A Sound Strategy
The Threat Of Excessive Motorcycle Sound, And A New Way Forward

by Ed Moreland

When it comes to motorcycle sound, the argument is not about the freedom to be as loud as you want to be. The argument is about the freedom to go where you want to go.

Like their streetbike counterparts today, off-highway motorcycle and All-Terrain Vehicle (ATV) riders in recent decades were running up against restrictive laws and outright land closures because their machines were drawing too much attention due to the loud sounds coming out of their exhaust pipes. Instead of standing back and waiting for even more land to be closed, the off-highway vehicle (OHV) community embraced change and moved toward a quieter solution.

The result of their efforts was the creation of a simple, consistent, economical and enforceable sound procedure for OHVs. The benefit of this standard—formally labeled J1287 by the Society of Automotive Engineers International (SAE)—was continued access to more public lands than would otherwise have been possible.

Now, streetbike riders are facing the same kinds of concerns. Ask the residents of Canyon Lake, Calif., or any number of private neighborhoods that have closed their gates to motorcycle traffic because of excessively loud bikes. It doesn’t stop there. Today, under pressure from business districts, citizens and county boards, entire cities have passed unfair, motorcycle-specific noise ordinances due, in part, to the absence of an objective on-highway test that law enforcement and motorcycle owners can rely upon.

Fortunately, there’s a solution, in the form of a new SAE sound-test procedure for on-highway motorcycles. Officially dubbed the SAE J2825 “Measurement of Exhaust Sound Pressure Levels of Stationary On-Highway Motorcycles,” it was developed with substantial support from the Motorcycle Industry Council (MIC) and published by the SAE in May.

The AMA’s ongoing efforts to encourage quieter riding can be documented as far back as 1948 and the “Muffler Mike” campaign. More recently, the AMA hosted the Sound Summit in 2003, which brought together riders, manufacturers, the aftermarket, law-enforcement and federal agency personnel to develop responsible approaches to sound management. Now, thanks to the MIC, we have SAE J2825 for the street-riding community.

This new test procedure is a long time coming, and it arrives just as a noisy minority of street riders resists reining in excessively loud bikes. We all know at least one: an otherwise sensible person who just doesn’t get it that their straight pipes or competition exhaust is determining whether countless others among the silent majority will enjoy the freedom to even ride in their own neighborhood.

It’s up to us. The new on-road standard can be the same kind of change agent for street riders that SAE J1287 was for OHV riders. At a time when the future of riding on our roads and highways is at stake, we now have a very important tool available to help us preserve the open road for motorcyclists. 

Ed Moreland is AMA vice president for government relations. Read more about the new SAE sound test procedure and the people who created it on page 46.
SOUND MANAGEMENT

A Breakthrough Streetbike Sound Test Standard Sets The Stage For Curbing Loud Pipes

The line between motorcycle sound and motorcycle noise has always been controversial. Cities around the nation have come up with some complicated laws over the years to try to deal with the issue.

Problem is, their solutions, though sometimes well intentioned, have been scattershot at best and entirely subjective and unfair at worst. But now, a new way of measuring the sound of street motorcycles could change all that. In the process, it could help curb two of the worst problems that motorcyclists face today: Excessive sound, and the anti-motorcycling laws that come when motorcycles are perceived to be the source of it.

by Bill Kresnak
What's now new is that the Society of Automotive Engineers (SAE) International has produced a simple, consistent, economical and enforceable sound test procedure that can be used to determine whether an on-highway motorcycle exhaust system emits excessive sound. If municipalities adopt the procedure, called "SAE J2825," as part of their overall sound-control strategies, it could eliminate laws that allow the subjective call of an officer, or a decibel reading that can't be measured repeatedly, to be the basis for enforcement.

That means the new practice is good news for motorcycle owners—if it isn't used to unfairly target motorcycle riders, and, hopefully, for cities nationwide.

"The motorcycle community and law enforcement have long sought a practical field test for measuring street motorcycle exhaust sound," says Ed Moreland, AMA vice president for government relations. "Thanks to the hard work of the Motorcycle Industry Council (MIC), and the SAE engineers involved in the project, a simple field test is now available.

"The AMA has always been concerned about excessive noise in the streets and the SAE J2825 procedure is a strong step towards solving this problem," Moreland adds. "With the new procedure, street motorcyclists can now determine how quiet, or loud, their bikes really are. The J2825 procedure allows jurisdictions to set reasonable limits in accordance with the procedure," he says.

