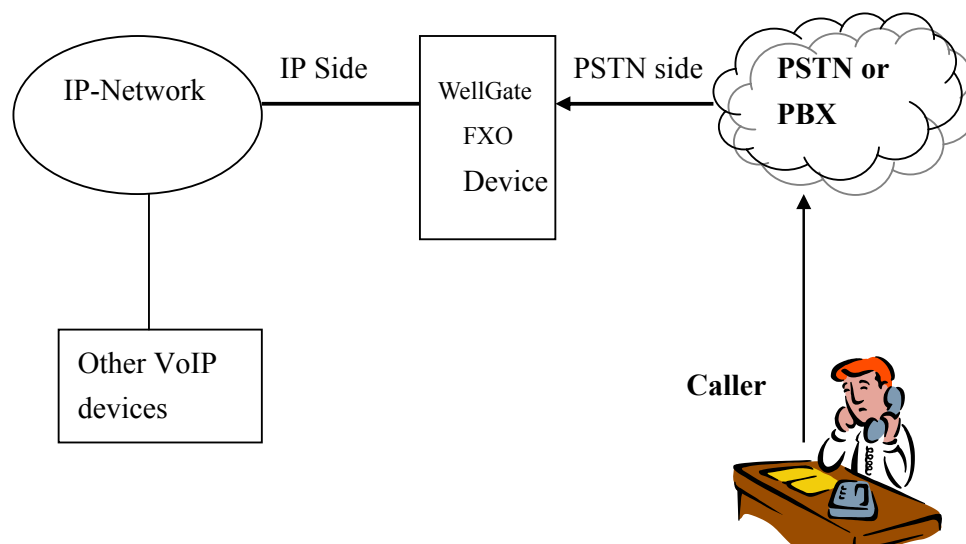


# Disconnect Tone Configuration

This application note is going to describe how to record and configure the disconnect tone to avoid the “hang up” problem.

## 1.1 What is Disconnect Tone



A caller make a phone call to Gateway from PSTN side, WellGate FXO device will answer the call automatically. If the IP side of other VoIP devices do not answer the call and the caller hang up this call, the PBX/ CO will give Gateway a disconnect tone automatically.

If the other VoIP device of IP side answers then hangs up the phone, the gateway will release the LINE port automatically based on the released signal of VoIP protocol.

There are three parameters received from PBX/ CO.

- High level frequency and Low level frequency
- Tone Cadence (ON/OFF intervals)
- Tone level

These parameters must be properly configured to FXO in order to recognize disconnect tone correctly. Each different PBX/ CO has different tone parameters. So, FXO has to configure tone table when LINE port connect to different PBX/ CO.

## 1.2 How to configure disconnect tone on WellGate FXO gateway

WellGate FXO device has four default settings of disconnect. Use can check the tone table by “tone –print” command, where 1 to 4 settings are for disconnect tone, and 5 to 8 are for remote ring back tone. If the disconnect tone is match with one of the four settings, the LINE port from PBX/ CO will be released after two seconds. Otherwise, it may be released after one minute or lock this LINE permanently.

The tone table parameters are shown as follows.

LowFreq 480 : Low frequency is 480 Hz

HighFreq 620 : High frequency is 620 Hz

LowFreqLevel 8 : Low frequency level received range from PSTN/PBX

HighFreqLevel 8 : High frequency level received range from PSTN/PBX

TOn1 50 : Disconnect tone cadence ON time is 0.5 seconds

Toff1 50 : Disconnect tone cadence OFF time is 0.5 seconds

(If this is continuous tone, the Toff parameter must set to 1023)

TOn2 1023 : Disconnect tone second cycle cadence ON time is OFF

Toff2 1023 : Disconnect tone second cycle cadence OFF time is OFF

(If the tone cadence has only one cycle, the second cycle must set to 1023)

### (1) Examples of how to configure Tone table

a. 480/620 frequency with ON/OFF time is 0.5 seconds

***tone 1 480 620 8 8 50 50 1023 1023***

b. 480 HZ single frequency with ON/OFF time is 0.5 seconds

***tone 2 480 0 8 0 50 50 1023 1023***

### (2) There are two ways to analyze the disconnect tone.

a. The FXO device provides the functions for learning the disconnect tone.

