Revel is a dedicated high-end brand founded by Harman International in 1996, and the F-208s were designed by Kevin Voeks, who’s been Director of Engineering at Revel since that time. Voeks was previously the head designer at Snell, having taken over from founder Peter Snell after his tragic death from heart attack, aged just 38, in 1984. Prior to working at Snell, Voeks worked for famous Canadian manufacturer Mirage. As a point of interest, Revel was only the second company actually started by Harman (itself now owned by Samsung), because apart from the harman/kardon brand, all the other brands owned by Harman are the result of acquisitions and mergers.

Some measure of the popularity of Revel’s F-208 floor-standing loudspeakers can be gauged by the fact that this model has been a best-seller in Revel’s line-up ever since it was first introduced in 2014. It’s part of Revel’s Performa3 Series, which, being positioned between Revel’s PerformaBe Series and its Concerta2 Series, puts it exactly in the middle of Revel’s five different series (not counting its architectural speakers).

The curvy cabinets in the Performa3 Series are similar to those used for the company’s flagship Ultima2 Series, being formed with contiguous wood layers and finished in high-gloss piano black or genuine American walnut using a process Revel says: ‘is developed and overseen by Italian luxury cabinet-makers and exceeds automotive finish quality.’

The equipment

The Revel F-208s are certainly impressive, as they stand more than one metre tall (1.182 metres, to be precise) and sport no fewer than four drivers on the front baffle—two 200mm-diameter aluminium-coned bass drivers, a 133mm-diameter aluminium-coned midrange driver and a single 25mm aluminium-domed tweeter.

This means, of course, that the Revel F-208 is a true three-way design, which is my favourite implementation because it means that the all-important midrange frequencies are being reproduced by a single driver that’s dedicated to the task, so you not only get the purest tonality but also point-source sonic delivery.

The bass and midrange drivers have resonance-free cast aluminium chassis and the voice-coils and magnets use a geometry that results in a stable flux field even at high volume levels, which has the effect of reducing distortion. The aluminium cones have ribbing that Voeks says results in more piston-like behaviour which ‘eliminates a major source of resonances that are clearly audible in most other loudspeakers.’ The surrounds of the bass drivers and midrange driver are made from Santoprene, which is a thermoplastic vulcanizate made from rubber particles encapsulated in polypropylene. Santoprene combines the longevity of rubber with the flexibility of foam without any of the drawbacks of either material and as a result is one of the very best materials available for use in loudspeaker surrounds.

Rather unusually for a high-end loudspeaker, the Revel F-208 uses high-order crossover slopes either side of both crossover frequencies (270Hz and 2.2kHz). Although it’s not stated in the specifications, Voeks estimates the order as approximating that of a 4th-order (24dB/octave) Linkwitz-Riley characteristic. Voeks says that it’s essential to use higher-order crossover slopes in a loudspeaker if you want low distortion characteristics, minimal compression and high dynamic range. This is because if you use low-order crossover slopes the drivers are being fed audio signals that are outside the frequency range they’re designed to handle, so most of the audio signal voltage ends up simply heating up the voice-coils. ‘The heat makes the voice-coil impedance go up, and as a result of that the filter network is mis-terminated because it’s not seeing the termination impedance it expects to see, then the network doesn’t work.'
The tweeter’s acoustic lens waveguide ensures its dispersion characteristics match that of the midrange waveguide that Voeks says not only ensures that its dispersion characteristics match that of the midrange transducer in the crossover region, but also actually increases the tweeter’s dispersion at higher frequencies. ‘This gives the loudspeaker very smooth sound far off-axis,’ says Voeks, ‘providing consistent sound over an exceptionally wide listening area, which is an important contributor to overall sound quality.’

I loved that the tweeters on the F-208 are at seated ear-height, which is ideal acoustically. And of course you don’t have to use any ungainly (and often very costly!) stands to accomplish this—one of the many advantages of a good floor-standing design. I also loved that the tweeter dome is aluminium, because if you’re going to have any chance of making your speakers sound cohesive right across the frequency range, a very good starting point is to make sure that all the driver diaphragms are made of identical material. Designers who try to marry paper-coned bass-drivers with a metal-coned midrange and a fabric dome tweeter are behind the eight-ball before they even start!

