 JOHN E. JOHNSON, JR. | NOVEMBER 21, 2012 | UNIVERSAL PLAYERS

OPPO BDP-105 Universal Blu-ray Player Review *Highlights*

OPPO's new BDP-105 Universal Blu-ray Player is one of the finest Blu-ray players to hit the market. It is also a universal player, meaning that it will play Blu-ray music, as well as high resolution music files on a hard drive connected to the player via a USB jack on the rear panel.

The music files can be DSD64 as well as 24/48, 24/96, 24/176, and 24/192 PCM files. It can stream music from your computer through your wireless network too. It pretty much does everything, and

with vanishingly low distortion. Its menu system is easy to use, and the sound and video quality are amazing.

The bench test results illustrate the BDP-105's impeccable decoding quality that is astonishing at this price point ($1,199). The OPPO BDP-105 promises to be a very strong contender for player of the year in A/V magazines published around the world, and likely, some vendors will use the circuit board from the BDP-105 to manufacture their own players.

Here is a video of the equipment rack in which I use the BDP-105 for home theater enjoyment.

Introduction to the OPPO BDP-105 Universal Blu-ray Player Review

OPPO continues its tradition of being leader of the pack with the introduction of the BDP-105 Universal Player. It has every type of input that one could want, making it truly a player that can handle all types of media and sources. The video quality is superb (video results coming in Chris Heinonen's review of the 103 which has the same video circuit as the 105), and the audio quality (tested in this review) is what we have come to expect from OPPO: audiophile-grade.

OPPO BDP-105 UNIVERSAL BLU-RAY PLAYER SPECIFICATIONS

- Design: Blu-ray, Universal Player
- Codecs: Everything from Here to Eternity
- DACs: ESS Sabre32 Reference
- Features: Two HDMI Inputs, Two USB 2.0 Ports (Type A) for Storage and WiFi (Type A), One USB 2.0 Port (Type B) for Connection to Computer, One Asynchronous USB Audio 2.0 Input on the Front Panel for Connection to iPod, iPad, or iPhone, 3D-Capable, 4K Upscaling (3,840 x 2,160), VUDU HD Movie Streaming, CinemaNow, Netflix Instant Streaming, Pandora Internet Radio, Rhapsody Online Music, BD-Live, BonusVIEW
- Dimensions: 4.8″ H x 16.8″ W x 12.2″ D
- Weight: 17.3 pounds
- MSRP: $1,199 USD
- OPPO
- SECRETS Tags: OPPO, 7.1, Universal Players, 3D, Video

The Design

The BDP-105's analog audio sections are based on the proven design of the BDP-95. It uses the same ESS Sabre32 Reference DAC (ES9018) and same LM4562/LME49720 op-amps as in the BDP-95. The feature differences include (1) a built-in headphone amplifier based on the TPA6120A2 Hi-Fi headphone amp chip from Texas Instruments; (2) an asynchronous USB DAC input for computer audio use. It also has coaxial digital and Toslink optical inputs for use with other digital transports.

In order to add the headphone amp and the USB DAC, OPPO made some changes to the design. The BDP-95's stereo output stacks four DAC channels for each L/R output channel. The idea of the stacked DAC design is to increase the output current from the DAC so a smaller I/V conversion resistor can be used (a smaller resistor has lower thermal noise). When OPPO tried to utilize this design in the BDP-105, they found that the performance became worse. The additional input and output made it impossible to design an optimized PCB layout if they maintained the stacked DAC channels, so a non-stacked DAC channel design was implemented.

In the 105, there is one pair of DACs for the RCA output, one pair for the XLR, and two pairs stacked for the headphone amplifier. The new configuration minimizes interference and crosstalk. A higher value I/V resistor (1.2 kOhm compared to 430 Ohms in the BDP-95) had to be used, but by beefing up the power supply and separating the stereo and multi-channel boards, audiophile-grade performance was maintained.

The BDP-105 is a step up from the BDP-103, which is also a new product, and both models have several new features, as follows:

(1) 4K upscaling and 2D->3D conversion.

(2) Two HDMI input ports (one front one back) so users can connect other devices to take advantage of the video processing capability. This is also useful for a small installation such as bedroom where the TV is on the wall and an AVR is not required. The user can connect through a single HDMI cable to the TV from the player, and connect other components such as a cable box or Roku/Apple TV to the player.

(3) MHL (Mobile High-definition Link) support. The front HDMI port is also an MHL input port. Users can connect their smartphone, tablet, or camcorder to show their video on a large screen if the mobile device supports MHL. There is a new product from Roku called "Roku Streaming Stick" that uses this technology.

(4) Audio return channel (ARC option of the HDMI 1.4 specs).

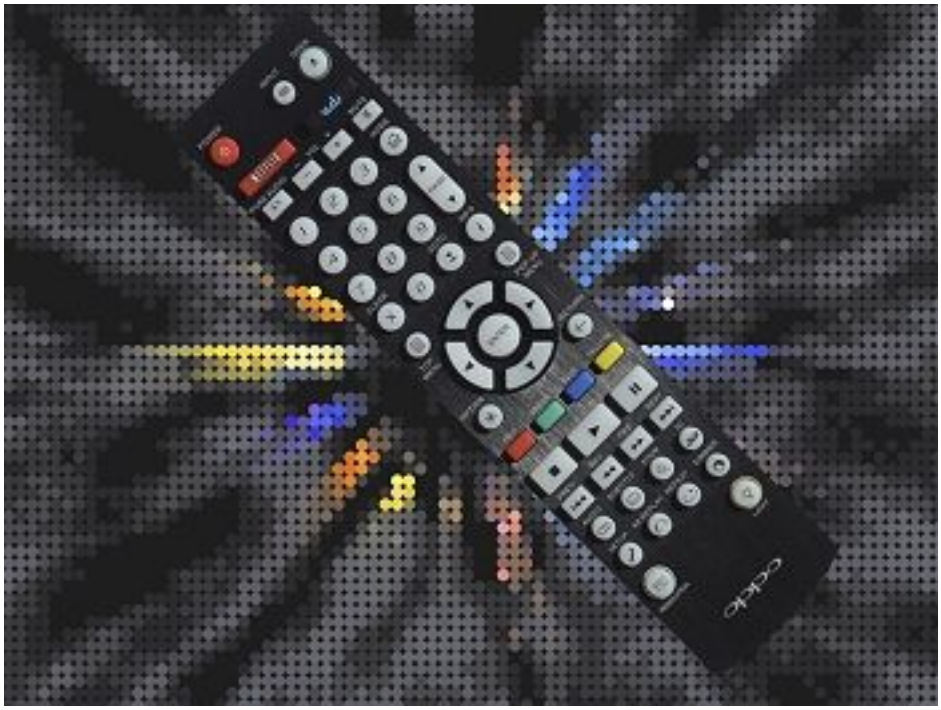
(5) Gracenote MusicID and VideoID service are integrated. If the player is connected to the Internet, you can get cover art, genre, artist, synopsis, and other information for CD, DVD, Blu-ray, music, and video files. When you put a CD in the player, you will see the cover art displayed on your TV.

