



GOLD NOTE IS-1000

INTEGRATED AMPLIFIER DAC/STREAMER

It seems difficult to credit that an amplifier/DAC/streamer... or, as Italian manufacturer Gold Note prefers to describe it, a 'complete all-in-one super integrated amplifier', could offer so many features, and have only a single control on the front panel, yet be so simple to operate. Yet it is. You need only spend a few minutes with the front panel knob (which Gold Note would prefer was called an 'SKC' (it stands for 'Single Knob Control')) and the superb colour front panel display to realise Gold Note has really nailed

the user interface. Who needs a manual when the product is so easy to use? (But you get a manual anyway, both hard-copy and on-line on Gold Note's website.)

But in creating a 'jack of all trades' component, has Gold Note fallen into the trap of the old fable? Like you, I couldn't wait to find out!

THE EQUIPMENT

The Gold Note IS-1000 is not short on inputs. In a world in which amplifiers are increasingly offering only digital inputs, the IS-1000 has not one, not even two, but three line-level analogue inputs—one balanced (via XLR) and two unbalanced (via RCA). What's more, one of the two unbalanced line inputs can optionally be configured as a phono input offering both moving-magnet and moving-coil settings. The circuitry for the phono stage is reportedly the same as that used in the company's PH-10 phono stage (reviewed in *Australian Hi-Fi Magazine* Volume 48 No 2).

On the digital side of things, Gold Note has fitted one coaxial S/PDIF digital input and three optical (Toslink) digital inputs, all of which end up at the front end of a Burr-Brown PCM1796 DAC that supports sample rates up to 24-bit/192kHz. At least it ends up at the front of a PCM 1796 if you buy the 'standard' version of the IS-1000. If you pay an additional \$1,250 at the time of purchase, you can upgrade the DAC to a Burr-Brown 1792A. This lifts the total RRP from \$7,800 to \$9,050. My review sample was fitted with the higher-spec DAC. There's also a USB Type-A port capable of 24-bit/192kHz PCM operation as well as DSD64 decoding.

But wait! There's more! As you've likely guessed from the fact that there's an antenna socket on the rear panel of the IS-1000 (and if you didn't notice that, you should certainly have noticed the Ethernet port!), the Gold Note will integrate with your home network to replay music files stored on your computer or server... plus—if your network is con-

nected to the internet—access to whatever streaming services are available in your region. It provides native support for internet radio via vTuner, as well as Tidal, Qobuz and Deezer. The Gold Note IS-1000 also supports AirPlay... and it is Roon-ready. In fact I couldn't find any missing 'useability' except for if you want to play MQA or high bitrate DSD (because the IS-1000 plays only DSD64 native files and via DoP). And since I am not a fan of either DSD (at any speed) or MQA, these MIAs didn't bother me at all.

But wait! There's even more. You can control the Gold Note IS-1000 using either a remote control (supplied as standard in some regions or as an optional added-cost extra in others), or by using a third-party app (Mconnect Control, software that's written by Conversdigital) which is available for both iOS and Android. The app is easy to use and lets you create, store and retrieve playlists, designate favourites, and completely take control of your music library no matter where it's stored... in Dropbox, OneDrive, NAS...

Given the lack of visible heat-sinking on the exterior of the chassis, and the high power output claimed for it (125-watts per channel) I was fully expecting the Gold Note IS-1000 to be sporting a Class-D output stage of some kind, but in fact it has a conventional linear Class-A/B output stage—though using MOSFETs as output devices, rather than bipolar transistors. It also has an equally conventional linear power supply (rather than a switch-mode design), comprised of a single large-ish toroidal transformer and four 6800µF 63V smoothing capacitors.

As for that lack of heat-sinking that nearly fooled me, it seems that rather than put any heatsinking on the outside of the case, Gold Note decided to put it inside, so it's had to supplement that heat-sinking by attaching two low-noise fans to ensure good airflow over the heat-sink fins in order to keep the MOSFETs at the correct (safe) operating temperature.