A bass-reflex design, the Revel F-208’s port is on the front baffle, which simplifies room positioning, and the circular port is flared at both ends to minimise port-generated noise. You can ‘tune’ the speakers by fitting the ports with soft foam ‘plugs’. Revel says of these: ‘If your loudspeakers are located less than about 611mm from walls or other large objects, inserting the port plugs into the loudspeaker’s port openings can reduce the overly-aggressive bass output that can be created by the speaker’s proximity to large surfaces that reflect bass energy. In the F-208 you can experiment with the port plugs in conjunction with the loudspeaker’s Low-Frequency Compensation adjustment to fine-tune the low-frequency performance even further.’

So what is this Low Frequency Compensation adjustment? It’s a feature of the Revel F-208 that I have not yet got around to mentioning, so now seems as a good a time as any to do so. But before I do, however, we’ll first need to take a quick look at some basic physics, which is that the low-frequency output of any loudspeaker will be greater when it is located close to one or more boundaries (walls, floor, ceiling etc) than it is when it’s located away from such a boundary. This is because the boundary essentially acts as a reflector to concentrate the bass energy. Think about a light bulb. If you just put a single bulb in the middle of the room, its light will shine in all directions, lighting up all parts of the room equally.

If, however, you put a reflector behind the bulb, all the light that would normally have been sent behind the bulb will be reflected forwards. The result will be that the room in front of the reflector will be brighter than before, while the area of the room obscured by the reflector will be darker. Yet the bulb itself is producing exactly the same amount of light as previously.

Exactly the same effect occurs with the low frequencies produced by a speaker. If you put a speaker in the middle of a room, the low-frequencies will spread out omnidirectionally from the cabinet, so that the sound will be almost equally as loud behind the speaker as it is at the front of the speaker. If you move the speaker closer to a boundary, that boundary will reflect the sound forward, increasing the level compared to if the speaker had been in the centre of the room. This effect only occurs at low frequencies, because high frequencies are more directional so, for example, very little of the sound from a tweeter goes behind the cabinet: some does, but most of it goes forwards.

All speaker designers know all about this of course, but none of them know where you will place your speakers, so almost all of them design their speakers to deliver the maximum bass output the drivers are capable of delivering and most of them do their measurements with their speakers elevated from the floor and well clear of any boundaries... even, sometimes, in large anechoic chambers, where there are no boundary effects at all. This means that when you put these speakers in your room, you will get more bass than the designer’s measurements would indicate, because you are putting the speakers on the floor. And if you move the speakers closer to a room boundary such as a wall, you’ll get even more bass. And if you move the speaker close to a side wall as well, yet more bass again!
It is exactly to counteract this effect that the Revel F-208 has a ‘Low Frequency Compensation’ switch that can be used to reduce the speaker’s bass response when the speaker is operated close to a boundary. The switch has two positions—one marked ‘Normal’ and the other marked ‘Boundary’. The F-208 Owner’s Manual notes that you should: ‘Select the Normal setting if the loudspeaker is located at least 910mm from walls. Select the Boundary setting if the loudspeaker is built into an entertainment centre or shelving unit or if the loudspeaker is located less than about 610mm from walls and other objects.’ (Obviously some of this text is meant to apply to the smaller models in the Performa3 Series range that are fitted with LFC switches, because you would not build the F-208 into an entertainment centre!)

You can also adjust the output level of the tweeter, using a five-position ‘Tweeter Level’ switch that has positions for –1.0dB, –0.5dB, 0dB, +0.5dB and +1.0dB. Revel’s Owner’s Manual doesn’t go into much detail about adjusting this switch, noting only that you should: ‘Adjust the Tweeter Level switch on each loudspeaker to change the high-frequency level and fine-tune the overall tonal balance.’ The position you select will depend somewhat on your personal preferences, but assuming that you are after a nice linear and extended high-frequency response, you would use the +0.5dB or +1dB settings if your listening position is a considerable distance from the speakers and/or your room has lots of absorptive surfaces, and either the –0.5dB or –1.0dB settings if your listening position is fairly close to the speakers and/or your room has lots of reflective surfaces (hard floors, mirrors, window glass etc).

Both the Tweeter Level and the Low Frequency Compensation switches are rotary controls that are mounted at the rear of the speaker in a moulding that also houses the dual bi-wireable multi-way gold-plated speaker terminal posts.

Revel has built the F-208s speakers so they look equally attractive when used with or without grilles. The grilles are made from black cloth stretched over a very thin, insubstantial plastic frame (all the better to minimise diffraction) and attach to the front baffle via magnets, so there are no fittings visible if you decide to use the speakers without the grilles. The Revel F-208 is available in high-gloss piano black or walnut finishes. Each cabinet measures 1182×300×375mm (HWD) and weighs 36kg.