(6) The startup and disc loading time have been reduced. This is because of the advancement in SOC designs. The main SOC is a dual-core processor instead of the single-core in the BDP-93/95. Because of the multitude of inputs, just about any other digital source can be connected to the player, such as a different disc transport, a thumb drive with music files, a hard drive with music and video files (video files that are not copy protected, such as your home videos), and music files on your computer (via the wireless port on the BDP-105), I would refer to the BDP-105 as a ***Universal Server***. As soon as the iPad app is complete, you will be able to scan the music file sources connected to the BDP-105 with your iPad (routed through your wireless computer network) and play any of them. Truly, the BDP-105 is morphing into a media server with a 3D Blu-ray player included. Shown below is a photo of the rear panel.

From left to right, you can see the XLR/RCA stereo analog outputs, an Ethernet port, an HDMI input, Coaxial and Toslink Optical Digital outputs, A Video Diagnostics jack, Two HDMI outputs, two USB 2.0 jacks, IR in (for remote control), and RS-232 jack, Coaxial and Toslink Optical Digital outputs, a USB 2.0 Type B input, and at the top, a set of 7.1 analog outputs. The AC power jack is three-prong grounded.

The inside of the chassis is shown below. It is very neatly laid out, with components arranged in a modular and symmetric array.

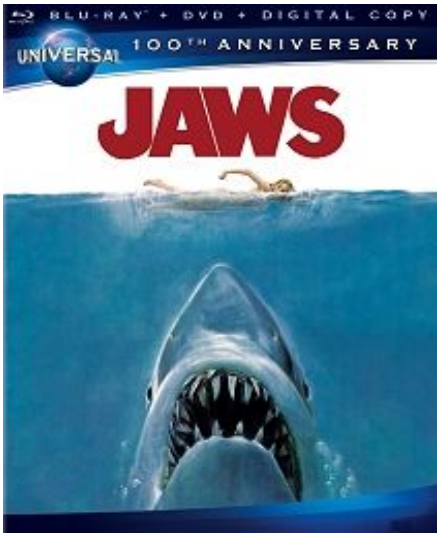
The remote control looks similar to other OPPO remotes, with the addition of Netflix and VuDu buttons, and a few changes to the operation of the player.



In Use

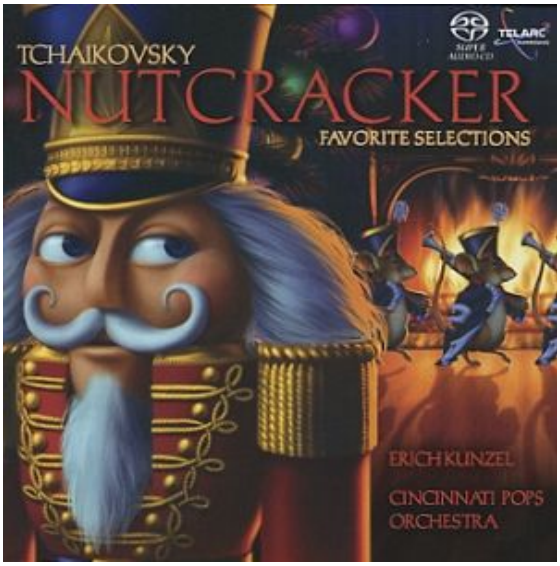
I tested the OPPO BDP-105 with a Classé CP-800 preamplifier, Classé SSP-800 SSP, Classé CA-5200 multi-channel power amplifier, HiFiMan HE-500 Headphones, Threshold ES-500 and Final Sound electrostatic speakers, and Paradigm Reference Signature C5 Center Channel Speaker. Subwoofers were Velodyne (crossover 60 Hz). Cables were Wireworld, Emotiva, and Marc Audio. I

listened to stereo music through the XLR outputs of the OPPO BDP-105 connected to the Classé CP-800, and to surround sound recordings using the HDMI connection to the Classé SSP-800. The video circuit in the BDP-105 is the same as in the BDP-103, which is being reviewed by Chris Heinonen, and which will be published shortly. In this review, I will focus on the audio performance. I used the HDMI output for all the movies and for SACD discs.



The Blu-ray release of *Jaws* is spectacular both visually and in sound, as the original audio tapes were remixed for discrete 7.1 surround. It is a collector's disc for sure, and the OPPO delivered everything on the disc. In the original stereo, at the theater, it was terrifying enough, but in full 7.1 surround, it makes you want to crawl under the chair. In spite of the current rage of blood spattered butchery in movies, Jaws remains one of the scariest films ever made. I suppose it is because we can easily distance ourselves in the audience from the mayhem on the screen, but with a shark, we are all afraid, and Spielberg knew how to bring us to our knees in fear.

