

PLUS IFA News + Panasonic OLED + Yamaha MusicCast + Beyonwiz T2 PVR

SOUND IMAGE

AUSTRALIA'S
No.1 GUIDE
TO AUDIO & AV
www.AVHub.com.au

Vol.28 #6
OCT-NOV 2015
A\$9.95 NZ\$10.99

READ BEFORE YOU BUY!
**AWARD WINNERS
BUYING GUIDE**
EVERY ONE'S A WINNER - LISTINGS OF
THE TOP AUDIO & AV AT EVERY PRICE



GIVE
YOUR
SYSTEM
A SOLID

BASS BOOST!

13
REVIEWS

**MASSIVE SUBWOOFER GROUP
TEST FOR MOVIES AND MUSIC!**

CEDIA AWARDS 2015
TOP HOME CINEMAS & SMART HOMES

HEADPHONE HEAVEN!

- Audiofly AF180
- AudioQuest NightHawk
- B&W P5 Wireless
- Def Tech Symphony I →
- Focal Spheros
- JBL Synchros S700
- NAD VISO HP50
- Sennheiser RS 185

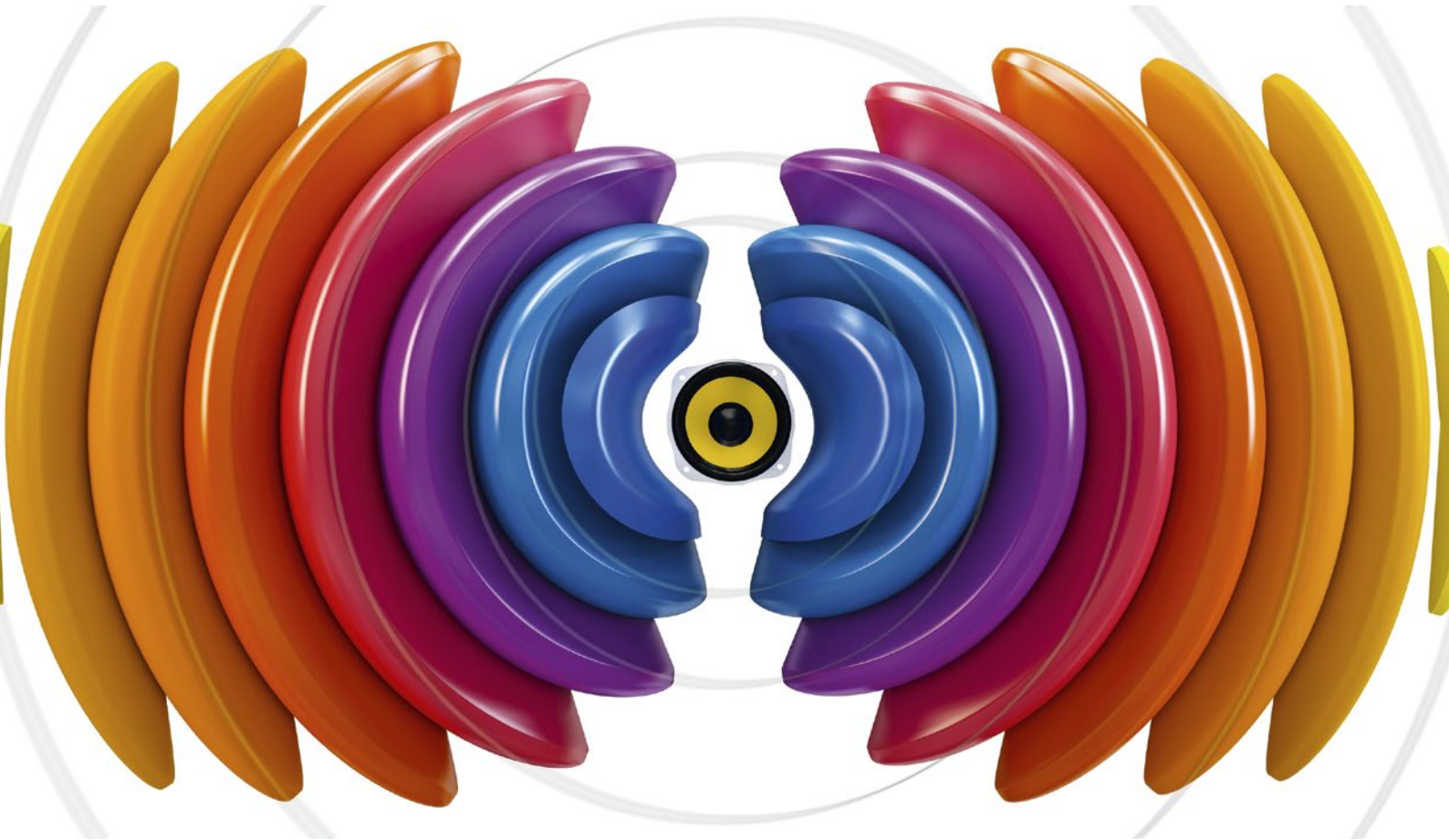


**FINDING
THE RIGHT
SUBWOOFER
FOR YOU**

Up to \$2000: Sumiko **vs** Krix **vs** Dynaudio **vs** M&K Sound

\$2000-\$4000: Velodyne **vs** Sunfire **vs** Yamaha **vs** Dynaudio **vs** Revel

Over \$4000: M&K Sound **vs** Bowers & Wilkins **vs** REL Acoustics



All about that **BASS**

You want bass? Not woofy fake bass, but real tight deep stuff? You can't fake it — you need a subwoofer... and they're not just for the movies. Our group test of 13 subs rises upwards from \$999 — to see how low you need to go.

First off, let's dispel a misconception — that subwoofers are just for movie systems. For sure, the wizards of sound design behind blockbuster soundtracks use the lowest of frequencies to superb effect, heightening reality, inserting ominence, humming your tum-tum with a thrilling bass swoop as the articulated truck flies over the Ninja Turtle, or whatever.

But bass is not just for the movies. If you've had the chance to sit in front of a truly great (and large) pair of stereo speakers, perhaps at an audio show, you'll know how much the lowest of frequencies can complete the experience of musical realism, whether you're down in the thirties of hertz for a crunchy Neil Young guitar piece, or right down for that 16Hz fundamental pipe organ note from Bach's Passacaglia and Fugue in C minor, of which our reviewer Stephen Dawson (and his neighbours) is so fond.