IN USE AND PERFORMANCE

Getting good sound in any room is more about getting the acoustics of the room right first (not too bright, not too damped, eliminating resonances and room modes and so on) and then about correctly positioning the speakers in that room, after which all other considerations come a distant second… assuming that there’s some synergy between the various components in your system and they’re all of a minimum technical standard.

The fact that the Revel F-208 design allows you to experiment with not only the actual physical positioning of the speakers in the listening room, but also with the speakers’ acoustic interaction with the room by means of the port plugs and the Low Frequency Compensation and Tweeter Level switches makes it far more likely that you’re going to get better sound in your room as a result, along with a greater freedom to position the speakers where you like than you would otherwise. All of this therefore gives the Revel F-208s an instant and huge advantage over speaker designs that don’t offer these options.

If you decide to use the port plugs, you need to insert them into the loudspeaker’s port far enough that the end of the plug is flush with the inside end of the port tube’s external flared section. However, the port in the F-208 is relatively short (165mm in length) that you have to be a bit careful not to push the plug too far in, otherwise it might drop down inside the cabinet. In the unlikely event this happens you’ll have to remove it, which will involve some careful work with a bendable gripping tool, a mirror and a flash-light or getting someone with extremely thin arms to assist (the port is only 75mm in diameter).

In my listening room I found I didn’t need to use the port plugs at all, and also found the Revel F-208s delivered ideal bass levels with the Low Frequency Compensation switches on both speakers set to ‘Normal’ and best treble with the Tweeter Level switches on both speakers set to ‘0dB’. (But note that the settings you use on one speaker do not have to be the same as the other. If, for example, your left speaker is close to a side wall, but the right speaker isn’t, you might have the LFC switch on the left speaker set to ‘Boundary’ and the LFC switch on the right speaker set to ‘Normal.’) Note also that I did not fit the grilles for my listening sessions. If you do use the grilles, you might like to set the Tweeter Level switch to +0.5dB to compensate for the absorption of the grille cloth.

So far as positioning was concerned, since my listening room is quite large, I was comfortably able to have both speakers a bit over two metres from the rear wall which seemed to provide the best stage depth. I found I achieved the best stereo imaging when I toed both speakers inwards so the tweeter paths crossed in front of the listening position, rather than converging exactly at the listening position. If, for aesthetic reasons, you’d prefer to have the speakers facing directly up the room, I’d suggest you might think about setting both Tweeter Level
switches to their +1.0dB positions. (And, if you move the speakers closer to the rear wall than I had them, also set the LFC switches to ‘Boundary’.)

I started out my listening sessions with a preconceived notion that the extreme high frequencies of the Revel F-208 might be slightly forward in the mix—a bit ‘hot’ if you prefer looser terminology—because the F-208s have been reviewed quite a few times over the four years they’ve been available, and some reviewers mentioned this as a characteristic of the F-208’s treble performance, and it’s a characteristic that’s often associated with metal dome tweeters because many of them have a resonant peak fairly close to—but higher than—25kHz.

Despite my preconceived notion, I am happy to be able to report that I heard nothing but absolutely clear, linear—and extraordinarily extended—treble… with no heat in the highs at all from my review F-208s. It may have been my room, which is very treble-friendly, or it may be that designer Kevin Voeks has ‘tweaked’ the treble of the latest models downwards slightly to address the concerns of the reviewers of earlier models… or it may simply be that they were wrong. It was because my judgement was that the treble was perfectly balanced against the midrange—and, indeed, against the bass—that I left the Tweeter Level control at 0dB where I’d set it as a start-out position, as noted previously. But if I had thought the treble was a little ‘hot’, I would have at least had the option to wind it back to ~0.5dB or ~1.0dB… options that will be available to you if you disagree with me about the treble.

As for the sonic purity of the treble, I was captivated. Brushed cymbals sounded just as they should, and the violin sound was perfectly true, with the G-string sounding soulfully sonorous, with a slightly dark tone, especially when compared to the E-string’s brighter, more lustrous tone. Particularly telling of the accuracy of the high-frequency sound was that the harmonics were not at all ‘stringy’ but more flute-like in character, exactly as a well-played violin should sound.