"The key, though, is using the new practice intelligently, and not unfairly targeting motorcycles alone when it comes to sound issues. "While the AMA supports the establishment of the SAE J2825 procedure in America's cities, towns and communities, we will continue to fight efforts that single out motorcycles while still permitting excessive sound from other sources, such as loud cars and trucks, booming car stereo, poorly maintained generators, whining leaf blowers, and the like," Moreland says.

Tim Buche, president of the MIC, the trade group that underwrote the development of the procedure, also sees the new test as good news.

"The new SAE standard provides a much-needed alternative to outright bans, restrictions and sound test standards that vary state to state, and city to city, frustrating riders, exhaust system manufacturers, and municipal governments alike. With J2825, we can now have uniform standards and testing that's easy to administer," he says.

Excessive Motorcycle Sound Targeted Around The Nation

Before now, there was no simple sound test procedure to measure whether an on-highway motorcycle exhaust system emitted excessive sound. Jurisdictions around the nation have grappled with the issue in various ways, with sometimes severe penalties. Consider these recent examples:

- New York City (NYC) and Beverly, Mass., considered proposals to allow police to confiscate noisy motorcycles. In the NYC case, if a bike didn't have an exhaust system labeled by the federal Environmental Protection Agency as meeting federal sound limits, the bike could be seized on the second noise violation. In Beverly, if noise from the bike could be heard from 25 feet away, then the bike could be impounded.
- Boston, as well as Arvada, Colo., passed noise laws requiring all motorcycles built after December 1982 to have exhaust systems labeled by the EPA as meeting federal sound limits.
- Citizens in Hingham, Mass., petitioned their decision makers to consider adopting a sound law requiring all motorcycles to have EPA-labeled exhaust systems.
- A Connecticut state lawmaker introduced a bill requiring motor vehicles to be operated to prevent "unnecessary and unusual" noise. If a rider got two or more written warnings for excessive sound within a six-month period, the motorcycle registration would be suspended.
- In Benicia, Calif., the city council debated motorcycle noise and ultimately passed a resolution in favor of a state law that would require EPA stamps on motorcycle exhausts.

Meanwhile, across the nation loud motorcycles have been targeted with periodic police enforcement campaigns in many communities, including San Francisco, Falmouth, Mass., and Indian Rocks Beach, Fla.

The AMA was aware even 30 years ago that excessive motorcycle sound created problems. The AMA launched its popular "Muffler Mike" campaign for quieter riding in 1948 in an effort to get motorcyclists to respect others.

Since that time, the AMA has always tried to find a middle ground between overly restrictive laws that punish responsible riders and a wide-open, anything-goes attitude that results in a backlash from the general public.

"Only a practical and consistent sound test can determine if the exhaust system is out of compliance with the law," says Imre Szauter, AMA government affairs manager. He notes that the AMA opposes laws that rely on an exhaust system having an EPA stamp because "the EPA stamp is not readily readable on some motorcycles. Heat shields, saddlebags and other components may obstruct the stamp, or its physical location prevents an observer from easily locating it. Also, the stamp doesn't guarantee compliance, and in many cases, a replacement original equipment exhaust system is unavailable or cost-prohibitive."

In addition, it's unfair and punitive because such a rule does not apply to cars."
Motorcycle Industry Council Spearheaded The New Test Effort

The creation of a new street motorcycle sound measurement procedure was a top recommendation of the 2003 national Summit on Motorcycle Sound, organized by the AMA. The Summit pulled together riders and user organizations, representatives of the motorcycle manufacturers, the aftermarket industry, racing promoters, government agencies, and others to develop proposals regarding the issue of excessive motorcycle sound.

The MIC initiated the $250,000 motorcycle sound test project three years ago, conducting field-testing, analyzing the data, and providing the initial draft practice. A representative sample of 25 motorcycles and more than 50 aftermarket exhaust systems were tested.

The goal was to develop an easy-to-administer field test as an alternative to the complex drive-by test required for EPA certification.

Collaborating with the MIC throughout, the SAE Motorcycle Technical Steering Committee validated the scope of work and co-wrote the final procedure.