“Something remarkable can happen when a large subwoofer is added to floorstanding speakers to play music...”

Can subwoofers augment a pair of small speakers to turn them into big ones in sonic terms? Well yes — Tomlinson Holman (for whom THX may have been named... possibly it was George Lucas' movie 'THX 1138') argues that subwoofers with small main speakers are actually *better* than large speakers. As he notes, the subwoofer's room position can be optimised for best bass performance, while the smaller speakers can be placed for best imaging and the like. There are many small satellite speaker designs which are delivered with a matching subwoofer aiming to achieve just that.

But perhaps ironically, the larger the subwoofer and the smaller the satellites, the less likely they are to work well together — the required frequency at which the handover happens may be too high for a large subwoofer to integrate smoothly. So a smaller subwoofer may be a better bet to go with small satellites.

But something remarkable can happen when a large subwoofer is added to floorstanding speakers to play music. It can

add an extra octave or two of capability down low — and if a high-pass filter takes some of the work away from your main speakers, things can sound thrillingly complete; you know it when you hear it.

So here we are examining all these subwoofers with a view to both movies and music. You can see precisely what we're looking for in the panel on the right, where Stephen also apologises to his neighbours for playing the cannon fire from the 1812 quite so many times during the preparation of this issue.

Careful set-up is, unfortunately crucial with a subwoofer — not only are bass frequencies the main culprits when it comes to sonic anomalies in listening rooms, but that crossover zone is notoriously difficult to get right. Happily new technology and the smartphone app have come to the rescue in recent years — where once a pricey Real Time Analyser was beyond the means of a proud subwoofer purchaser, now there's an app for that. Greg Borrowman walks us through that smartphone tuning process in our subwoofer set-up feature on p60.