The midrange of the Revel F-208 was vividly revealed by the sound of The Franklin Electric’s album ‘This Is How I Let You Down.’ I knew I was in for an aural treat from the very first track, Strongest Man Alive. Track three, from which the album takes its title, is by far and away the triumph on this album. The Revel F-208s’ dynamic ability was ideal for the song’s slow build, with the tonal quality remaining pure and true irrespective of volume level. My second-favourite track, Watching From a Roof Top, highlighted the Revel’s delivery of PRAT, the syncopated drum beats contrasting with the haunting sound of the trumpets and keeping perfectly separate—yet at the same time wonderfully together—the vocals of Matte and Killen. This is a great album, by the way. Classified as alternative folk-pop, it’s one of the best ‘late-night’ albums I’ve ever heard… beautifully lazy, exquisitely sad and excellently recorded—most notably the sound of Jon Matte’s trumpet.
Piano is a wonderful test of any loudspeaker because it’s a percussion instrument that also has an enormous frequency range and extraordinary dynamics. Many of my favourite piano recordings for testing loudspeakers are recordings by Glenn Gould, not just because I get to admire his talent whilst auditioning, but also because of the quality of his recordings and because I get to hear the piano from the pianist’s sonic perspective. This means close-miked sound with tremendous dynamic range (in Gould’s case it also means you get to hear his vibrato, but that’s something you just get used to… or not). Unlike most pianists, Gould was a stickler for getting the sound of the piano correct... as well as the performance itself.

To hear Gould at his best it’s very hard to go past his last recording of Bach’s Goldberg Variations, and very hard to go past the Revel F-208s’ ability to render it. Close your eyes and prepare to be amazed. The complete continuity of the sound from the very lowest notes on the piano to the highest is extraordinary. Every note is at the correct volume, irrespective of pitch, and the ‘tone’ of each note is identical to that alongside it, changing only when the thickness of the piano strings the hammer is hitting changes... and yes, you can hear that very clearly also. I marvelled at the attack sound the Revel F-208s were able to deliver in Variations 9 and 10, particularly against the sustained sounds of Gould’s other hand.

The ability for the drivers to ‘stop’ when required is crucial when playing the Goldbergs, and the Revel F-208s also accomplished this perfectly. I was totally impressed that the bass of the Revel F-208s is so balanced. More this perfectly. I was totally impressed that the speaker because it’s a percussion instrument... thus it should be. If you are doing an A-B comparison, another thing you should watch out for is that in some cases you might think you’re hearing that the sound from the Revel F-208s is lacking in ‘warmth’, whereas what you’re actually hearing is a total lack of distortion and colouration combined with a completely linear and accurate frequency response. If you find this is happening, listen to the Revel F-208s exclusively for an hour or so and then switch back and you’ll realise that it’s the F-208s that are being truthful to the original sound quality and that it’s the other speakers that are tonally compromised by excessive distortion and colouration. Prove it to yourself by listening to the voice of London Grammar’s Hannah Reid. Any disc will do, but I used ‘Truth is a Beautiful Thing’, just so I could labour the bit about truthfulness in this review (because musically I actually prefer Grammar’s earlier album, ‘If You Wait’). You’ll hear Reid’s voice is delicate, yet at the same time powerful and although it’s a rich sound, it’s not overly rich. Take the opportunity to also marvel at the pin-point accuracy of the stereo imaging of the F-208s, which is always an indicator of both driver quality and quality control during final assembly.

CONCLUSION

If you’re looking for a true reference pair of loudspeakers, speakers that do absolutely everything well and have no shortcomings at all, you need look no further. Deep bass? Tick. Neutral midrange? Tick. Extended treble? Tick. Univalued dynamics? Tick. Completely uncoloured sound? Tick. I could go on with my tick-box examples, but the real proof will come when you listen to the Revel F-208s yourself. They reproduce music so accurately, so musically—and so natural-sounding—that you’ll be captivated. -greg borrowman

Readers interested in a full technical appraisal of the performance of the Revel F-208 Loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

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- Superb sound
- Boundary control
- Appearance
- Lowish impedance

The frequency response of the Revel F-208, as measured by Newport Test Labs, is shown in Graph 1 and you can see that it’s flat and extended, particularly so at the low-frequency end of the audio spectrum. Overall, it extends from 42Hz to 26kHz ±3dB. Note also that there’s no spectral skew on the response that would indicate a particular portion of the audio spectrum is dominant—the ±3dB variations are fairly evenly distributed across the frequency response. You should particularly note the spectacular smoothness and linearity of the response between about 120Hz and 15kHz. The response almost tracks the graph line up to 1.2kHz, so is effectively ±1dB, then there’s a small dip between 1.2kHz and 3kHz, the lowest part of which is 2.5dB below reference, after which the response is around ±2dB out to 15kHz before rolling off to be ~2.5dB at 20kHz. This is an excellent response.