The steps are as below:

- Step1: Connect the port 2 of the FXO device to your PBX/CO.
- Step2: Input the command “record –tone” then press “Enter”.
- Step3: Use a phone set to dial the port 2 of the voice gateway.
- Step4: Wait until the port 2 LED turns on, and you will hear a greeting.
- Step5: Hang up the phone; waiting for 3 to 5 seconds (*some PBX may not send the disconnect tone immediately*); then press “R” and “Enter” to start learning.
- Step6: You will get the result as below:

r (Press "Enter" button after you key in "R")

.....  
.....  
.....  
.....

Analizing!! Please wait a moment..

(You coule hang up the call from PSTN if you get this message)

Frequency : 480

Frequency : 620

0.25sec on 0.25sec off

tone 4 480 620 8 8 25 25 1023 1023

(Put this value in to the tone table)

- b. You may use your PC with Microphone to record the disconnect tone and save to a WAV file. Using a third party's software to analyze it. Please follow below steps:
- Step1: Prepare two extension lines and plug telephone sets, make sure both sides can call to each other.
  - Step2: Ext A call to Ext B, and both sides can communicate with Handfree mode.
  - Step3: Prepare a PC, and plug a microphone with it. Or you can use the bulit-in microphone of your notebook. Anyway, you need to prepare a PC which can record the tone file.
  - Step4: Execute the built-in recorder of Microsoft Windows, you can find the recorder program in the path: (START → Program Files → Accessories → MultiMedia → Recoder)
  - Step5: Now, the A and B are in conversation with "Handfree", then A hang on the call, and B will hear disconnect tone from the speaker of telephone set.
  - Step6: Start to record the disconnect tone with the Microsoft recorder.
  - Step7: Save it as a WAV file.

Then you can use "CoolEdit Pro" software to analyze the frequency and ON/OFF time. Please visit <http://www.cooledit.com> to download demo version for analysis.