A note on measurements

For the tech-minded, the frequency response graphs shown with each review were obtained by, first, setting the output level on 30-60Hz bandwidth-limited pink noise to 80dB SPL at an average of one metre from the subwoofers' cones, then recording wideband pink noise. The measurement microphone was placed close to the cone to minimise room effects, except where noted in the article. The SPL meter used for level setting was in the same position for each subwoofer.

For the 30Hz distortion measurement, a sine wave was set to output at a measured 90dB SPL using the same position as for frequency response.



What we're looking for in a subwoofer...

How are your neighbours? Mine are wonderfully tolerant. They must be, given the past few weeks of thumping bass they have endured from my listening room as I've subjected a baker's dozen of subwoofers to deep sine wave and pink noise test signals, to the cannon blasts from the famed 1978 Telarc '1812 Overture', to the dinosaur stomps (with content approaching five hertz) from a DTS-CD demo disc, to the bass guitar on rock tracks played very loud, to a massive Chinese orchestral drum.

And, of course, to the end-of-the-world bass rumblings of the movie 'Titan A.E.'; and the shockingly realistic scream of aircraft taxiing way too close to the microphone in 'Heat', and to the impressive LFE tracks in a random selection of Blu-ray movies and TV shows.

All that, and not one complaint, in my quest to try to find the perfect subwoofer.

So what would you expect from the perfect subwoofer? Here I may differ from some ideals. THX, for example, considers -6dB at 20Hz to be more ideal than flat at 20Hz. I don't. So this is what I would want in a subwoofer.

- Zero distortion.
- A flat response from at least 120Hz down to 2Hz.
- Output levels of up to 120dB in a large room at all frequencies.
- Fast, accurate timing with no phase shift across the frequency range.
- Compatibility with other equipment and, of course, with the room itself.

What, '2Hz!' you're saying to yourself? Well, yes: the Dolby Digital LFE channel is specified to carry from 2 to 120Hz.

Of course, this is the real world and you won't get anywhere close to that without the application of tens or perhaps hundreds of thousands of dollars. So what I happily settle for in a subwoofer is the following.

- Distortion levels low enough to not be obvious.
- A fairly even output from at least 120Hz down to 20Hz, and preferably 15Hz or so.
- Output levels sufficiently high to cause physically pulsating air in the room at low frequencies.
- Fast, accurate timing that permits tuneful integration with the main speakers.
- Compatibility with other equipment and, of course, the room itself.

So that's what I had in mind as I studied these 13 mighty subwoofers. **Stephen Dawson**





The REL is large, it's heavy, but it has some remarkable convenience features, including a built-in wireless receiver.

REL Acoustics 212/SE

The largest, heaviest and most expensive subwoofer in our group doubles up the drivers from our current award-winner for devastatingly powerful effect.

SUMMARY

REL Acoustics 212/SE
subwoofer
Price: \$6499

- + Astonishing volume levels available
- + Very low distortion
- + Wireless option

- Not effective at 20Hz

UK firm REL — winner, incidentally, of *Sound+Image's* 2015 Subwoofer of the Year — has released its massive new subwoofer, the 212/SE. This turned out to be the most expensive, largest and heaviest of the 13 subwoofers in our review collection.

It weighs more than 55kg. It stands over 800mm tall. It has a footprint of 436 by 507mm. It has adopted basically the same 300mm driver used in *Sound+Image's* award-winner (the S/5), tweaked for this model. But it uses two of them, in a forwards-firing configuration,

one above the other. Each driver has a cast metal-alloy 'cone', actually a smooth inverse dome rather than the conventional cone, plus dust cap. REL says that these have a linear excursion range of a wide 50mm.

The massive enclosure is loaded by two 300mm passive radiators. These sport cones similar to those used in the drivers. One is mounted in the base, firing so to speak downwards, while the other is in the back panel. That means that you need to leave a little breathing room between the radiator and the rear wall with this subwoofer.

The built-in amplifier is rated at 1000W 'RMS' (which I take to mean continuous), and 1700W peak.

The enclosure was finished in piano-gloss black, with a detachable black cloth grille. A silver REL logo panel is on top, while there are two odd metal straps on the side. They look like handles, but are too shallow to get your fingers around.