Previously, it was possible to optionally 'upgrade' the power output of the Gold Note IS-1000 to an 'IS-1000A' version that is rated at 150-watts per channel. This always seems like a rather odd 'upgrade' to me, as the increase in power is just 25-watts, or 0.79dB, which, according to current psychoacoustic knowledge, is such a small increase in power that it would actually not be audible to the human ear as an increase in perceived volume. It turns out that this 'upgrade' was possible only because Gold Note had designed a 150-watt version of the IS-1000 specifically for sale in China.

According to Gold Note's Australian distributor, Absolute HiEnd, although it will still be the only version of the IS-1000 available in China, it is no longer be available for individual consumer orders, but only by 'special demand for specific markets'. Australia is apparently not one of those specific markets. In any case, Gold Note says the Chinese model is identical, except for having (and I quote directly from the company's email in response to the question): 'a bigger transformer and power supply to get such a little more power.'

The circuitry of the Gold Note IS-1000 has two unusual features. The first of these is that its output impedance is switchable between 'High', which Gold Note says results in a damping factor (DF) of 250, and 'Low', which is said to result in a damping factor of 25. As a general rule, solid-state amplifiers have a low output impedance, which results in a high damping factor (since damping factor is the ratio of the output stage impedance to the load impedance of your speakers), and valve amplifiers have a high output impedance, which results in a low damping factor.

A high damping factor enables an amplifier to have more control over the voltage coming back from the loudspeaker that is generated by the speaker coil moving through the magnetic field of the driver magnet. This voltage is generally labelled 'Back EMF' (EMF being Electro-Motive Force). As the word 'damping' would suggest, amplifiers with high DF can more easily 'stop' the speaker cone from moving when it's not supposed to be moving. Gold Note suggests you use the 'High' setting if you have 'big

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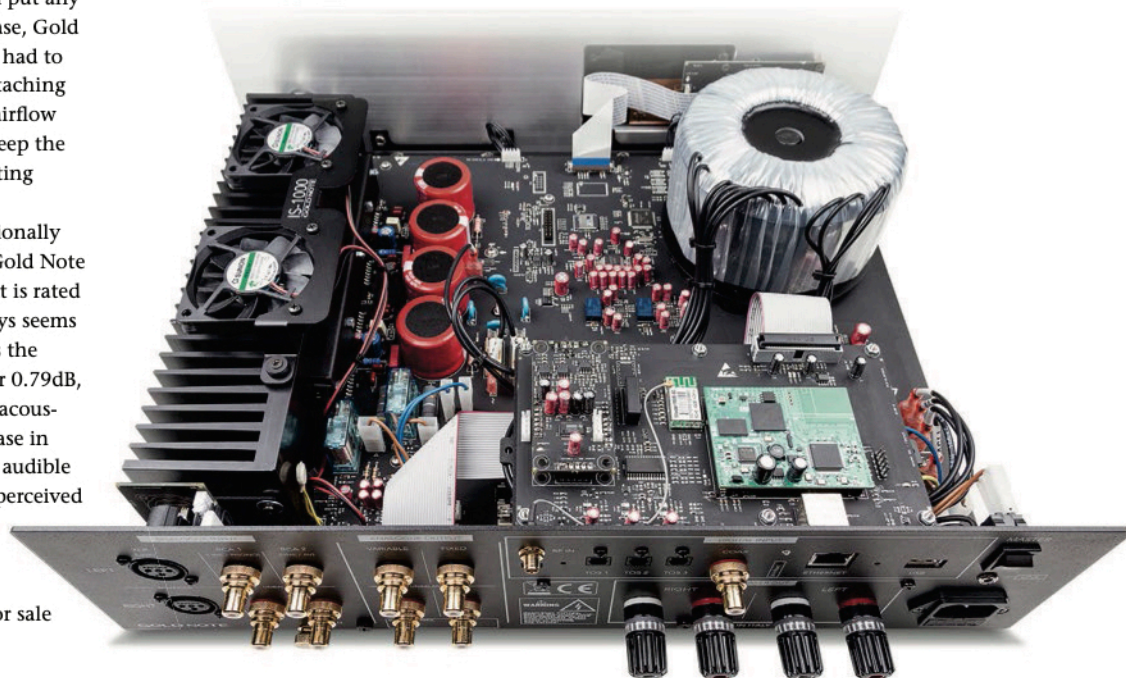
The circuitry of the Gold Note IS-1000 has two unusual features.

