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The wily Andy Lewis of Acme Sound, LLC

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A KILLER BASS CAB

Plain and Simple

Acme Sound LLC Low B-112 Full Range Bass Cab

By **Tom Bowlus**

Andy Lewis is a plain kinda guy (though he does look sharp in a fedora!), and he builds a pretty straightforward kinda cab. His very brand name, "Acme," was designed to draw attention away from himself and allow the focus to be on his products. Those products have always been technically quite advanced, though the presentation and style were built more around simplicity and practicality than "flash." If anything, his designs have gotten more focused and trim as we move into the 21st Century. The Series III 1x12 models feature Acme's first 2-way and single driver (tweeterless) cabs, and show that Andy Lewis can deliver the goods no matter how many ways he divides them up.

Origins…

As a kid, I always enjoyed reading the "origins" stories for my favorite comic book super heroes. Okay, so I still enjoy those kinds of stories… But after being immersed in the world of bass gear for some years, my day-to-day heroes are the men and women who make all this fantastic stuff, and I find that the real-life origins stories of these heroes are even more interesting. After talking to a good number of bass cab manufacturers, it seems that these types, in particular, found their career path more by fate than by design. Andy Lewis is no exception.

We often talk about the simpatico between bass and drums, so it is interesting to note that Andy's musical career began on drums, at the tender age of ten. His cab-building inclinations kicked in shortly thereafter, and by age 14, Andy was reading "How to Build Speaker Enclosures," by Alexix Badmaieff and Don Davis and built his first hi-fi speakers. He continued

to build home audio speakers throughout high school, and moved on to his first PA speakers (Altec A7's) at age 17. This would also be the age at which he landed his first paying gig as a speaker builder (for the record, he had been gigging out as a drummer since age 16), when he worked for Audio Design Lab in Boulder, Colorado. This job helped him to develop his knowledge of woodworking, production, and the general business of building speakers.

After taking some time off to study general physics at Hastings College in Nebraska, Andy was back playing drums and building cabs at Audio Design Lab. They were making a lot of transmission line enclosures in those days, and he also experimented with building folded horn designs. However, at age 20, he was playing drums full-time, and toured much of the USA, Europe, the Far East, and even Greenland. By 1989, Andy was back building loudspeakers full-time (and still gigging part-time).

Throughout these adventures, Andy continued his independent study in the field of math, physics and speaker design. He became a subscriber to, and later wrote several articles for, the magazine Speaker Builder (Andy has several other articles in progress). His studies involved the collective thinking of Newton, Maxwell, Vanderkooy, D'Appolito, Pass, Edgar, Knittel, Dickason, Pierce, Augsburger, Staggs, Russell and Small. Don Keele, Harry Olsen, and Abraham Cohen provided additional inspiration. However, Andy's stars didn't really align until he started talking to some of the bass players he was gigging with about their gear.

He noticed that bass gear was rather expensive, and he became curious as to what exactly was involved in making these "expensive" cabs. So, he asked if he could borrow a couple of bass cabs to check out. Without naming names, Andy was able to get his hands on cabs from two of the leading bass brands at the time (early '90s). The first brand used good drivers, but the enclosure was far heavier than it needed to be, and the tuning of the ports was way off (by an octave or more). The second cab was even worse, featuring drivers with an "unusable Q" and huge magnets which did not help the situation. In short, Andy felt that he could do better, and he's been building bass cabs ever since.

The first Acme bass cabs (introduced in 1993) were 3-way designs employing two or four 10" drivers: the Low B-2 and Low B-4, respectively. These enclosures were certainly ahead of their times in terms of their pursuit of uncolored, accurate reproduction of bass instruments. The Low B-2 and Low B-4 received some tweaks and a new sibling, the Low B-1, when the Series II Acme cabs were released in 1999. Acme cabs were firmly on the map at this point, and earning wide acclaim amongst players who valued accurate reproduction.