The controls and inputs are at the back. There are no outputs. There are four kinds of input. A single RCA socket is provided for LFE (that is, unfiltered), and this has its own dedicated level control. A stereo analogue line-level input is provided, as is a single speaker-level input using a Neutrik SpeakOn socket. A cable is provided for this last, along with wiring instructions so that both stereo channels can be fed to the subwoofer. Both this and the stereo line-level are under the control of the low-pass filter, and they share a level control.

Finally, if your room presents particular wiring challenges, this subwoofer includes a most unusual feature for a high-end subwoofer: it has a built-in wireless receiver. You will need to purchase the matching 'LongBow' transmitter (\$399) to use this.

More than one of the inputs can be employed at a time, and REL's recommended configuration is always to have high-level and LFE inputs used simultaneously to achieve the best effect; by receiving the full speaker signal (which should not, obviously, be low-pass

“The amount of energy this subwoofer proved able to deliver was astonishing.”

filtered by your receiver), the REL thereby underpins your main speakers, as well as receiving the dedicated LFE bass channel.

Performance

To leave room for the rear radiator, I put the unit in the usual corner, but angled at 45 degrees. So how did it sound? There are two aspects to it. First, let’s go loud.

Do you recall stories about alleged torture of prisoners through the playing of loud music? The REL 212/SE could well be suitable for the bass part of that, given the volume levels it will achieve, except for one thing: it sounds too damned good. I put on the Blu-ray of ‘Heat’, jumped to the airport chapter near the end, and turned up the receiver to reference level. And, oh, what a thrill. As jet aircraft taxied past, and others took off and landed, the massive rumble and pulsing of air in the room was seemingly unlimited.

When it came to ‘Titan A.E.’, it was the same but even more so. The amount of energy this subwoofer proved able to deliver to the listening room was astonishing. At some point in the manual REL says this subwoofer is designed to

Measurements



Engineered for power at 25Hz up, and outstandingly clean, the Revel was great for music and even better for home theatre.

Because of the dual drivers

here I had some trouble finding a good representative location for my microphone to close-mike the frequency output of this subwoofer. In front of the drivers, the contribution of the passive radiators was diminished. In the end I found a place that seemed to capture equally the contributions of all the parts of this subwoofer, and the results were somewhat surprising.

I had felt that infrasonic performance would be strong, judging by the pulsating air filling my listening room, but in fact little of that was evident in any of the measurements. They all showed the response extending out to 27Hz, then diminishing rapidly below that point. Even so, a ±3dB band encompassed from 24 to 95Hz, while my standard ±6dB envelope went from 22-127Hz. The output was down by 12 decibels

at 20Hz. So it seems that this unit has been engineered for power at 25Hz and up, rather than to be deeply extended into low bass. There would be few subs so well engineered for that particular purpose.

This subwoofer proved to be the one to deliver the lowest distortion figures at the 30Hz test frequency: just 0.78% second harmonic, 0.33% third, 0.14% fourth. No wonder it sounded so clean.

be able to ‘play shatteringly loud’. Shattering is a good word, but it’s a shattering via the administering of pure, undistorted signal.

With such headroom available, the subwoofer spent most of its time barely idling, loping along comfortably, totally unstressed. Thus with regular music it delivered its component of the music with superb accuracy without in any way drawing attention to itself. Yet when the music went to a climax of orchestral drum, or

Chinese orchestral drum, or indeed an 1812 Overture cannon, it roared.

Conclusion

While the REL 212/SE performs very well with music, especially with mighty crescendos, it really comes into its own with home theatre work. With these, it is seemingly without volume limit. *SD*



1 Inputs
There are three types of inputs, plus a surprise — RCA for LFE, stereo line level, and a single speaker-level input using a Neutrik SpeakOn connector.

2 Wireless connection
You can also switch the REL to wireless connection — the receiver is built in, but you’ll need REL’s optional ‘LongBow’ transmitter (\$399).