its output impedance is switchable to adjust the damping factor.

speakers of mid/low sensitivity' and the 'Low' setting if you have 'high sensitivity speakers' or 'mini monitors.'

The other seemingly unusual feature of the Gold Note IS-1000 is the provision of what Gold Note calls its 'proprietary Booster technology'. This 'Booster' circuit has three possible settings (Off, 1 and 2) and is said to enable the amplifier to 'drive speakers that require robust power supplies providing greater energy in a very specific range of low frequencies and for difficult environments.' When I looked more deeply into this circuit, it appeared to me to be a fairly simple 'bass boost' circuit, essentially similar to a loudness control, but with a higher Q than usual, a peak boost at a lower frequency than usual, and no high-frequency boost at all. Local Australian amplifier manufacturer Redgum has been building a similar circuit into its amplifiers for many years.

Visually, the IS-1000 stays very close to Gold Note's already well-established design cues, looking a lot like, for example, the Gold Note DS-1000 (a DSD DAC/Streamer).





Indeed at 135×430×375mm the IS-1000 shares that product's dimensions, as well as its styling. My only gripe that was that the admittedly sharp looks of its chassis are accompanied by physically sharp edges on the corners and slotting, so you need to be careful when handling it not to accidentally snag your clothes (I managed to ruin a perfectly good shirt whilst installing it!)

IN USE AND LISTENING SESSIONS

The Gold Note IS-1000 is extraordinarily easy to get 'up-and-running' for such a sophisticated piece of kit. Connect your loudspeakers, plug in the power cord, and then connect to your network using the usual WPS function. It's as simple as that. If this doesn't work (and it worked perfectly for me!), Gold Note has a back-up WiFi 'Wizard Mode' that will do all the hard yards for you. The only tool you will need to use it is a paperclip.

One trap for young players that I ran into early in the piece is that because I'd hard-

wired the IS-1000 into my home network using the Ethernet port, I figured that I didn't need to leave the IS-1000's wireless interface switched on, so I switched it off... upon which the Mconnect app promptly stopped working. This meant I then had to use the 'Wizard Mode' to get the app running again, the lesson here being: Leave the WiFi enabled all the time!

You will also have to make sure that you download the correct 'Mconnect' app for the Gold Note IS-1000, which is 'Mconnect Control.' This is because there are other Mconnect apps available, most of which are used for banking, but there are also multiple versions of the 'Control' app, all of which have confusingly similar names. If in doubt, you can access the correct app by using the QR code in Gold Note's *User Manual*.

My entire music collection is now in FLAC format, the vast majority ripped from 16-bit/44kHz originals, but presently being continually updated by hi-res downloads from the usual suspects. But I also have test files in other formats (AIFF, WAV, WMA, MP3, etc) specifically in order to test the ability of components such as the IS-1000. (You don't really think I'd listen to an MP3 file for pleasure do you?).