Using the Bitstream option, and the HDMI connection, I listened to many SACD multi-channel discs in the player (I will comment on music played from a hard drive connected to the BDP-105 via USB later in the review).



The Nutcracker is one of my favorite holiday albums, and fortunately, there is an excellent multi-channel SACD version. You have to use the HDMI connection for SACD digital output to your processor, and you have the choice of output as a DSD bitstream, or letting the player convert it to PCM before output to your processor. As an audio purist, I chose the DSD bitstream. However, if your processor accepts only PCM, you will need to select that setting in the player's menu for the SACD output.

Tchaikovsky's masterpiece was rendered in all of its audio majesty by the OPPO. We also have a Blu-ray version with the San Francisco Ballet and San Francisco Symphony Orchestra, which we have seen in person. My wife, having been trained in classical ballet, obviously would prefer to hear and see it live, but the Blu-ray is very good, with full surround sound at a high sampling rate.

This SACD sampler disc is a recording that I had sitting around but never opened, until now. It is actually quite good, with selections by Purcell, Prokofiev, Beethoven, Grieg, Mahler, Stravinsky, as well as some tracks by The Cincinnati Pops Orchestra. Very entertaining. The vanishingly low distortion of the OPPO-BDP-105 makes digital music a joy to experience.

Connecting the HiFiMAN HE-500 Headphones to the headphone jack on the BDP-105 was quite a revelation. The DACs for this output are double-stacked to allow for sufficient output current to drive headphones that are typically low impedance. The HE-500s are unique in that they use planar magnetic drivers, which are extremely light in comparison to standard cone-type drivers, so they respond to the smallest detail and nuance. The BDP-105 has such low distortion, it represents the best headphone amplifier I have ever heard. Of course, I have not listened to all the headphone and headphone amplifier combinations out there, and I imagine that HiFiMAN's HE-5 headphones and EF-6 headphone amplifier have an edge over the HE-500 combo, but the HE-500 is a superb contender in its price category.

For example, Barbra Streisand's voice could be considered a standard by which female voices could be judged with hi-fi equipment, and this disc (Columbia 88697 57150 2), which is 16/44.1, is a good example of not only how beautiful her voice is, but that she can still sing like an angel 50 years after I first heard her. Through the headphone jack, her voice was mono, and center stage, while a full orchestra surrounded her. The violins caressed her like dozens of velvet covered hands, and they were absolutely crystal clear, without even a hint of glare or harshness. I used a headphone volume setting (in the menu) of 50. I would suggest setting it to that level or lower before you plug in your headphones, in order to prevent the sound from being too loud, and then adjusting it to suit your tastes.

To set up wireless streaming from your computer, you first must set up the network option on the OPPO. Connect the USB Wireless Adapter to one of the USB ports on the rear panel. Power the OPPO on and press the Home button and select "Setup", then select "Network Setup". I used the "Auto" option, which displayed the wireless networks within the range of the wireless adapter. I selected my network, typed in the password using the remote control. It displayed, "Connection Successful". Then, on my computer, I went to "Control Panel", "Network and Internet", "View Network and Computer Devices", and right clicked on "OPPO BDP-105", which displayed a menu, and I selected "Allow Streaming to this Device". Below is shown the menu after I did that (the option is now, "Block Streaming to this Device"). Go to your Music directory, right click on it, and select "Properties", then "Sharing" and "Share".

Once I set this all up, I clicked the “Home” button on the OPPO, and then “Network”. It displayed the music directory, and proceeded to index it. The only problem I had was that the music files were all listed one after the other, rather than in the separate album directories that are on the computer. The music streamed to the OPPO without any difficulty. There were no dropouts or audible change in quality of sound. With the addition of future firmware updates, perhaps the streaming indexing capabilities will be improved.

One other way of using the BDP-105 as a music server is to get a USB-powered hard drive. First, you connect it to your computer and drag and drop your music files onto the USB drive. Metadata are not used with this technique, so you can name the albums as you wish, as well as the tracks, and those names will show up in the menu of the OPPO iPad app (downloaded from iTunes) when you play your music. Create directories for the albums, such as Classical, Pop, Jazz, etc. You then connect the USB drive to one of the USB ports on the rear panel of the BDP-105. Turn on the player, click the OPPO app on your iPad, and you will see the contents of the USB drive. Click on a directory, and album, and a music track, and away you go. Here is a video explaining it.