SPECS

REL Acoustics 212/SE	\$6499
Drivers: 2 x 300mm, forwards firing	
Enclosure: 2 x 300mm passive radiator	
Inputs: 1 x stereo line input, 1 x LFE, 1 x mono speaker level input (SpeakOn)	
Outputs: Nil	
Low-pass crossover: 30-120Hz	
Quoted power: 1000 watts	
Measured room response (pink noise -6dB): 22-127Hz	
Level at 20Hz: -12dB	
Dimensions: 816 x 436 x 507mm	
Weight: 55.3kg	
Warranty: Two years	
Contact: Synergy Audio Visual	
Telephone: 03 9459 7474	
Web: www.synergyaudio.com	

group test **subwoofers**



Brand	Sumiko	Krix	Dynaudio	M&K Sound	Krix	Velodyne
Model	S.5	Seismix 3 v.6.0	SUB 250 II	V8	Volcanix Slim	SPL1200U
Price	\$999	\$1095	\$1399	\$1499	\$1995	\$2899
<div style="text-align: center;"> + - </div>	<ul style="list-style-type: none"> Very good value for money Fine musical performance Useful connectivity options 	<ul style="list-style-type: none"> Good musical performance Solid LFE performance Good value for money 	<ul style="list-style-type: none"> Wonderfully compact Good musical performance even when very loud Respectable LFE performance 	<ul style="list-style-type: none"> Pleasing musical performance Good levels with LFE operation Compact design 	<ul style="list-style-type: none"> Very high levels available Good musical performance Good fit for certain installations 	<ul style="list-style-type: none"> Enormous levels available Very low distortion Solid LFE performance
	<ul style="list-style-type: none"> High 3rd harmonic distortion Not effective for deep bass 	<ul style="list-style-type: none"> No effective output at 20 hertz 	<ul style="list-style-type: none"> Fairly high 3rd harmonic distortion No effective output at 20 hertz 	<ul style="list-style-type: none"> High distortion levels Not effective at 20 hertz 	<ul style="list-style-type: none"> No effective output at 20 hertz 	<ul style="list-style-type: none"> No, nothing negative to report
Description						
Driver/s	1 x 210mm	1 x 275mm	1 x 240mm	1 x 203mm	1 x 305mm	1 x 305mm
Driver description	Very long throw, treated paper cone, wide rubber surround	Paper cone, 50mm long throw voice coil	Long throw, 100mm voice coil, Magnesium Silicate Polymer cone	Pulp cone, aluminium voice coil former, extended pole piece, aluminium shorting ring	Paper cone, 50mm long throw voice coil	Kevlar reinforced resin cone, diecast aluminium basket, in/outside wound 'Dual Tandem' voice coil
Driver orientation	Downwards firing	Forwards firing	Forwards firing	Forwards firing	Forwards firing	Forwards firing
Enclosure type	Sealed	Bass reflex	Sealed	Sealed	Bass reflex	Sealed
Port orientation	N/A	Forwards firing	N/A	N/A	Twin, downwards firing	N/A
Inputs	1 x mono line input, 1 x LFE, 1 x mono speaker level input (SpeakOn)	1 x stereo line level	1 x stereo line level, 1 x LFE	1 x stereo line level	1 x stereo line level, 1 x stereo speaker level (4 x binding posts)	1 x stereo line level, 1 x stereo speaker level (4 posts)
Outputs	Nil	1 x stereo line level	1 x stereo high pass, 1 x LFE pass through	1 x stereo line level	Nil	1 x stereo high pass
Low pass crossover	30-120Hz	50-200Hz	50-150Hz	60-150Hz	50-195Hz	40-135Hz
Filter bypass	Yes	Yes	Yes	Yes	Yes	Yes
Auto on/off	Yes	Yes	Yes	Yes	Yes	Yes
Phase control	0/180 degrees switch	0-180 degrees continuous	0/180 degrees switch	0-180 degrees continuous	0/180 degrees switch in software	0/90/180/270 degrees
Other features	Separate level controls for LFE and other inputs	-	Choice of high pass filter for line out	-	Trigger in, Slimline design	DSP, auto calibration, trigger, IR input, remote
Dimensions (hwd)	335 x 285 x 315mm	450 x 360 x 410mm	271 x 266 x 308mm	340 x 260 x 290mm	630 x 500 x 295mm	394 x 380 x 470mm
Weight	14kg	15.65kg	7.2kg	10.3kg	24.3kg	20.7kg
Manufacturer's specifications						
Amplifier (watts)	150 watts (RMS)	300 watts (RMS)	200 watts	150 watts	450 watts (RMS)	1200 watts (RMS)
Specified frequency response	-3dB @ 40 hertz, -6dB @ 30 hertz	22-200 hertz -6dB	29-250 hertz ±3dB	30-200 hertz ±2dB	16-200 hertz -6dB	21-135 ±3dB, 13-240 hertz overall
Measurements						
Cone diameter (not counting roll surround)	143mm	191mm	154mm	150mm	225mm	221mm
Total cone area	161cm ²	287cm ²	186cm ²	177cm ²	398cm ²	384cm ²
Room frequency response (Pink Noise ±6dB)	33-146Hz	29-153Hz	27-158Hz	25.6-158Hz	24-163Hz	18.5-167Hz
Level at 20 hertz (ref average level)	-28dB	-30dB	-16dB	-11dB	-15dB	-2.5dB
Distortion 30Hz 90dB SPL** 2nd/3rd... harmonic %	1.82/10.6/0.84/0.50	3.0/0.53/.02/0.12	3.35/5.01/0.16/0.28	10.6/6.3/0.33/0.27	1.12/0.28/0.05/0.08	1.50/0.35/0.05/0.12
Warranty	2 years	5 years (1 year for amplifier)	3 years	3 years	5 years (1 year for amplifier)	2 years
Contacts						
Distributor	Synergy Audio Visual	Krix Loudspeakers	BusiSoft AV	Qualifi	Krix Loudspeakers	Revolution Technologies
Telephone	(03) 9459 7474	1300 005 749	03 9810 2900	1800 24 24 26	1300 005 749	07 3902 8051
Web	www.synergyaudio.com	krix.com.au	www.busisoft.com.au	www.qualifi.com.au	krix.com.au	www.revolutiontechnologies.com.au