Graph 2 shows a detailed view of the Revel F-208’s high-frequency response, showing response with and without the grille fitted. It’s immediately apparent that the grille has very little affect on performance, but interestingly enough, the very deep suck-out in the response up at 27kHz is ameliorated when the grille is fitted. This is of academic interest only, because it would not be possible to hear this particular dip in the response in any event, as it’s too high in frequency and too narrow in bandwidth.

The effect of the Revel F-208’s high-frequency control is shown in Graph 3 (with the grille fitted) and you can see that it has exactly the plus minus 1dB effect on the response that Revel claims for it... at least over the bandwidth between 3kHz and 23kHz. Below 3kHz the amount of boost and cut (for the record, it’s all cut, there’s no ‘boost’—the settings should more accurately be called 0dB, -0.5dB, -1dB, -1.5dB and -2dB) tapers off below 3kHz and there’s no effect on response at all below 2kHz. As this would represent second from top ‘C’ on the piano keyboard, this control is really only going to affect harmonics, rather than fundamentals.
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Graph 1. Frequency response. Trace below 1kHz is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter using pink noise test stimulus with capture unsmoothed. This has been manually spliced (at 1kHz) to the gated high-frequency response, an expanded view of which is shown in Graph 2.

Graph 2. High-frequency response, expanded view showing grille off (black trace) vs. grille on (red trace). Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. Lower measurement limit 2kHz.

Graph 3. High-frequency response, expanded view showing effect of tweeter level control. Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. Lower measurement limit 2kHz.

Graph 4. Low frequency response of bass drivers (black trace), bass reflex port (red trace) and midrange driver (blue trace). Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas.
Revel F-208 Loudspeakers

Graph 5. Impedance modulus (red trace). Low pass showing boundary setting (green traces); high-pass (blue trace) plus phase (pink trace).

Graph 6. Low frequency room response showing effect of boundary control.

Graph 7. Averaged frequency response using pink noise test stimulus with capture unsmoothed. Trace is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter.

Graph 6. Composite response plot. Red trace is output of bass reflex port. Dark blue trace is nearfield response of upper bass driver. Light blue trace is nearfield response of lower bass driver. Green trace is nearfield response of midrange driver. Black trace is gated (simulated anechoic) response above 2kHz and averaged in-room pink noise response below 2kHz.

Graph 4 shows that the low-frequency response of the Revel F-208 rolls off very smoothly, that there’s no unwanted output from the bass reflex port and that the acoustic crossover between the bass drivers and the midrange occurs at around 230Hz.

The impedance of the Revel F-208 (the red trace on Graph 5) is controlled, but dips below 4Ω at a number of points across the audio spectrum, most importantly to 3.5Ω at 100Hz. Nevertheless, the design could to all intents and purposes be regarded as having a nominal impedance of 4Ω, despite not completely conforming with the specification for such a rating according to IEC 60628-5. However, it does mean that the driving amplifier should be comfortable driving 4Ω loads and that if you use a valve amp, you should use the 4Ω taps.

The effect of the Revel F-208’s boundary switch is shown in Graph 6, where the black trace is the frequency response of the speaker when measured well clear of any boundaries (except the floor) and the boundary switch set to Normal. This trace was obtained in the farfield, using pink noise, so the outputs of the bass drivers and the port are able to combine, and you can see that it is remarkably flat down to 60Hz, after which it rolls off to be 5dB down at 40Hz and 9dB down at 30Hz.

The red trace shows the response when the speaker is in exactly the same position and the boundary switch is set to Boundary. You can see that output is reduced by about 4dB between 60Hz and 100Hz, and having progressively less effect with increasing frequency above 100Hz, and around 3dB below 60Hz. This should work well in for all conceivable speaker positions.

The in-room response of the Revel F-208 is shown in Graph 7 and, as you can see for yourself, it is outstandingly flat, virtually tracking the graphing line from the top of the start of the low-frequency roll-off at 60Hz right up to the graph limit of 10kHz. Graph 8 is a composite that puts many of the responses measured by Newport Test Labs on the one graph: the graph caption indicates what’s been shown.

Newport Test Labs measured the sensitivity of the Revel F-208 using its standard procedure as being 87.5dB SPL, which is a little lower than Revel’s specification of 88.5dB SPL, but an excellent result that means it’s still more efficient than most floor-standing designs.

Overall, the Revel F-208 returned outstandingly good performance in all of the tests conducted by Newport Test Labs. A truly excellent design achievement.

Steve Holding