The Gold Note IS-1000 handled every file I played through it perfectly, delivering sound quality to the maximum capability of the particular format's codec, sampling rate and bit depth. Although the IS-1000 was instantly responsive when using the SKC or the infra-red remote, the response time when using the Mconnect app could sometimes be a bit slow and the 'soft buttons' occasionally a bit unresponsive. Both of these hiccups could have been down to the device I was us-

ing (an older Motorola phone), so I'd advise loading the app (it's free) onto your device at your hi-fi retailer whilst you're evaluating the IS-1000 to check that you're happy with the app's speed and responsiveness on your own device. However the beauty of an app is that it can be updated at any time (I was using version 2.4.0, whose 'What's New' list informed me that this version had 'Fixed some bugs' that were in the previous version), so the app might have been updated again by the time you're reading this review. I am also unreliably informed that Gold Note is developing its own control app, which may—or may not—be available by the time you read this review.

What *will* certainly be available as you're reading this review is Billy F. Gibbons' second solo album, in which he gets back to his blues roots (the album's title, 'The Big Bad Blues', is a dead giveaway). For mine, it's about time, so I can blessedly think Billy's first solo album, 'Perfectamundo', was an aberration (much like his recent disastrous Australian tour). BBB is the album I'd expect from the founder/front-man of ZZ Top and once ranked by *Rolling Stone* as one of the '100 Greatest Guitarists of all Time'. I listened to BBB over and over via the Gold Note IS-1000 and continually came away gob-smacked by the bluesiness of it all, and that it's perfectly preserved by this Italian beauty. The sound of Joe Hardy's bass was always rich and resonant (and most particularly with DF set to low), while Gibbons' lead breaks and embellishments screamed and soared from the speakers no matter what DF setting I used. The IS-1000 had more than enough power available to deliver lease-breaking sound pressure levels, too: I never once wished for any more power than the IS-1000 could easily and comfortably deliver.

Just as the IS-1000 could deliver the blues, it managed equally well with retro pop, delivering the girlish voice of Iluka, as well as the Motown-ish backing sonics that abound on 'Ritual' with a crisp clarity. The driving beat of *Sympathy* was accentuated by the exact timing of the Gold Note. Just listen to the precision drum sound on this track. Impressive. The layered sound of the title track was delivered with its structure revealed, yet the Gold Note IS-1000 also managed to convey the underlying complexity while also allowing me to focus on individual performance elements as well.

CONCLUSION

This may be the first 'all-in-one' unit Gold Note has ever built, but its design has obviously been informed by the many 'separate'

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components this Italian company has built over the past 20 years, because I'm here to tell you that Gold Note has nailed it with the design and execution of the Gold Note IS-1000. Despite its seemingly limitless capabilities, the IS-1000 is not only super-easy to operate, it's a real joy to use no matter whether you're operating it via the front panel SKC or with the sensuously-shaped infra-red remote. It's also a joy to listen to. The Gold Note IS-1000 sounds clean and powerful when playing any music, no matter from where it's sourced: hard-wired to the rear panel, via a local network or streamed from the Internet. *Dean Shopes*

Gold Note IS-1000

Brand: Gold Note

Model: IS-1000

RRP: \$7,800 (Base model)*

Warranty: One Year

Distributor: Absolute HiEnd

Address: PO Box 370

Ormond VIC 3204

T: (04) 8877 7999

E: info@absolutehiend.com

W: www.absolutehiend.com

(*Standard unit, see copy)