** For stated output at one metre

						
Sunfire	Yamaha	Dynaudio	Revel	M&K Sound	B&W	REL
XTEQ10	NS-SW1000	SUB 600	Performa 3 B110	X12	DB1	212/SE
\$2999	\$2999	\$3299	\$3845	\$4999	\$5500	\$6499
<ul style="list-style-type: none"> • Very high levels available • Excellent auto-calibration system • Extremely compact 	<ul style="list-style-type: none"> • Fine musical performance • Extremely powerful performance above 25 hertz • Solid LFE performance 	<ul style="list-style-type: none"> • Excellent bass extension • Very high levels available • Compact enclosure 	<ul style="list-style-type: none"> • Extremely powerful performance above 25 hertz • Tuneful and fast delivery with music • Superb tuning facilities 	<ul style="list-style-type: none"> • Enormous levels available • Extremely low distortion • Excellent performance with music 	<ul style="list-style-type: none"> • Massively extended bass • Enormous levels available • Excellent performance with music 	<ul style="list-style-type: none"> • Astonishing volume levels available • Very low distortion • Wireless option
<ul style="list-style-type: none"> • Not effective at 20 hertz • 2nd harmonic distortion a bit high 	<ul style="list-style-type: none"> • No effective output at 20 hertz 	<ul style="list-style-type: none"> • No, nothing to report 	<ul style="list-style-type: none"> • No effective output at 20 hertz • Fairly high 2nd harmonic distortion 	<ul style="list-style-type: none"> • Small amount of 50 hertz hum 	<ul style="list-style-type: none"> • Third harmonic distortion higher than expected 	<ul style="list-style-type: none"> • Not effective at 20 hertz
1 x 254mm	1 x 300mm	1 x 300mm	1 x 254mm	2 x 300mm	2 x 300mm	2 x 300mm
Long throw, high back-EMF	Semi-pressed paper cone with Kevlar fibres, double layer ferrite magnets, diecast aluminium frame	Magnesium Silicate Polymer cone, double magnet, diecast aluminium basket	Coated Paper/Pulp cone, 50mm two layer copper voice coil, vented triple stacked ceramic 5 magnet assembly, vented diecast aluminium frame	Pulp cone, cast open baskets, aluminium pole spacers, aluminium shorting ring	Rohacell cone, long throw	Cast alloy cone, 50mm linear stroke, die cast aluminium chassis
Sideways firing	Forwards firing	Forwards firing	Forwards firing	Forwards & downwards firing	2 x sideways firing	Forwards firing
Passive 254mm radiator	Bass reflex	Sealed	Sealed	Sealed	Sealed	2 x 300mm passive radiator
Sideways firing	Sideways firing (right)	N/A	N/A	N/A	N/A	Rear & downwards firing