“Thanks to the determined efforts of the MIC OE Technical Committee, the RAC Motorcycle Technical Steering Committee, the MIC American V-Twin Committee, MIC member aftermarket exhaust system companies, MIC consultant Tom Austin of Sierra Research, MIC Vice President Pamela Arnette, MIC-member OE manufacturers and distributors, plus supplemental funding from non-members Harley-Davidson and the Motorcycle & Moped Industry Council of Canada, we finally have a stationary sound test procedure for on-highway motorcycles that works very well and should be adopted across the country,” Buche says.

New Streetbike Sound Test is Easy To Administer

The J2825 practice, officially titled, “Measurement of Exhaust Sound Pressure Levels of Stationary or-Highway Motorcycles,” establishes several procedures to measure motorcycle sound with specific instrumentation, test sites, test conditions, measurements and sound-level limits.

The new procedure follows the general SAE procedures established years ago for off-highway motorcycles. The AMA recommends that procedure, SAE J1287, wherever off-highway motorcycles and all-terrain vehicles (ATVs) are operated.

The new streetbike test procedure requires holding a calibrated sound meter at a 45-degree angle 20 inches from the exhaust pipe of a running engine. The procedure specifies how to do the test with the bike at idle, at a predetermined engine speed (“Set RPM Test”) or by slowly increasing the engine speed of the bike, called the “Swept RPM Test.”

The SAE J2825 standard, prepared by the SAE Motorcycle Technical Steering committee, recommends:

- A limit of 92 dB(A) at idle for all machines;
- Using the Set RPM or Swept RPM test—100 dB(A) for three- or four-cylinder machines at 5,000 rpm or 75 percent of maximum engine speed, whichever is less; and
- A limit of 96 dB(A) for bikes with fewer than three or more than four cylinders at 2,000 rpm or 75 percent of maximum engine speed, whichever is less.

The test also suggests that 2 dB(A) be added to these sound limits for motorcycle exhaust systems that have EPA sound-limit certification labels and haven’t been modified.

The complete SAE J2825 standard can be downloaded for $61 from the SAE website at sae.org/technical/standards/J2825_200905.

Chris Real, a member of the SAE committee that put together the new street motorcycle sound procedure, says the sound limits of the new test are high enough so that motorcycles that fail the test are extremely loud.

“We’re talking about a race pipe on a sportbike, or short headers on a V-twin,” Real says.

A Harley-Davidson Electra Glide with baffled aftermarket exhaust system would pass the test, but if the baffles are removed, or the bike has, say, 18-inch slash cut pipes, it would fail, he says.

It’s the open pipes, he notes, that are the problem.

“Those are the guys making the communities crazy,” Real says.

“The thing we motorcyclists need to be aware of is that there are more of us these days, and we have to fit into the communities,” Real continues. “Some cities have designated truck routes, and it would just take a stroke of a pen to have designated motorcycle routes because of excessive sound.”

THE J2825 STANDARD
“Measurement of Exhaust Sound Pressure Levels of Stationary On-Highway Motorcycles”
What Exhaust System Makers Say

Tim Calhoun, executive vice president for LeoVince USA, calls the new standard a "positive and proactive move by the Motorcycle Industry Council to protect the rights of riders."

"We believe the MIC has developed a test that is liberal enough to allow a reasonably built and engineered aftermarket exhaust system to pass these tests, while still being stringent enough to quickly weed out gross offenders," Calhoun says. "These usually consist of shotgun exhausts, un-muffled straight pipes, mufflers with little or no packing, or systems with the mufflers removed.

"It also is proactive, in that it finally gives the authorities a true roadside sound test that is valid and repeatable," he says.

"All LeoVince exhausts will pass the new standard, and even our race cans will pass with a sound insert, which typically only robs 1-2 horsepower," he adds.

Kenny Price at Samson Motorcycle Products notes that most Samson exhausts with baffles pass the test with a 92 or lower decibel level.

"All in all, I feel we have finally come to a fair set of rules we can abide by. This will also keep us aftermarket companies alive, and help the rider as well. This is a home run for everyone," he says.

EPA Ride-By Test Doesn’t Work In The Real World

The new standard is a practical alternative to an existing standard that is so complicated that it just doesn’t work in the real world.

In 1972, Congress passed the federal Noise Control Act, which required the EPA to set noise standards for a variety of products. The EPA set sound standards for motorcycles beginning in 1983.

The EPA rule set the sound limit at 83 dBA, with the limit going to a stricter 80 dBA beginning in 1998. The test specified by the EPA is a pass-by test. Under that test, a motorcycle is ridden with the throttle wide open and the bike accelerating past a sound meter that is 50 feet away.