Super-intuitive operation
Gorgeous sound
Does everything



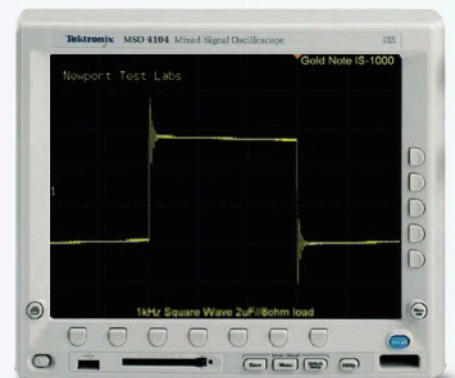
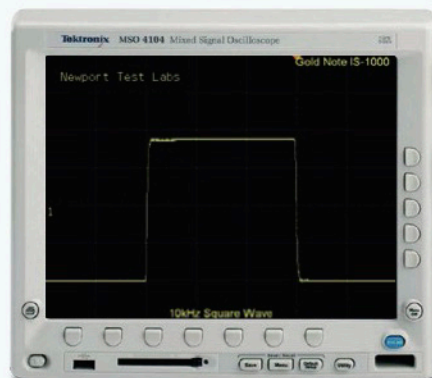
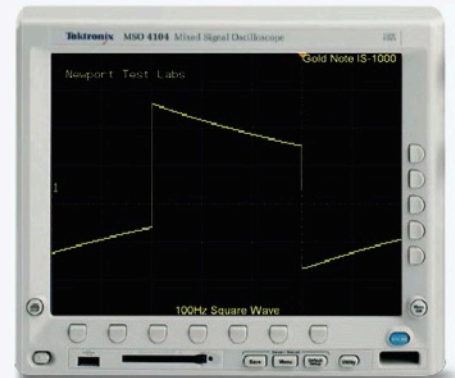
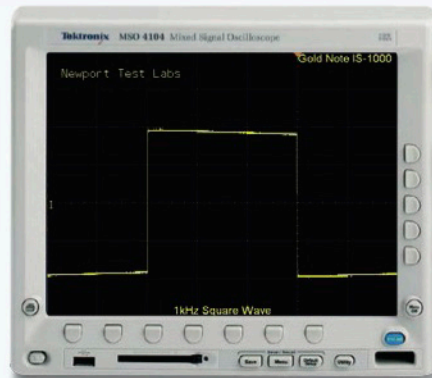
Sharp chassis edges
App can be sluggish

Readers interested in a full technical appraisal of the per-

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

LABORATORY TEST REPORT

Newport Test Labs' tests of the Gold Note IS-1000 showed that it met its 125-watt power output specification into 8Ω loads only when driving an 8Ω load at the 1kHz test frequency, and only when one channel was being driven. When both channels were

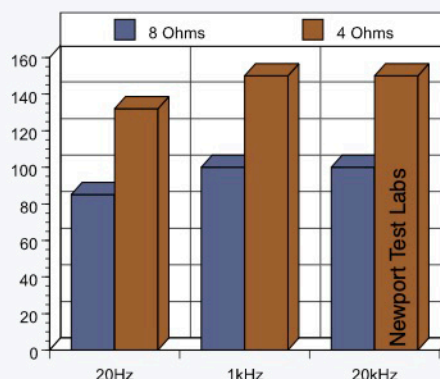


driven, as per the Australian standard for testing the power output of audio amplifiers, the Gold Note IS-1000 returned test results of 100-watts per channel into 8Ω and 150-watts per channel into 4Ω, at frequencies of 1kHz and higher. With a 20Hz test signal, the both-channels-driven power output was measured by Newport Test Labs as being 85-watts into 8Ω loads and 132-watts into 4Ω.

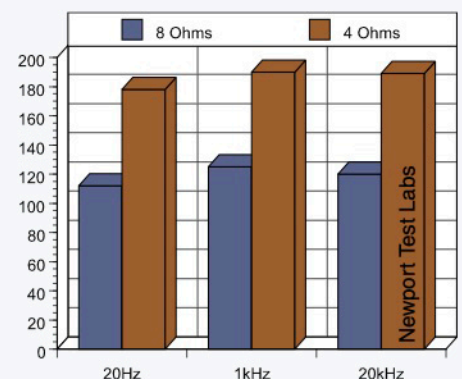
The frequency response of the Gold Note IS-1000 was well-extended at high frequencies, with Newport Test Labs measuring it as being 1dB down at 270kHz and 3dB down at 385kHz. The low-frequency response of the amplifier was, however, curtailed rather prematurely, with Newport Test Labs measuring it as being 1dB down at 29Hz and 3dB down at 16Hz. These figures are reflected in the traces that are graphed in Graph 6, which shows the frequency response into

an 8Ω non-inductive load (black trace) as well as into a load representative of a typical two-way loudspeaker system using both the high (green trace) and low (red trace) settings of the IS-1000's damping factor circuit. This shows that you will get greater frequency response variations using the low setting than either the 'Off' or 'High' setting, though as these variations will be in the order of only ±0.3dB, they would not be audible... though audibility would also depend on the actual impedance of your loudspeakers.

