



Willow Creek Community Church

An open letter regarding audio volume levels at Willow Creek Community Church.

To Whom It May Concern:

My name is Chris Gille and I have been on staff at Willow for 8+ years. I am the Audio Director for the church, lead an audio staff (Matt, Nathan, Scott, Ron, Jeff, Joel), and am responsible for sound for the campus. I have taught at the Arts Conference for 8 years (in addition to other conferences and seminars over the last 10 years) and my material includes 30 minutes on volume, exposure, hearing response curves, risks, damage, fatigue, TTS, tinnitus, measurement and logging, and international governing laws.

Cumulatively our staff has over 100 years of experience in the audio field including touring, theater, system design/install, and system setup/adjustment. We are blessed with skills and talents of how to interpret what we hear into a mix, and simply love how God designed hearing. We have all had full hearing tests by an audiologist within the last 2 years. We are friends with Sensaphonics, a world leader in hearing conservation and protection, and have all been molded with custom monitors and attenuators. We stay in touch with sound techniques and trends all over the country in all kinds of environments, all kinds of styles at all kinds of volume levels, and never go anywhere without our attenuators and plugs to preserve our hearing, our 'tools' for our church, jobs, and ministry.

Willow's audio staff commits to keeping Willow a safe place concerning noise exposure. Measurements are taken and logged in all rooms running levels of 85dB or more (as per OSHA noise exposure regulations), including the main auditorium, Lakeside, Activity Center, and for services including Promiseland, Axis, Elevate, and Impact.

Volume is expressed in SPL (Sound Pressure Level) in a log₂₀ scale of Pascals (Unit of pressure). It is logarithmic to best express the range and resolution of measurable audible pressure levels, and more resembles how the ear perceives sound. This range would be cumbersome to represent linearly. With the log₂₀ scale, a 3dB increase is a doubling in pressure (the least amount of change the average person can detect) and a 10dB increase is about triple (what is actual perceived as double). For comparison, normal speech can have a 20dB dynamic range, which is a difference in pressure of a factor of 10. Very high differences are normal in sound when looking at the pressure numbers. The logarithmic SPL scale is centered at 94dB = 1Pa, and hearing represents a total range of about 200Pa (140dB). From 94dB-140dB is most of the 200Pa range. And from 94dB (1Pa) down to 0dB (the threshold of hearing) at .00002Pa make up the

last Pascal. Considering the smallest unit at the threshold of .00002Pa, a linear representation of the 140dB range of hearing would be over 20,000,000 units.

There have been several articles and opinions about the dangers of noise exposure that feature the number 85dB. Often missing information is how it is measured, and the fact that 85dB is an averaged exposure equivalent 'dosage' limit for an 8 hour day, 5 days a week. Louder sounds are safe for shorter periods of time. A 1-hour service could be 105dB(A)-slow of uninterrupted music (or noise), and still be in compliance with OSHA guidelines. Even though it is considered 'safe' enough for all occupations in the United States, we would never run at these allowed levels, because it doesn't serve our church to be as loud as, well, as is allowed.

Sound Pressure Level (SPL) dB(A)-slow and Level 'exposure' equivalents (in Leq) are logged in the main auditorium to reflect the real dosage, and as an ongoing study, developing a comprehensive historical report that keeps us on the leading edge of noise exposure safety compliance among live music venues around the world. These logs are obtained with various test equipment including Klark-Teknik, NTI, SIA, and others.

We operate below all known safe noise exposure standards, including OSHA (5dB exchange), EE ISO (European 3dB exchange at the strict newly-reduced '06 levels), Canadian and British governing laws, as well as ACGIH, and the opinions of aforementioned Sensaphonics (our local Chicago-based world-renowned audiologist partner, member hearing conversation groups and panels, performs our staff hearing tests and provides IEM and attenuation molds).

All New Community services in '05 measured at average exposure levels (Leq) of 72 to 81dB(A)-slow. These levels don't even register on Osha's exposure chart and doesn't count against anyone's daily noise exposure dose limit. For an example of comparison, our full congregation worships (with no music) at levels reaching 90dB(A) and applause approaches 97dB(A).

- See our "Audio Volume Policy" for the actual SPL values we adhere to.

We have been studying/observing/measuring/logging levels specifically for several years, and have a passion and a confidence for how our church is being an example to many others. We have friends in church production all over the world and have been informed that we are among the most comprehensive and diligent churches, with regards to attention to volume exposure, with logging, multi-scale info, and computer mapping comparisons.

The goal of our staff is to find the BEST volume. There are many parameters that factor into the 'best' volume, and they change from day to day and even service to service. We don't try to make it too loud. We're not going for as loud as we can get away with. We are engineering the sound of the room to appropriately and effectively support and express what is happening on stage and on the screens. Cultural relevance drives us towards being confident with our sound, not timid. This level also changes with the level of engagement of the congregation. We know where it should be, and it has been validated by exhaustive checks, cross checks, consultants, contractors, engineers, guest engineers, etc..

“Are we too loud?”

The answer, in all humility, is a confirmed, confident, and qualified ‘no’.

We are operating well below noise exposure regulations.

This allows us to find the BEST volume to support each service, not the loudest volume.

“Are we monitoring the volume?”

The answer is an enthusiastic and professional ‘yes’ that has been praised and affirmed for completeness, detail, and depth by several in the professional audio industry. In fact, several professionals have asked why we even go to the extent that we do with the “low and safe” levels we run at. We believe we have the responsibility to not just comply with regulations and understand measurements, but to also be an example of safety in this area.

“But it’s still too loud for me!”

If the volume is too loud for you, or this doesn’t satisfy your concerns, or if you simply disagree, please know that we have considered YOUR safety for anywhere in the room. If you prefer, there is a wide variety of quieter seating options available, including the back rows of any of the 3 seating levels, which are ‘shadowed’ from the main speaker arrays, yet still have excellent site lines to the stage and support screens.

I sincerely hope this has helped communicate our spirit in this, that we have met your expectations and concerns of safety and protection, with real measurements and exhaustive professional attention.

Sincerely,

Chris Gille

Audio & Systems Director, Production Department

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