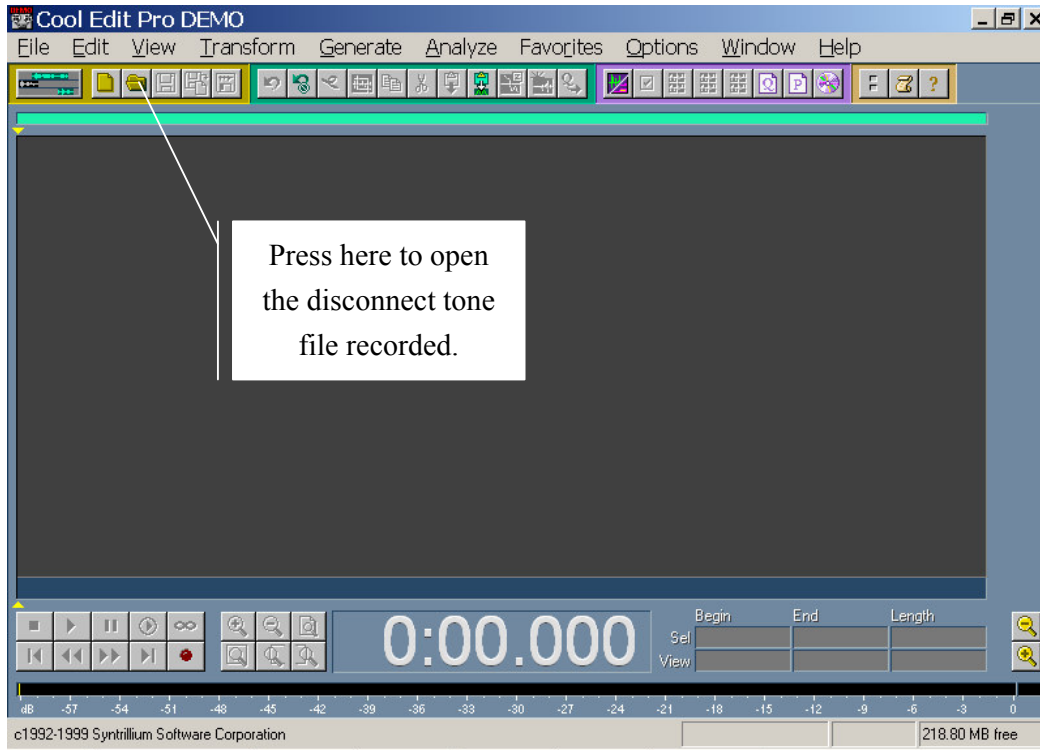
*Note :*

Although all the LINE ports are under the same PBX, disconnect tone may be various according to different direction of incoming call, so please consider the different situation and record disconnect tone from different direction.

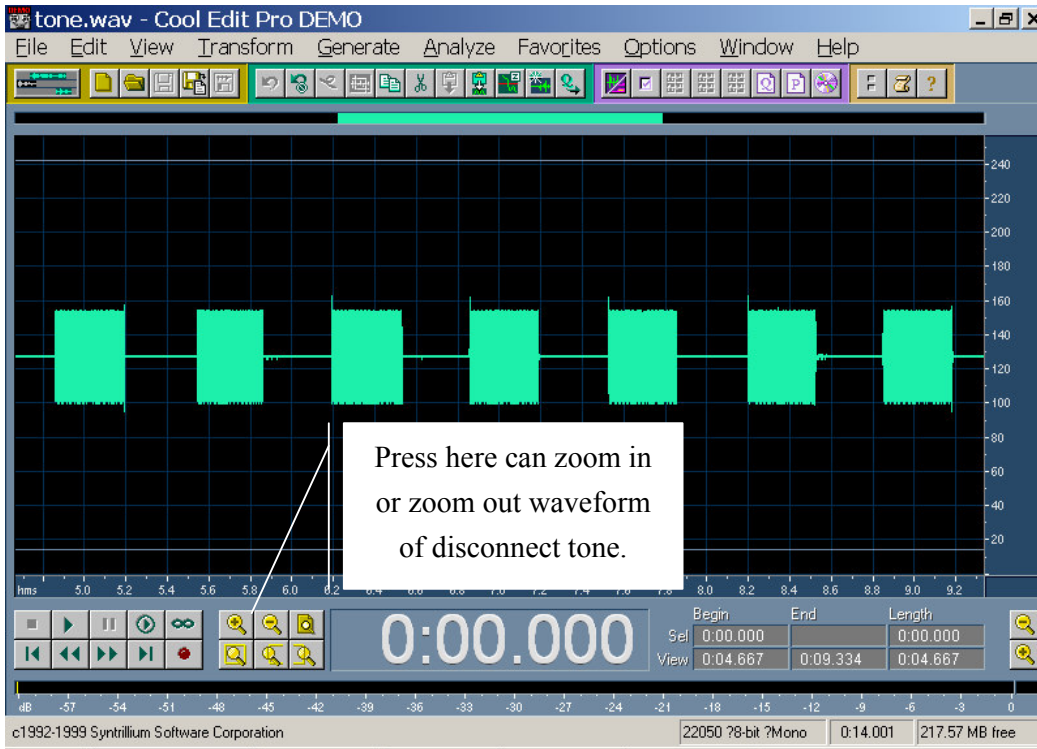
a. How to Use Cool Edit Pro :

(1) Execute Cool Edit Pro , you can see windows as below  
( demo version has 30 minutes limit per use. )