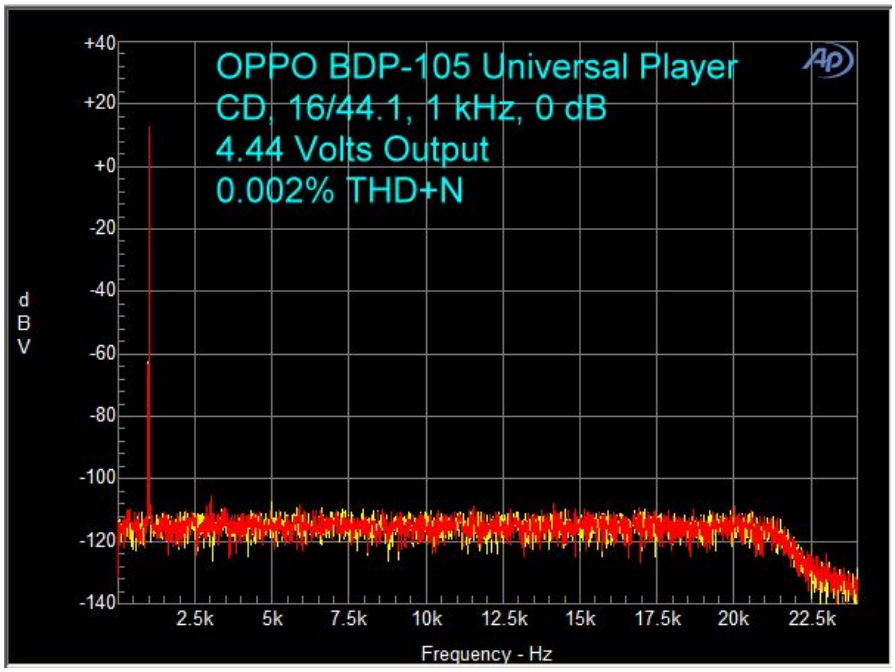
On the Bench

All distortion measurements were made within an 80 kHz bandwidth, unless otherwise specified, and the test signals were generated at – 5 dB, unless otherwise specified. The XLR balanced outputs were used for all measurements (except for the headphone output). Note that manufacturers usually specify distortion within a 20 kHz bandwidth, since that is the limit of human hearing. We use an 80 kHz bandwidth, except where specified, because 24/192 sampling yields a frequency response out to 96 kHz, and in order to keep the playing field level, so to speak, we also use the 80 kHz bandwidth for 16/44.1 tests. As a result, distortion measurements in our lab may, in some cases, be higher than the manufacturer specification. What we have found is that reducing the bandwidth to 22 kHz (20 kHz is not an option in the Audio Precision), gives a distortion measurement 30% – 75% lower than the

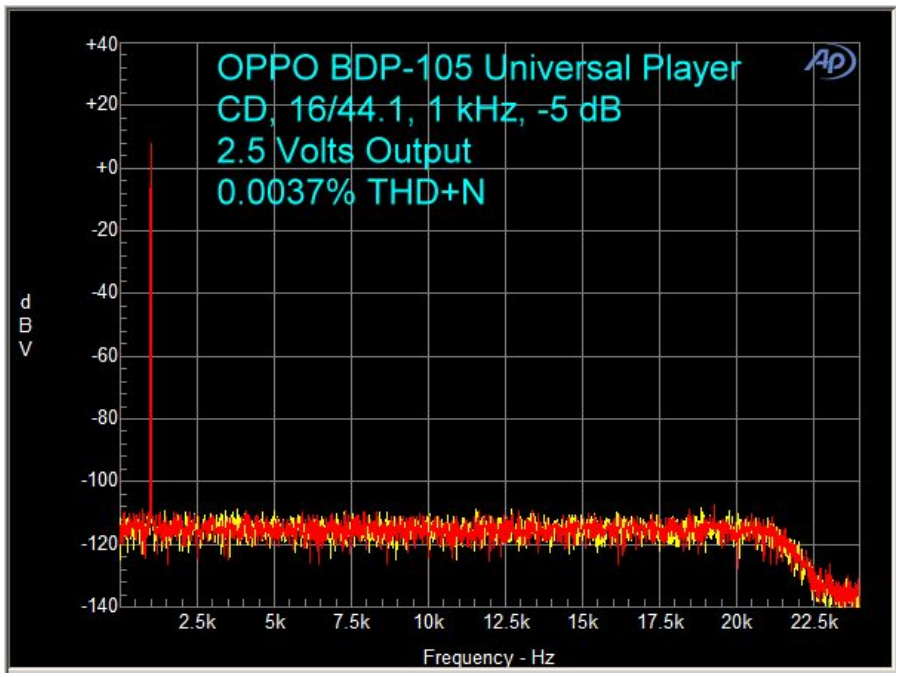
measurement with an 80 kHz bandwidth. So, our data represent the “real world” measurement of signal in a bandwidth that just about every hi-fi component responds to.

First, the test results using signals from CD and DVD-A.

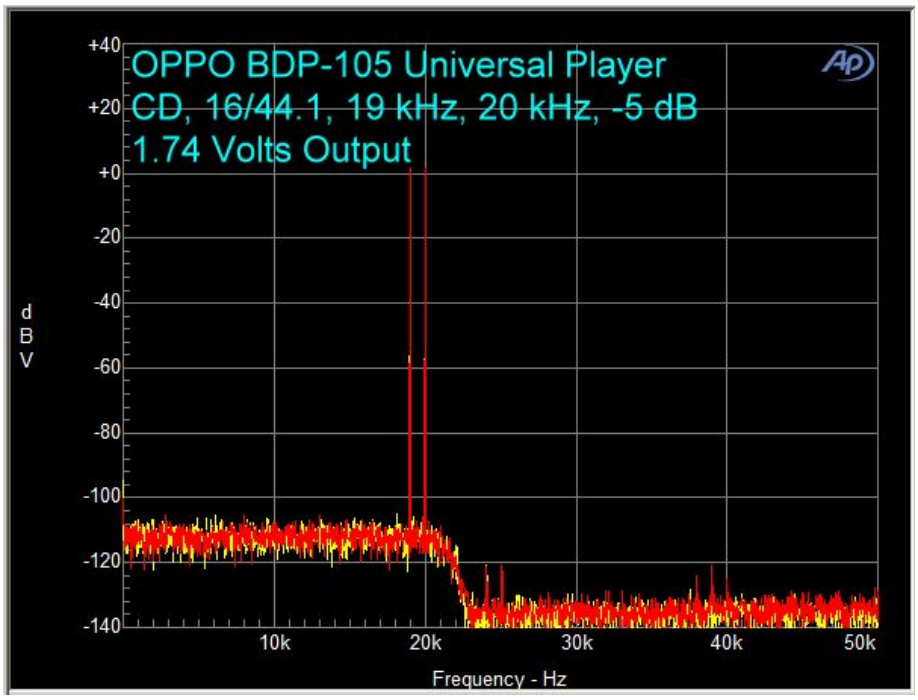
CD, 16/44.1, 1 kHz, 0 dB (Full Scale), output was 4.4 volts RMS, and distortion was 0.002%. At 0 dB, this is the highest voltage you can get from the player’s output.