Around this same time period, Andy's son was diagnosed with autism. Much of his energy and creativity were redirected to volunteer work with the local autism society, where Andy helped develop office procedures and software to help make the organization more productive. This occupied a lot of his time, but yielded its own rewards. Ever the active mind, though, Andy continued to tinker with a number of different designs and techniques to help potentially make his cabs even better. By the way, much of Andy's collective work (spanning decades) is available in the form of various technical papers and spreadsheets which are available on the Acme website (www.acmebass.com)

2010 ushered in the Series III era, and the first product was the Low B-112 Flat Wound – the first Acme cab without a crossover, and the first cab to use something other than a 10" driver. It was about 17 years since Andy last designed a bass enclosure from the ground up, and this was certainly quite a departure from his earlier models. The Low B-112 Full Range followed in 2011 and saw the addition of a higher-output textile dome tweeter to the same 12" driver used in its sibling. Series III versions of the Low B-1/2/4 enclosures (all sporting sprayed-on finishes and polyswitch protection – more on this in the technical review) are coming soon. The matching finish will be especially nice when stacking 10" Acme models with the 12" models, and the new B-112 cabs were specifically designed to pair up well with the earlier designs, both physically and sonically.

Thorough Design

The first Acme cabs I encountered some years back were the Low B-1 and Low B-2 (both Series II). I was amazed at their tonal balance from top to bottom, and their ability to stay tight and clear down low – really low! The mids were not peaky, and the highs were nice and smooth. Sure, they liked to have a good bit of power thrown their way to get the best results (not the most efficient of cabs, to be sure), but if you did, they rewarded you in spades. Equally impressive was the fact that these designs had been around for over a decade at that point – again pointing out that Andy really helped lead the charge with regard to "accurate," "uncolored" bass cabs. And to top it all off, the pricing was (and still is) certainly far lower than you'd expect based upon the performance level.

Fast forward a bit to late 2009, early 2010, and you started to hear a lot of buzz about a new breed of neodymium-based drivers from Eminence and some

other brands. The Eminence drivers came in several varieties (the LF and HO series) and were available in both 12" and 15" form factors. Talk was, they were using these very powerful neodymium ("neo") magnets – in conjunction with some new advances in surrounds, motor design, and the like – to achieve more excursion and higher output. The LF drivers were aimed towards going as low as possible with usable output, and the HO drivers were tweaked for higher output (but still went lower than most conventional drivers). Different proprietary versions of these drivers were discussed, and when I heard that Andy Lewis had been talking to Eminence about a proprietary 12" driver to be used in a new Acme design, I (and a bunch of other players) started to get excited.

The first 12" model I was able to play with was the Flat Wound ($609.00 direct price, by the way). Compared to the three-way Low B-1 and Low B-2 I had tried before, this was really something different. It is a single-driver system, with no tweeter (or midrange), and no crossover. It definitely had the deep, full low end I had heard in the earlier cabs, but the top end rolls off around 4kHz, somewhat mimicking the high-end roll-off you get when using flatwound strings (and hence the name, of course). This cab is a study in minimalist design, though certainly a lot of thought (and math, and physics) went into it. On his webpage, Andy writes:

"I see it as a statement. It is simplicity itself. It is the most parameter-optimized and perfectly-executed example of the most conservative of designs, distilled to an essence. The sheer purity of the "Flat Wound" system shows the philosophy at work in a way no other loudspeaker does and attempts to respect the purity of the classic American bass guitar which made us notice that there was a place for this simple loudspeaker."

No doubt about it, the Flat Wound has a great warm, full tone which will sit in many mixes just fine, and it begs you to dig in with a vintage P-bass and roll off the tone a bit. Still, it wasn't exactly "my thing" (I prefer stainless steel roundwounds, thank you), so I was definitely stoked when the B-112 Round Wound, er, I mean, Full Range, came in.

The Full Range is basically a Flat Wound with a tweeter (and crossover) added to it. The identical 12" driver is also run full range (up to about 4kHz), with the crossover bringing in the tweeter around 2.5kHz. It is a very seamless transition from driver to tweeter. Although the crossover itself is not a large mechanism, like many other aspects of Andy's cabs, the apparent simplicity belies the deep computer analysis that went into its development. Less can be more, but it can take some effort to get there. Making good, effective crossovers from fewer and fewer parts has been a goal of Andy's for some time, and his approach to crossover design (which abandons the resistive model of a moving coil driver) appears to be unique in the industry.