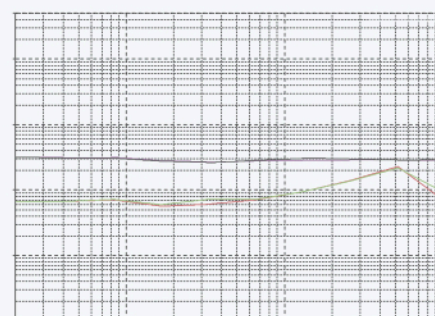
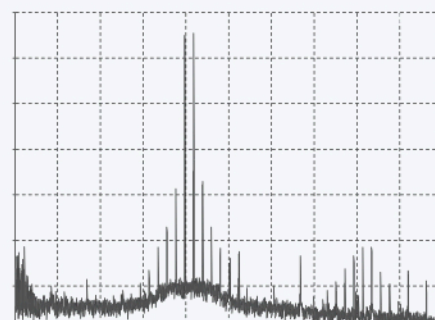
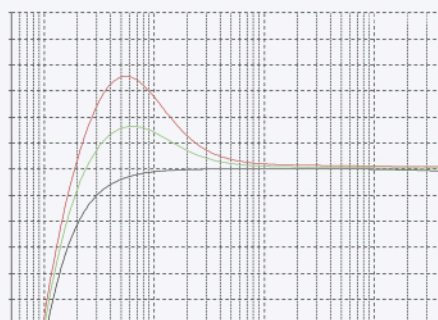
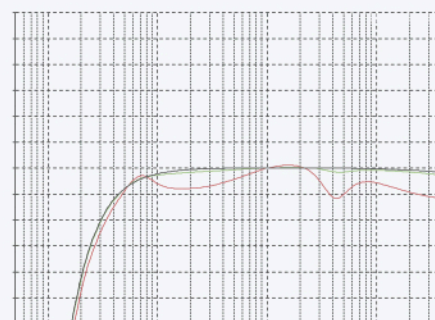
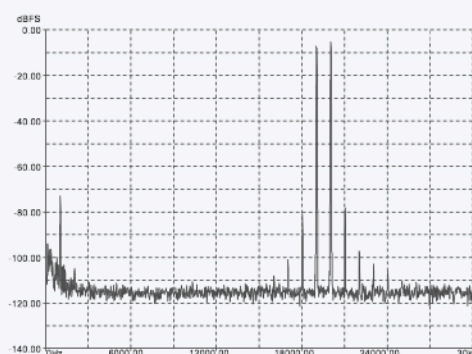
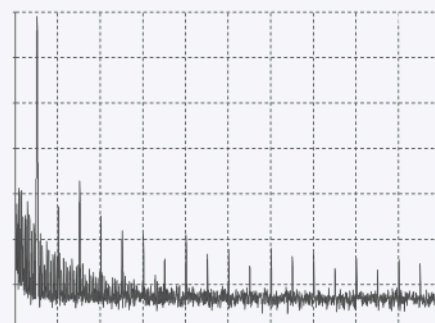
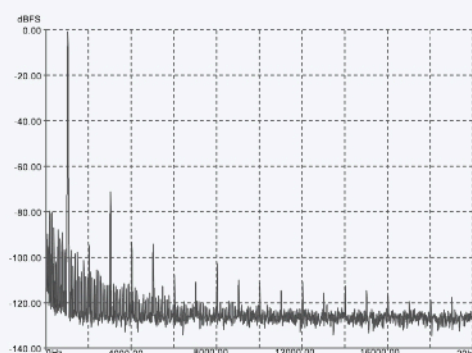
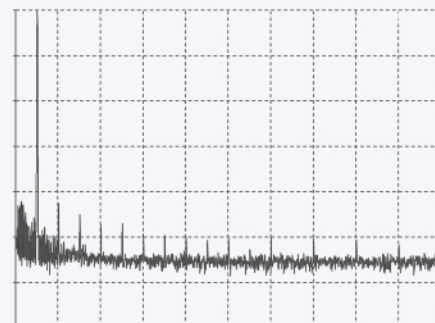
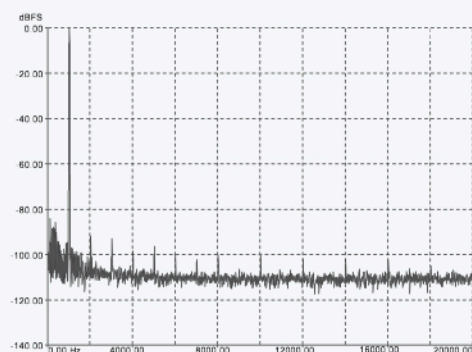
The IS-1000's low frequency roll-off is also evidenced by the tilt on the 100Hz square wave. Interestingly, there is also some tilt on the top of the 1kHz square wave as well, which in normal circumstances should be perfectly horizontal. On the 10kHz square wave, on the other hand, where one would normally expect to see rounding caused by