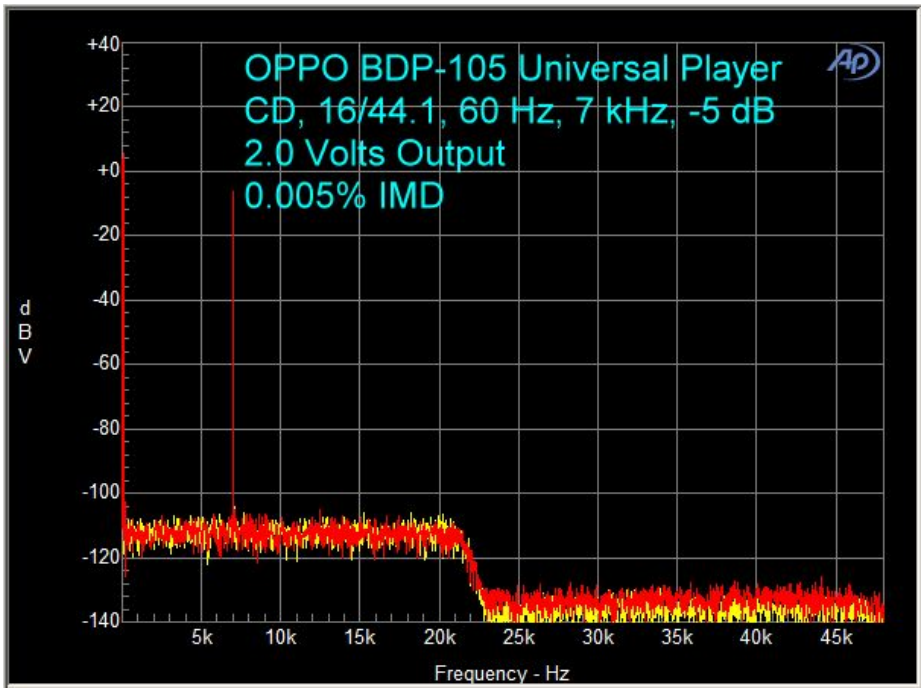
CD, 16/44.1, 1 kHz, -5 dB, the output was 2.5 volts RMS, and distortion was marginally higher than it was at 0 dB, 0.0037%, which I suspect is really just a reflection of the fact that the signal peak is lower in relation to the noise floor, as no distortion peaks are visible in either graph.



CD, 16/44.1, 19 kHz, 20 kHz, 1.74 volts output, the B-A peak at 1 kHz was not visible.

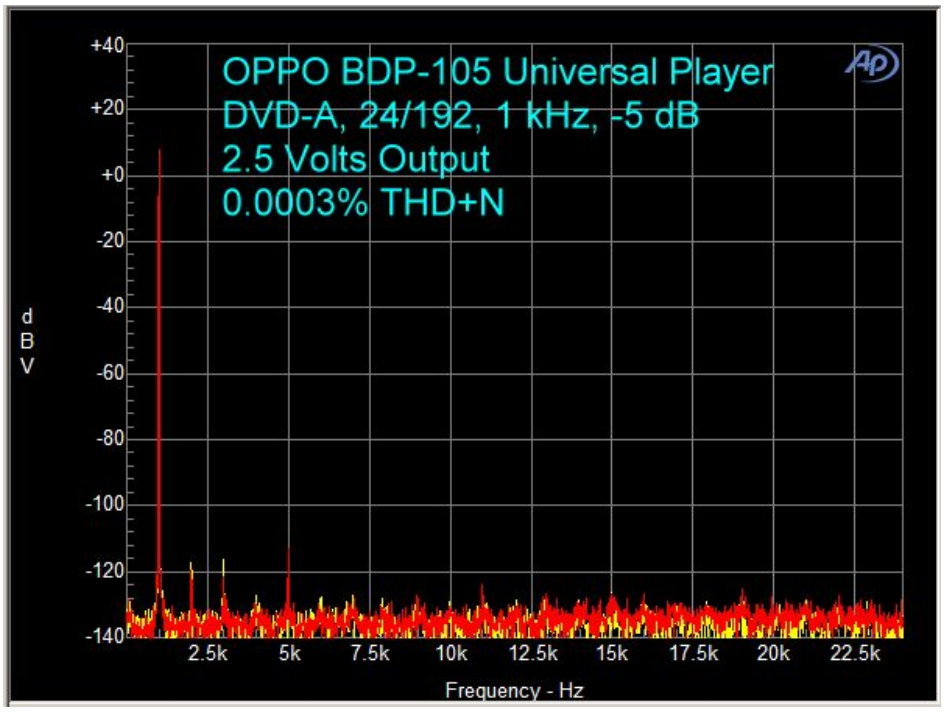


CD, 16/44.1, 60 Hz, 7 kHz, 2 volts output, IMD was 0.005%.