Real World Performance

The Low B-112 Full Range continues the Acme tradition of very balanced reproduction from bottom to top. The lows definitely go very deep, but do not overpower. There is great clarity and precision through the midrange. The tweeter Andy is using in this cab may look like his other textile dome tweeters, but it is an entirely different model, and it has a lot more output. It definitely keeps up with the 12" driver,

but remains as smooth and sweet as Andy's other tweeters. The overall clarity of this cab is excellent.

I happened to have a number of other 1x12 enclosures on hand for comparison's sake, and several of them were using one form or another of these new Eminence neo drivers. After numerous comparisons using multiple basses and heads, the Full Range proved itself to be very clear throughout the midrange, and very balanced throughout its useable range. Some of these other cabs are also aimed at a more or less uncolored response, and there were some strong similarities in certain sonic regions. Each enclosure had its own way of getting its story across. The Acme was more clear than some, and more warm than others. With no clear "winner," I felt that each cab had something unique to offer.

The first gig test came with both the Flat Wound and the Full Range (4 ohms, each) being pushed by a Genz-Benz ShuttleMAX 12.0. This is an excellent match-up, in my opinion. At sound check, my bandmates and the other folks on hand commented at the massive, room-filling lows. I offered to turn down, but everyone liked it and noted that it was not overpowering. For a relatively compact rig, I must admit, the tone was huge! After the room filled up a bit, I did have to tweak the response a bit, but he ShuttleMAX 12.0 certainly gives you plenty of options when it comes to tone tweaking. While a single 4-ohm Full Range could probably cover most moderate-volume gigs, I more commonly find myself needing more air movement than a single 1x12 can provide. For players with similar realities, the 8-ohm option may be more attractive, especially if you don't have a head that is comfortable with a 2-ohm load (or two 4-ohm loads).

The Bottom Line

Andy Lewis has been designing great-sounded, uniquely affordable high-end bass enclosures for decades. His designs have always been on the compact side, and now he is able to bring the weight down well below 40 lbs. per cab. The Low B-112 Full Range continues the Acme tradition of very "uncolored," very balanced, very clear sonic reproduction. While I still believe that the earliest Acme models are still relevant – and highly competitive – designs (even in today's market), I am thrilled to see these new 12" based models from Acme. I can't wait to see what Andy has in store for us next! BGM

bass gear test

Acme Sound Low B-112 Full Range Bass Cab

Enclosure

Configuration:	1x12
Listed Impedance:	4 ohms
Rated Power Handling:	350 watts
Inputs/Outputs:	Two Neutrik NLJ2MD-V dual Speakon & 1/4" jacks
Dimensions:	23"h x 15.75"w x 16.5"d
Weight:	37.5 lbs
Ports:	One 4" port (front)
Covering:	Spray-on
Baffle Board:	3/4" plywood
Cabinet:	3/4" plywood
Grill:	Metal
Handles:	One (top-mounted)
Feet:	Four, rubber
Casters:	No
Corners:	Yes, plastic stacking-style
Driver Mounting:	8 bolts (threaded inserts)

Drivers/Crossover

Woofers:	Proprietary Eminence 12", cast-frame
Cone Material:	Paper
Voice Coil:	3" copper
Magnets:	Neodymium (11 oz.)
Tweeter:	1" textile dome
Adjustment:	None
Protection:	Polyswitch
Speaker Connections:	Faston
Crossover:	2.5 kHz, 2nd-order
Options:	8-ohm configuration

Measurements

Average Sensitivity (200Hz-900Hz):	93.43 dBSPL (1 watt @ 1 meter)

TONE-O-METER

The Full Range likes a bit of power to sound its best, and has amazing clarity and balance throughout its range. The lows go very deep, and the overall tone is very defined.

