CLAIMS

What is claimed is:

1. A method for muting and unmuting a microphone signal, comprising:

providing a processor;

receiving an input microphone signal in a frequency domain;

measuring the input microphone signal for a loudness level at a sampling rate by taking a root-mean-square of the input microphone signal multiplied by a magnitude scaling factor, wherein the magnitude scaling factor is an inverse of a square root of a function of the sampling rate and frame size;

calculating a mute threshold level;

checking if the loudness level is higher than or equal to the mute threshold level, and resetting a mute delay timer upon determining that the loudness level is higher than or equal to the mute threshold level and obtaining the input microphone signal, or checking if the mute delay timer is running upon determining that the loudness level is not higher than or equal to the mute threshold level and attenuating the input microphone signal if the mute delay timer is not running or obtaining the input microphone signal if the mute delay timer is still running; and

writing the input microphone signal or attenuated input microphone signal to an output buffer.

2. The method of claim 1, wherein the loudness level of the input microphone signal is determined every 32 milliseconds.

3. The method of claim 1, wherein the step of calculating the mute threshold level comprises checking a voice activity detection mode and obtaining a set of parameters used for calculating the mute threshold level.

4. The method of claim 3, wherein the voice activity detection mode is selected from a group consisting of auto calibration, manual calibration by presets, manual calibration by preset level, manual calibration by custom value and real-time auto adjustment, and wherein real-time auto adjustment mode is selected by default.

5. The method of claim 1, wherein the mute delay timer is configured to 1 second.

6. The method of claim 1, further comprising a step of obtaining a preferred value for the mute delay timer of a user, and configuring the mute delay timer to the preferred value.

7. The method of claim 1, further comprising a step of displaying a visual indicator to show current mute status.

8. The method of claim 1, wherein the step of attenuating the input microphone signal comprises determining an attenuation value based on a target audio level of the input microphone signal and the loudness level, and wherein the target audio level of the input microphone signal is at an audio level that humans cannot hear the audio but communication applications can still detect the presence of the attenuated input microphone signal.

9. A software product that includes a non-transitory storage medium readable by a processor, the non-transitory storage medium having stored thereon a set of instructions for muting and unmuting an input microphone signal, comprising:

a first sequence of instructions which, when executed by the processor, causes said processor to receive an input microphone signal in a frequency domain;

a second sequence of instructions which, when executed by the processor, causes said processor to measure the input microphone signal for a loudness level at a sampling rate by taking a root-mean-square of the input microphone signal multiplied by a magnitude scaling factor, wherein the magnitude scaling factor is an inverse of a square root of a function of the sampling rate and frame size;

a third sequence of instructions which, when executed by the processor, causes said processor to calculate a mute threshold level;

a fourth sequence of instructions which, when executed by the processor, causes said processor to check if the loudness level is higher than or equal to the mute threshold level, and reset a mute delay timer upon determining that the loudness level is higher than or equal to the mute threshold level and obtain the input microphone signal, or check if the mute delay timer is running upon determining that the loudness level is not higher than or equal to the mute threshold level and attenuate the input microphone signal if the mute delay timer is not running or obtain the input microphone signal if the mute delay timer is still running; and

a fifth sequence of instructions which, when executed by the processor, causes said processor to write the input microphone signal or attenuated input microphone signal to an output buffer.

10. The software product of claim 9, wherein the loudness level of the input microphone signal is determined every 32 milliseconds.

11. The software product of claim 9, wherein the mute threshold level is calculated based on a voice activity detection mode and a set of parameters.

12. The software product of claim 11, wherein the voice activity detection mode is selected from a group consisting of auto calibration, manual calibration by presets, manual calibration by preset level, manual calibration by custom value and real-time auto adjustment, and wherein real-time auto adjustment mode is selected by default.

13. The software product of claim 9, wherein the mute delay timer is configured to 1 second.

14. The software product of claim 9, further comprising a sequence of instructions which, when executed by the processor, causes said processor to obtain a preferred value for the mute delay timer of a user, and configuring the mute delay timer to the preferred value.

15. The software product of claim 9, further comprising a sequence of instructions which, when executed by the processor, causes said processor to display a visual indicator to show current mute status.

16. The software product of claim 9, wherein the input microphone signal is attenuated by an attenuation value based on a target audio level of the input microphone signal and the loudness level, and wherein the target audio level of the input microphone signal is at an audio level that humans cannot hear the audio but communication applications can still detect the presence of the attenuated input microphone signal.