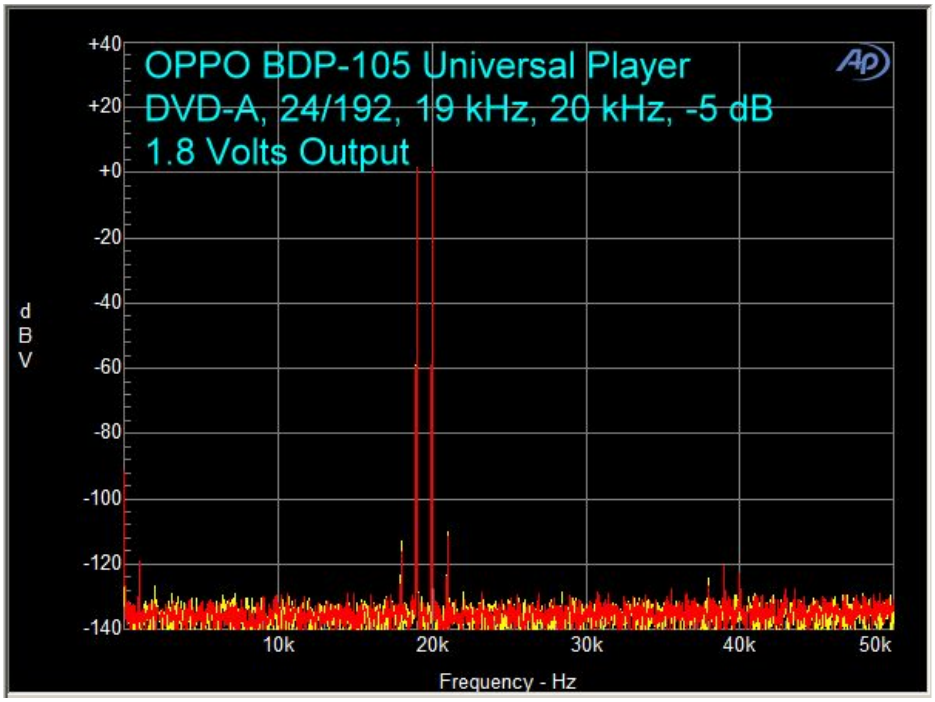


Using signals form DVD-A, the results were identical for 24/96 and 24/192, so I will only be showing the 24/192 results.

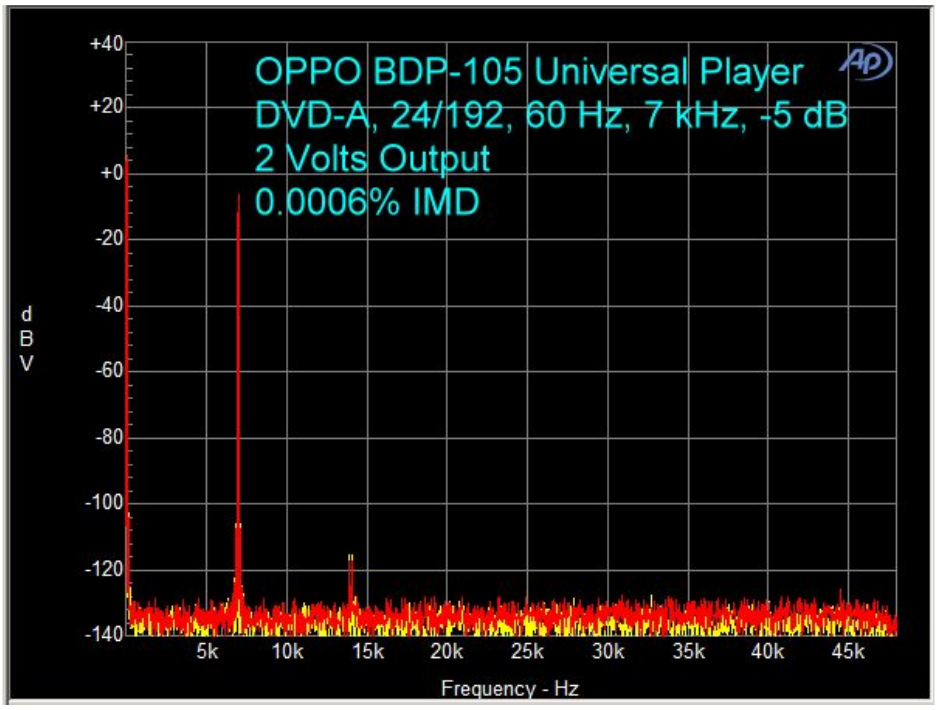
DVD-A, 24/192, 1 kHz, THD+N was an order of magnitude lower than with 16/44.1, at 0.0003%



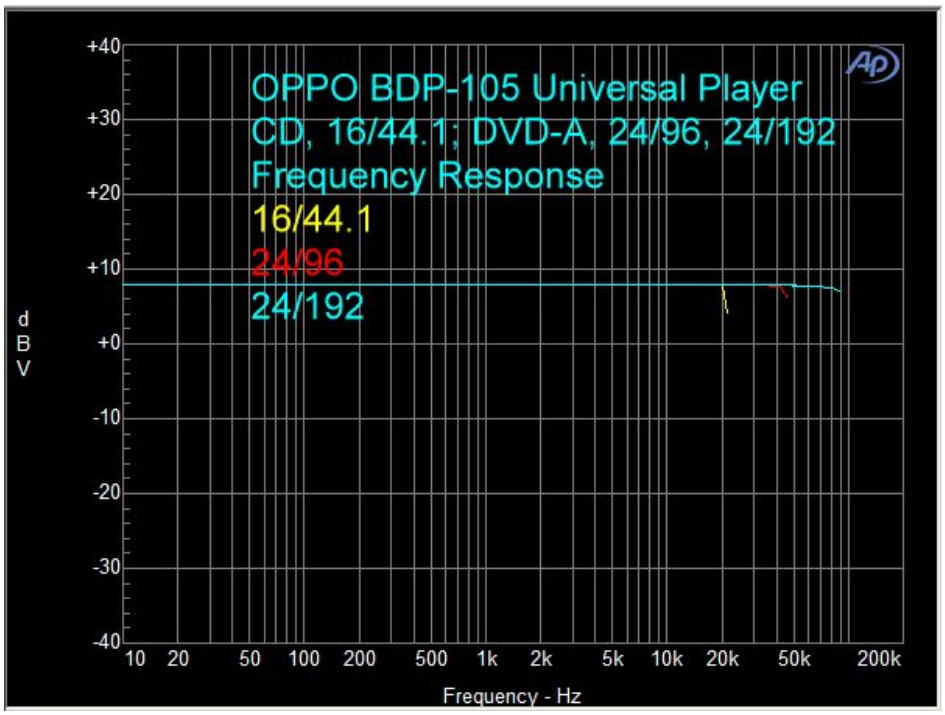
DVD-A, 24/192, 19 kHz and 20 kHz. The B-A peak at 1 kHz was 120 dBV below the fundamentals.