GENERAL

Company:	Acme Sound LLC Box 2556 Englewood, CO 80150 www.acmebass.com
Country of origin:	USA
Year of Origin:	2011
Warranty:	2 years (also, 14-day return guarantee)
List price:	$664.00
Street price:	$664.00
Options:	None
Accessories:	Tuki cover
Available colors:	Black
Acquired from:	Acme Sound LLC
Dates:	November 2011 through April 2012
Locales:	Ohio
Test gear:	Genz-Benz ShuttleMAX 12.0, Carvin B1500, GK MB800, Mesa/Boogie WalkAbout, Lakland Skyline DJ4, Gibson Thunderbird, Sadowsky P/J 5, Skjold Exotic Custom 4, AudioKinesis TC112AF, Baer ML-112, fEARful 12/6cube/1

TEST RESULTS

1-5 (unacceptable to impeccable)

In-hand		On-bench	
Features:	3.5	Portability	4.5
Tonal Flexibility:	4	Road Worthiness	4.5
Ease of Use:	4	Components	4.5
Aesthetics:	3.5	Hardware	4
Tone:	4	Cabinet Construction	4.5
Value:	5	Wiring	4
		Cover/Finish	4

In-Hand Score
4.00 average

On-Bench Score
4.29 average

SONIC PROFILE:

Lows: Very deep, but not "bloomy"

Mids: Incredible clarity and balance through the mids

Highs: Bright and clear, but still smooth and sweet

Tom Bowlus'

CAB LAB

Acme Sound Low B-112 Full Range Bass Cab

In order to build an excellent bass cab, you of course need to use the proper driver(s) and components, but none of that will matter if you don't put your enclosure together right. The front baffle, side boards and bracing in the Full Range are all made from 7-ply, 18mm (3/4") high quality plywood. Andy uses a "stressed bracing" approach, which he explains and demonstrates in a nifty video on his YouTube channel (www.YouTube.com/acmebass). The video also discusses how the damping material (fiberglass, in this case) helps to eliminate the higher frequency resonance, as well. The result is an acoustically very neutral enclosure which is not only strong but also fairly lightweight. It is worth noting that Andy has provided a real wealth of technical and practical information via his webpage and YouTube channel. It can take a bit of digging to find all the gems hidden on the webpage, but I believe that it is well worth the effort

The metal grill is held in place by four bolts with threaded inserts, and is additionally secured by four strips of double-sided tape. The rubber stand-off's for the grill are screwed into the front baffle, which is a very nice touch. I have seen some setups where the rubber stand offs are only held in place by the downward pressure of the grill, and it can be a real pain to make sure that they stay in place when you are putting the grill back on. No worries, here. I did have to remove the top two corners in order to get the grill back on properly, which is a slight pain, but no big deal.

The proprietary 12" Eminence driver appears to be a custom, 4-ohm variant of the Kappalite™ 3012HO (Acme also offers an 8-ohm model). It sits in a slight recess routed out of the front panel to give a little more space for cone excursion (and to keep any part of the cone/surround from hitting the grill). The sturdy cast frame contributes to the strength of the front baffle. Eight bolts with threaded inserts hold the driver in place, which is another nice touch. Gasket tape is used to seal the lip of the frame to the baffle. The textile dome tweeter is held in place with four wood screws, as well as more gasket tape. This tweeter is amazingly light and tiny for its prodigious output. It looks similar to the Audax drivers Andy used to put in his enclosures, but I am not sure who makes this model. This is definitely a different model than the tweeters used in the Low B-1/2/4 enclosures. The driver in both the Flat Wound and the Full Range is driven with a full-range signal, and in the case of the Full Range, a 2nd-order crossover centered around 2.4kHz handles the high-pass filtering for the tweeter.

As you can see from the on and off-axis frequency response chart, this driver goes very low. The -10dB point (relative to the average sensitivity

between 200-900Hz) is at around 25Hz, which is exceptionally low. The enclosure is certainly designed to handle this abuse, but I did find a number of things in my music room which really started to vibrate when I was giving these cabs a workout. Deep, strong, and accurate low frequency response has been an Acme hallmark since Andy's first cabs, and these 12" models certainly deliver the goods, as well.