To be able to sell their bikes in the United States, motorcycle manufacturers must certify their products meet the federal standard and stamp a compliance notice on the pipe.

The onerous part of the standard, though, is the fact that it requires that mufflers be certified for every year, make and model of bike the exhaust is designed to fit. That means if an exhaust system company wants to sell an exhaust for a sportbike, it has to rent an EPA-certified test facility, hire a certified technician, then show up with one of every year, make and model bike the muffler is designed to fit so it can run tests on dozens of machines, which could take several days—a horribly expensive proposition.

For a company that’s trying to eke out a profit from a small niche in the motorcycle industry, that would be cost prohibitive.

As a result, very few of the aftermarket street pipes and mufflers sold in the United States meet EPA labeling requirements. So regardless of whether they’re straight pipes or quiet replacements, they’re technically illegal.

Policing Ourselves

Off-Highway Rider Confronted the Sound Issue Years Ago

The streetbike community is not alone in feeling the pressure for responsible sound limits. In fact, off-highway vehicle (OHV) riders have taken the sound issue seriously for years, knowing that noisy motorcycles and ATVs translate into closed riding areas.

Just like streetbikes, OHVs designed for use in public riding areas—as opposed to closed-course competition—are governed by rules put together by the EPA. The rule specifies the same ride-by test used for street machines, with off-highway bikes built since 1985 being limited to 80 decibels if they have engines smaller than 170cc and 82 decibels if they are larger.

The EPA pass-by procedure is no easier to reproduce on a trail than it is on a street. But many park rangers, riding clubs and promoters found they could get consistent results from a test developed by the SAE.

Unlike the EPA test, which requires a large, controlled environment plus a test rider who will follow the procedures precisely, the SAE J1207 test is relatively simple. A calibrated sound meter is placed 20 inches from the exhaust outlet at a 45-degree angle. Then the engine is revved to a specified rpm (generally about halfway to redline) with the bike stationary.

The resulting decibel figures aren’t comparable to the numbers from the EPA pass-by test, but they result in uniform readings that can be used to develop independent standards.

Years ago, Michigan’s well-organized Cycle Conservation Club used the J1287 procedure to develop a 94 dBA limit for motorcycles ridden on the state’s enormous trail system.

In 2002, representatives from rider groups, exhaust companies, government agencies and even some environmental organizations in California came together to work on a similar standard for that state. The result, after extensive testing, was a 96 dBA limit for bikes that can be ridden on public trails.

That standard is now the rule for recreational riding throughout California and AMA-sanctioned public-trails competition events, including enduros, hare scrambles and desert races nationwide (although if a state has a lower sound limit, then the AMA requires an event there to conform to that limit). It has also resulted in a whole new line of performance parts designed to meet the 98 dBA limit.
A Note from Chris Real:

My firm, DPS Technical, Inc. is a member of the transportation community. We specialize in vehicle testing, education and projects related to transportation forensics.

We are very active in Civilian Vehicle Noise Control Training as well as in Law Enforcement Vehicle Noise Control training. We have a facility to perform vehicle testing.

People needing information on these subjects are encouraged to contact me directly.

We have a variety of information posted on our ever evolving websites, www.DPSTechnical.com. Our sound information is generally posted on either the Motorcycle Noise section or on the Transportation Forensics portion of the websites. A short video of the stationary sound test procedure is available for viewing.

I am often a guest presenter or instructor at events.

In 2009 – 2010 I will be in attendance at several events. Usually our outreach schedule is posted on the websites or on our Facebook pages.

2009 - 2010 Schedule

October 2009  SAE Standards Development meeting, Milwaukee, MN
  AMA Congress, Columbus, OH (Lecture presenter)
  Law Enforcement Training Class (Instructor)
  CA OHV Commission Conference (Technical guest)
  Civilian Sound Training Class & Outreach, Colton, CA (Instructor & Public function)

November 2009  Motocross Mini Olympics, Gainsville, FL (Race Team Mgr.)
  Barstow to Vegas, Dualsport, Barstow, CA
  MIC Inroads 2010

December 2009  Law Enforcement Class (Instructor)
  Cycle World Show, Long Beach, CA (Presenter)

January 2010  Law Enforcement Class (Instructor)
  ASA Los Angeles (Presenter)
  Civilian Sound Training Class & Outreach, Sacramento, CA (Instructor & Public function)