Power Output. Both channels driven into 8-ohm and 4-ohm loads.



Power Output. Single channel driven into 8-ohm and 4-ohm loads.



“ Newport Test Labs measured the effect of Gold Note’s impedance selector and reported that with it set to ‘Low’ the output impedance of the

GOLD NOTE IS-1000 INTEGRATED AMPLIFIER/DAC/STREAMER

high-frequency limitations, there is no rounding at all, indicating excellent high-frequency response. Performance into a highly capacitive load was good, with very little overshoot and with the ringing constrained.

Separation between the two amplifier channels was not outstanding, particularly at 20kHz, where *Newport Test Labs* measured left/right channel separation as being 41dB, suggesting some capacitive coupling effects, though many amplifiers deliver less than stellar performance at these high frequencies. At lower test frequencies, the channel separation improved to 62dB at 1kHz and further again to 77dB at 20Hz. Phase between channels was excellent at mid and high frequencies, but somewhat errant at 20Hz, with a phase difference of 8.67°, which presumably is related to the low-frequency roll-off. Channel balance was measured at 0.02dB at 1kHz, which is very good.

Distortion at a power output of 1-watt was low, and lower into 8Ω loads than into 4Ω loads, according to *Newport Test Labs*' graphs. The results for the two different loads were so similar, however, that I'll just go into detail about the 8Ω result, as shown in Graph 1.

You can see there's a second harmonic distortion component at -90dB (0.0031%), a third harmonic at -92dB (0.0025%), a fourth at -99dB (0.0011%), and a fifth at -95dB (0.0017%). There are higher-order harmonics visible, as you can see for yourself, but all are more than 100dB down, equivalent to 0.001% distortion. The overall noise floor is sitting down at around -110dB across the audio band, though noise increases at very low frequencies, which is what accounts for the 68dB (unweighted) and 73dB (A-weighted) signal-to-noise ratios that were measured and are tabulated in the table of test results.

Distortion at rated output was interesting, because although the third harmonic distortion component was far higher, at -70dB (0.0316%), the second actually reduced in level a little, down to -95dB (0.0017%). The fourth harmonic crept up a little, to -94dB (0.0019%) while the fifth remained unchanged. The 'grass' on the noise floor shows that the power supply is operating at its maximum capacity, and you can see 50Hz and other hum components are at levels of around -80dB at the extreme left of the graph. The noise floor has dropped to around

-125dB across the audio band, however the overall signal-to-noise ratios measured by *Newport Test Labs* were 82dB unweighted and 87dB A-weighted (referenced to rated output).