1 x stereo line level, 1 x XLR LFE, 1 x Slave	1 x stereo line level, 1 x LFE, 1 x stereo speaker level (4 x binding posts)	1 x stereo line level, 1 x LFE	1 x stereo line level, 2 x balanced XLR	1 x stereo line level, 1 x stereo XLR	1 x stereo line level, 1 x LFE, 1 x XLR LFE	1 x stereo line input, 1 x LFE, 1 x mono speaker level input (SpeakOn)
1 x stereo high pass, 1 x Slave	1 x stereo speaker level (4 x binding posts)	1 x stereo high pass, 1 x LFE pass through	1 x stereo high pass, 2 x balanced XLR high pass, 1 x LFE, 1 x XLR LFE	1 x stereo line level, 1 x stereo XLR	Nil	Nil
30-100Hz	40-140Hz	50-150Hz	50-200Hz	50-125Hz	25-120Hz	30-120Hz
Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes
0-180 degrees continuous	0/180 degrees switch	0/180 degrees switch	0/180 degrees switch in software	0-180 degrees continuous	0/90/180/270 degrees in software	0/180 degrees switch
DSP, auto calibration, trigger	Yamaha system remote connection, active servo	Choice of high pass filter for line out	Trigger in/out, Extensive DSP processing	THX Ultra 2 certified, Distortion cancelling driver placement	DSP, Calibration equipment and software, RS-232C, triggers	Separate level controls for LFE and other inputs, wireless capability
290 x 315 x 290mm	463 x 443 x 522mm	420 x 350 x 370mm	428 x 364 x 342mm	660 x 440 x 460mm	500 x 460 x 410mm	816 x 436 x 507mm
24.8kg	42.6kg	21kg	25.4kg	36kg	44kg	55.3kg
2700 watts	1000 watts	300 watts	1000 watts (RMS), 2000 watts (peak)	400 watts	1000 (continuous)	1000 watts (RMS)
18-100 hertz	18-160 hertz	18-250 hertz ±3dB	Not stated	20-200 ±2dB	17-145 hertz ±3dB, 15 hertz @ -6dB	-6dB @ 21 hertz
165mm	Grille not removable	212mm	185mm	223mm (x 2)	217mm (x 2)	221mm (x 2)
214cm ²	Grille not removable	353cm ²	269cm ²	781cm ²	740cm ²	767cm ²
25.6-119Hz	26-174Hz (music) 25-175Hz (movie)	18-205Hz	26-158Hz (no EQ) 23-150Hz (EQ)	21.7-184Hz (M&K EQ) 18.6-186Hz (THX EQ)	14.2-120Hz	22-127Hz
-17dB	-23dB (music) -18dB (movie)	-4dB	-18dB (No EQ) -17dB (EQ)	-9dB (M&K EQ) -3dB (THX EQ)	0dB	-12dB
3.98/0.40/0.03/0.05	1.33/0.32/0.11/0.11	2.11/0.60/0.10/0.06	4.5/0.40/0.06/0.22	0.89/0.45/0.008/0.06	1.25/1.41/0.1/0.32	0.78/0.33/0.14/0.20
3 years	2 years	3 years	5 years (1 year for amplifier)	3 years	2 years	2 years
Qualifi	Yamaha Music Australia	BusiSoft AV	Advance Audio Australia	Qualifi	Convoy International	Synergy Audio Visual
1800 24 24 26	1300 739 411	03 9810 2900	02 9561 0799	1800 24 24 26	02 9700 0111	03 9459 7474
www.qualifi.com.au	www.yamahamusic.com.au	www.busisoft.com.au	advanceaudio.com.au	www.qualifi.com.au	www.convoy.com.au	www.synergyaudio.com