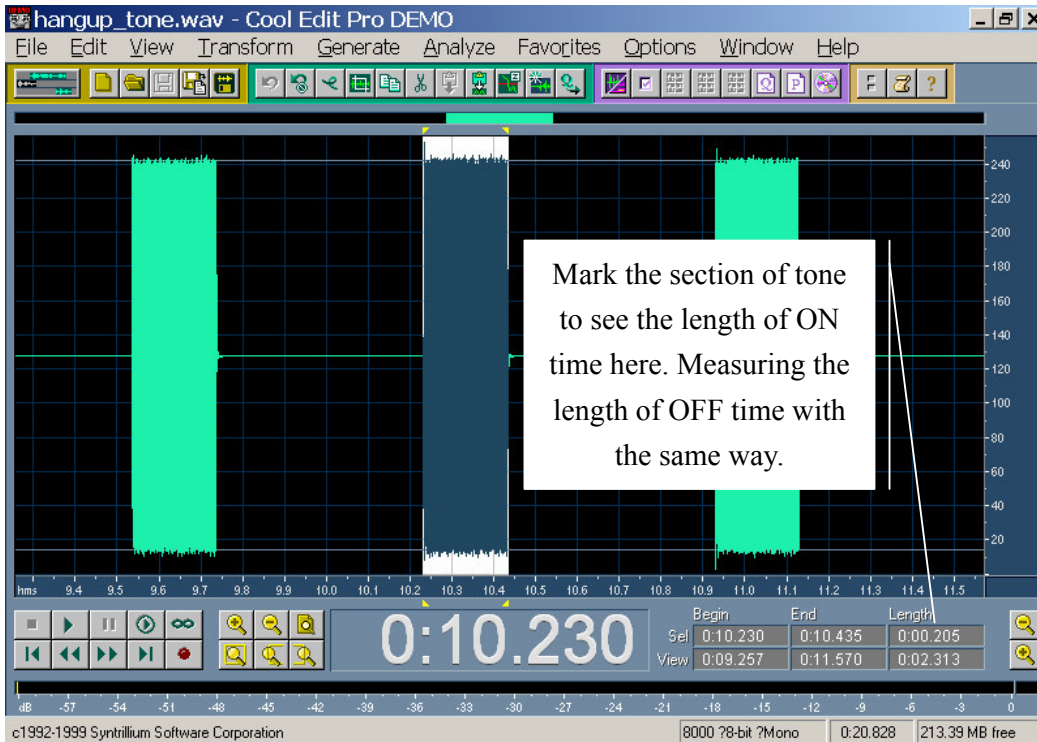
(1)



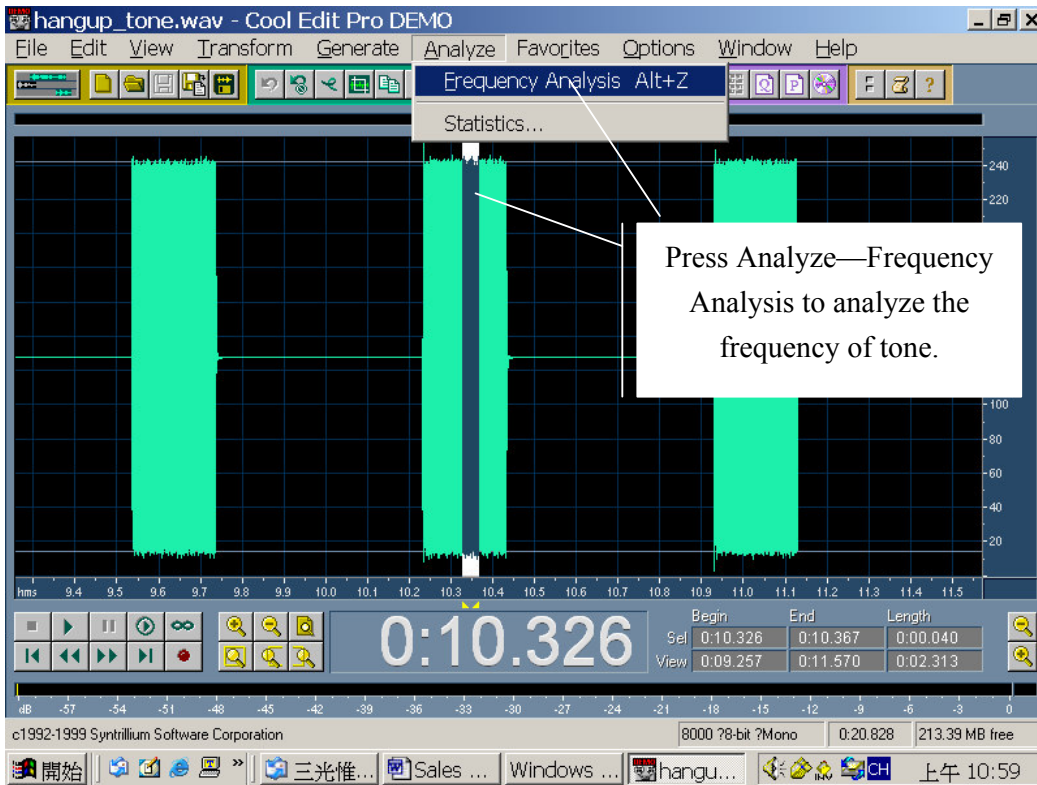
(2)