Intermodulation distortion at an output of 20-watts per channel into 8Ω is shown in Graph 5. You can see the test signals to the right of the middle of the graph. The 18kHz and 21kHz sidebands are at around -80dB (0.01%) but the next two sidebands are at -102dB (0.0007%) and -96dB (0.0015%) (these two at 17kHz and 21kHz respectively). The few other sidebands are around -110dB down (0.0003%). The unwanted regenerated signal at 1kHz is sitting at around -73dB (0.0223%).

The effect on the frequency response of Gold Note's 'Boost' control is illustrated in Graph 7 for its three possible settings. You can see that at the Boost 1 setting (green trace) the response is boosted by around 1.5dB with the boost centred at 60Hz. At the Boost 2 setting (red trace) the boost is around 3.5dB, with the maximum boost at around 55Hz. In both cases, the boost also affects frequencies above 100Hz, with the Boost 1 setting, for example, boosting frequencies at 200Hz by a full 1.2dB. The effect on response is not dissimilar to what I'd expect to see from a bass tone control set at 3 o'clock.

Graph 8 shows CCIF-IMD distortion of the DAC only, with *Newport Test Labs* using the digital input and the line output to make the measurement. You can see more sidebands than are present on Graph 5, plus sampling-related artefacts above 30kHz. The unwanted regenerated signal at 1kHz is at -105dB (0.0005%). You can see the noise floor of the low-level circuitry is lower than that for the power amplifier section, particularly at low frequencies.

Newport Test Labs measured the effect of Gold Note's impedance selector and reported that with it set to 'Low' the output impedance of the IS-1000 was 0.04Ω at 1kHz for a calculated damping factor of 200 (with 8Ω speakers), while in the 'High' position, under the same conditions, the output impedance was 0.26Ω, for a calculated damping factor of around 30.

The input sensitivity of the balanced inputs was quite high, with only 18mV required to deliver a 1-watt output and just 192mV required to deliver rated output.

Standby power consumption was just 0.52-watts, so you could comfortably leave the IS-1000 'powered up' all the time, and the circuitry is quite efficient, so I'd expect the amplifier to draw less than 100-watts during normal operation (and a maximum of 352-watts).  Steve Holding

Channel		20Hz	20Hz	1kHz	1kHz	20kHz	20kHz
1	8	117	70.5	125	70.9	120	70.8
2	8	85	19.3	100	20.0	100	20.0
1	4	178	22.5	190	22.8	189	22.8
2	4	132	21.2	150	21.7	150	21.7

Note: Figures in the dBW column represent output level in decibels referred to one watt output.

Gold Note IS-1000 Int Amp/Streamer – Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	29Hz – 270kHz	-1dB
Frequency Response @ 1 watt o/p	16Hz – 385kHz	-3dB
Channel Separation (dB)	77dB / 62dB / 41dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.02	dB @ 1kHz
Interchannel Phase	8.67 / 0.15 / 0.59	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.04% / 0.06%	@ 1-watt / @ rated output
Signal-to-Noise (unweighted/weighted)	68dB / 73dB	dB referred to 1-watt output
Signal-to-Noise (unweighted/weighted)	82dB / 87dB	dB referred to rated output
Input Sensitivity (balanced input)	18mV / 192mV	(1-watt / rated output)
Output Impedance		@ 1kHz (High/Low)
Damping Factor	30 / 200	@1kHz (High/Low)
Power Consumption	0.52 / 32.43	watts (Standby / On)
Power Consumption	61 / 325	watts at 1-watt / at rated output
Mains Voltage Variation during Test	231 – 243	Minimum – Maximum