarithmic frequency axis from 50 to 20000 Hz. A prominent peak is visible at 0.00000 Hz with a magnitude of 1883.09 Volt. Other smaller peaks are present at higher frequencies.

Control panels on the right side of the software interface include settings for two channels, "Ch A (L)" and "Ch B (R)". Each channel has a "Vpos Trig" control with a value of 2.8418 for Ch A and 0.9473 for Ch B. There are also "Zoom" controls (set to x1), "Trigger" options (Positive, Negative), and "Delta Th%" (set to 25). Additional settings include "D/A" (checked), "DCremoval" (-8.61 dB for Ch A, -inf dB for Ch B), and "Y-axis" options (Log, Hold, Lines, Average, Step, Auto). The "X-axis" is set to Log, and the "Channel(s)" are set to "Ch A".

The background shows a Microsoft Word document with the title "Document1 - Microsoft Word" and a 75% zoom level. The Word interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Table, Window, Help, PDF Create!), a ribbon with "Normal" style, and a search bar. The Windows taskbar at the bottom shows the Start button, taskbar icons for "Inbox - Out...", "Visual Anal...", "Document1 ...", and "Microsoft Word", along with system tray icons for "Norton" and the time "12:17 PM".