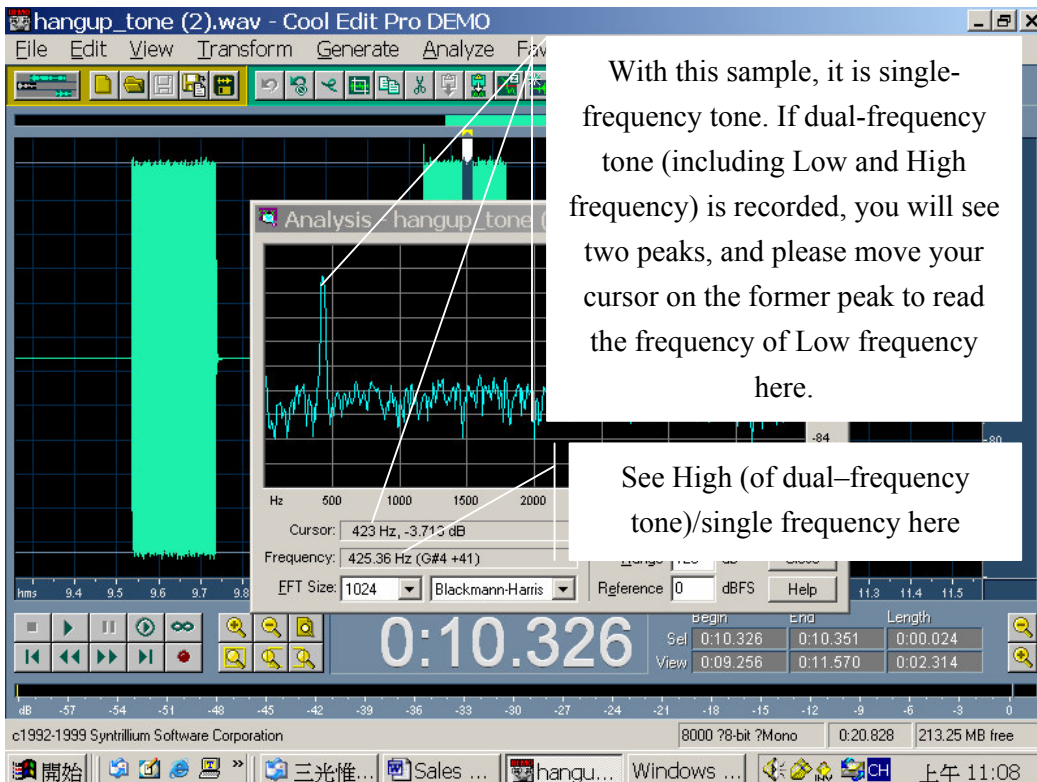
(3)



(4)



(5)



### 1.3 Adjust Tone Table parameters manually

If the gateway still can not release the LINE port in two seconds, try to adjust the frequency by 1 HZ on tone table, for example, the analyzed value is 620/480, take the following procedures.

620/479

620/480

620/481

621/479

621/480

621/481

619/479

619/480

619/481

If the LINE port of gateway was locked, please use "**hangup 0**" command to release LINE 1, "**hangup 3**" to release LINE 4.

### 1.4 Adjust Input Tone Level

Sometimes the disconnect tone level is too low to detect by FXO device. You can increase input gain from the following command.

**voice -volume input xx**

**commit**

**reboot**

xx is the input gain parameters. The maximum number is 35. If the number is over 35, the echo may be happened. Once you increase input gain, the voice volume from PSTN to IP side is increased too.