IMD at 24/192 was very low, at 0.0006%



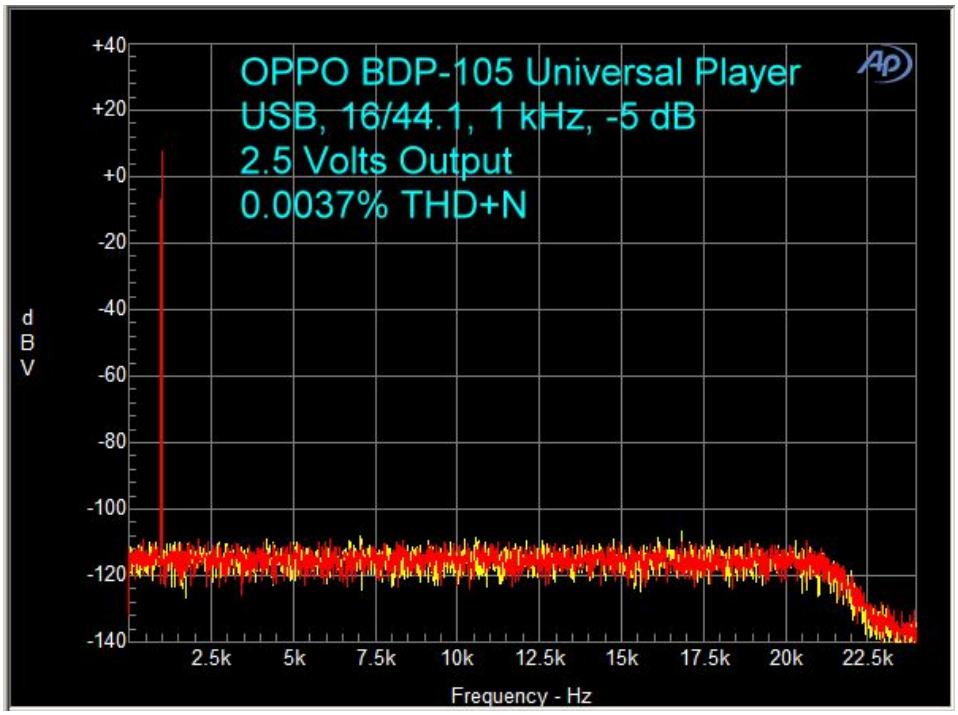
The measured Frequency Response for CD, 16/44.1, and DVD-A, 24/96, 24/192 is shown below. For CD, 16/44.1, the response rolls off sharply at 20 kHz, while for DVD-A, 24/96, the response rolls off sharply at 40 kHz, and for DVD-A, 24/192, the response begins rolling off slowly at 50 kHz, to be down 1 dB at 90 kHz.



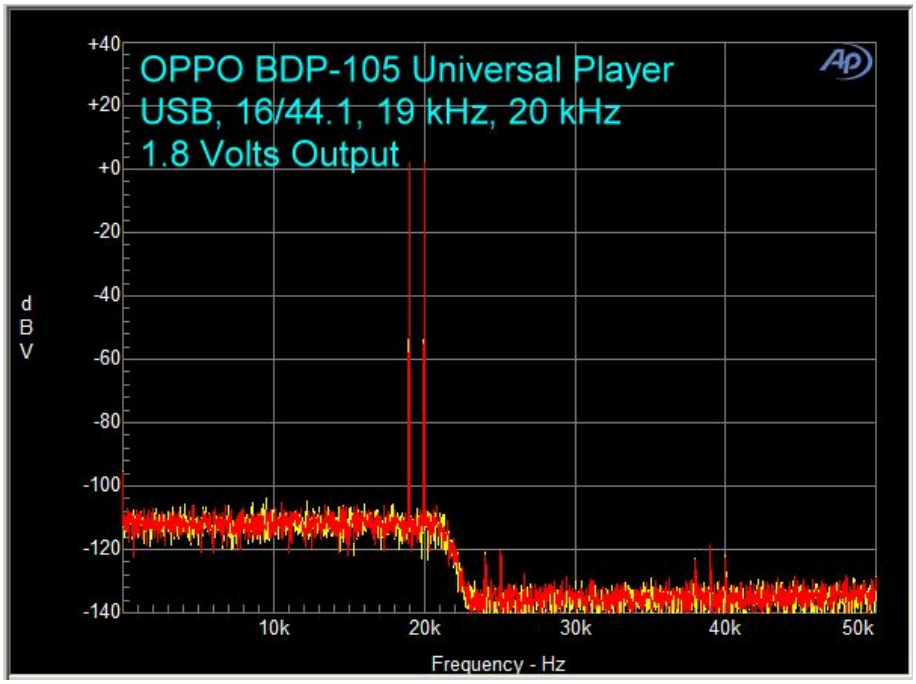
Now we come to the beginning of the bench tests with the USB input. Technically, all the USB inputs on the BDP-105 are asynchronous, in that the bitstream is reclocked to the BDp-105's DAC and then decoded. This is accomplished by storing the bitstream in memory as it arrives, and then re-clocked

for decoding. The “official” asynchronous USB input on the right hand side of the rear panel is designed to be connected to your computer through one of its USB ports. In any case, all the USB inputs for the BDP-105 remove the jitter that is inherent to USB connections.