Another nice little attention to detail is that the rubber feet on the bottom of the cab are tall enough to clear the edges of the plastic stacking corners when placed upon a flat surface, but the feet are exactly the correct height to allow the stacking grooves to "lock" when one cab is stacked on top of the other. The single, top-mounted, spring-loaded handle also uses a recessed dish design which minimizes how far the handle sticks up when not in use. It does not hit the bottom of the cab on top (if you are stacking cabs), and it is easily cleared by bass heads with even modest-sized feet.

In the past, Andy has used the light bulb approach to tweeter/driver protection. He has migrated, however, to using polyswitches for protection. Polyswitches are passive, non-linear thermistors, and they act like automatically resetting circuit breakers. What's not to love? The wiring is pretty straightforward, neatly run, and of appropriate gauge. Connections are made via two dual-function Neutrik™ NLJ2MD-V connectors, which accept either Speakon or ¼" inputs. The spray-on coating – a new approach for Acme cabs – is on par with the best examples I have seen, and this will be the treatment applied to all Series III cabs.

The Series III Low B-112 models appear deceptively simple at first glance, but they have a lot going on beneath the surface. Andy Lewis really knows what he is doing, and he definitely thinks through all the details. These are well-made, well-designed cabs, and I believe that they will stand the test of time, much as the earlier Low B-1/2/4 models have. BGM

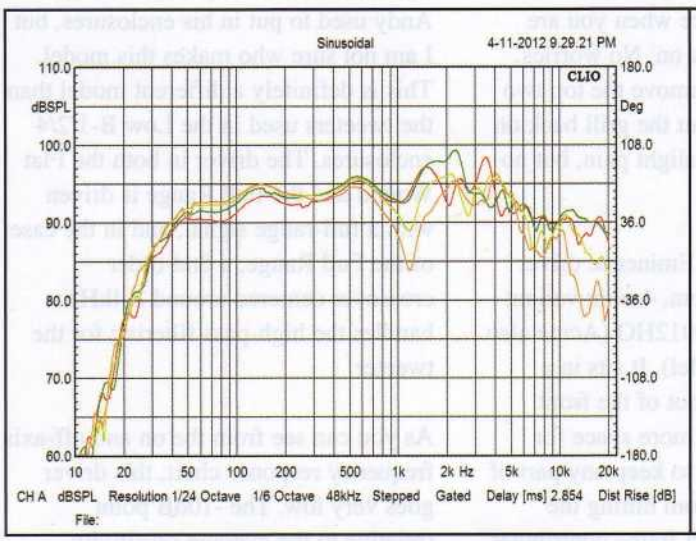

Fig A - On and Off Axis (15, 30, 45) Frequency Response

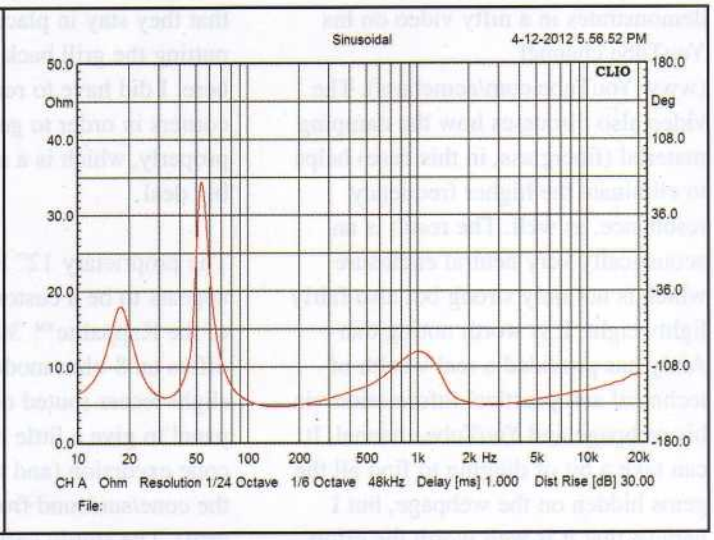

Fig B - On Axis Frequency Response with 0, 1, and 2 ports blocked