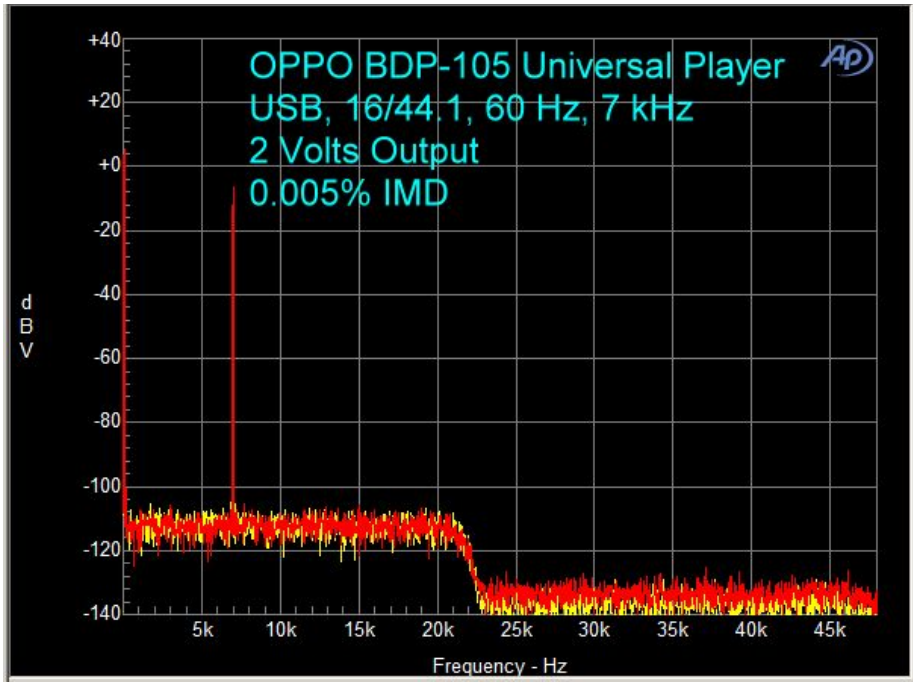
Here is the first example, with a 1 kHz sine wave, at 16/44.1. The distortion – 0.0037% – was exactly the same as the measurement with the test signal being played on a CD (see graph above).



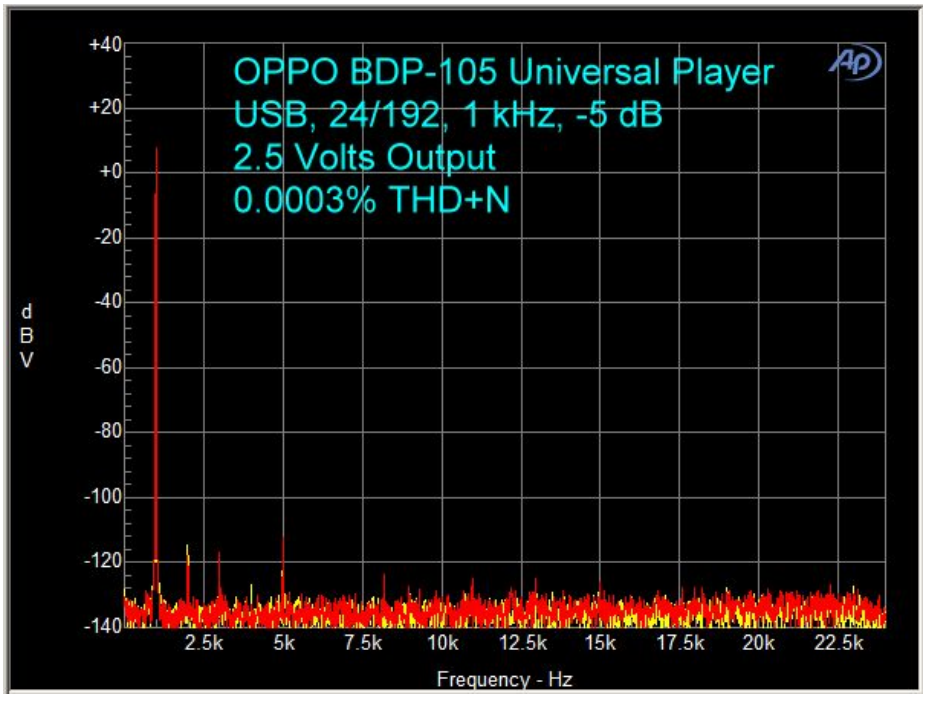
19 kHz and 20 kHz yielded the following graph. There was no B-A peak visible at 1 kHz.



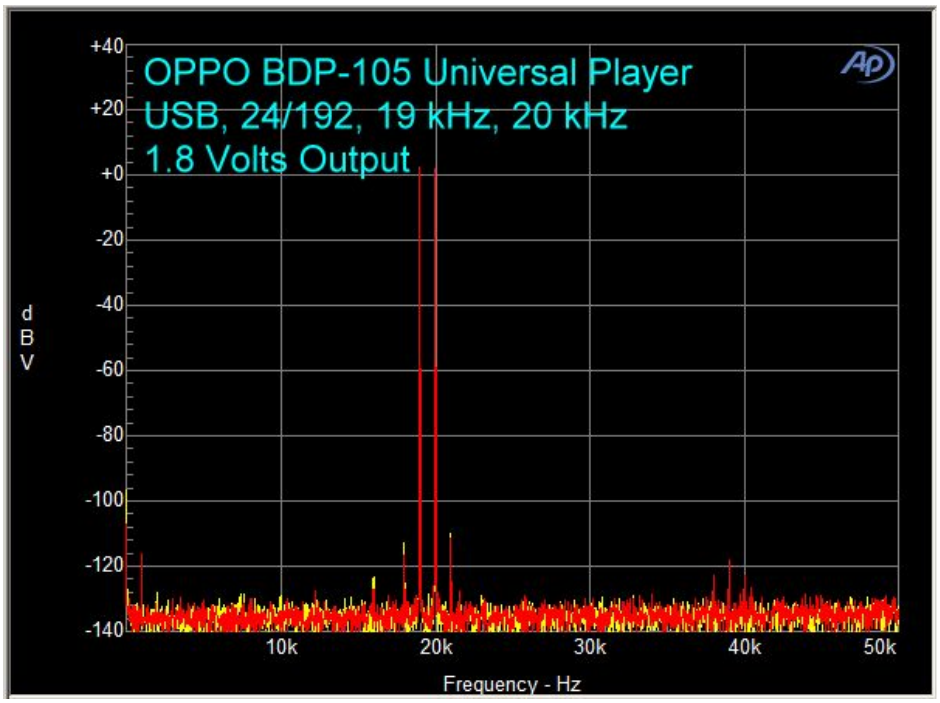
IMD at 16/44.1 sampling through the USB port was 0.005%, again, the same as it was when playing the signal from a CD.



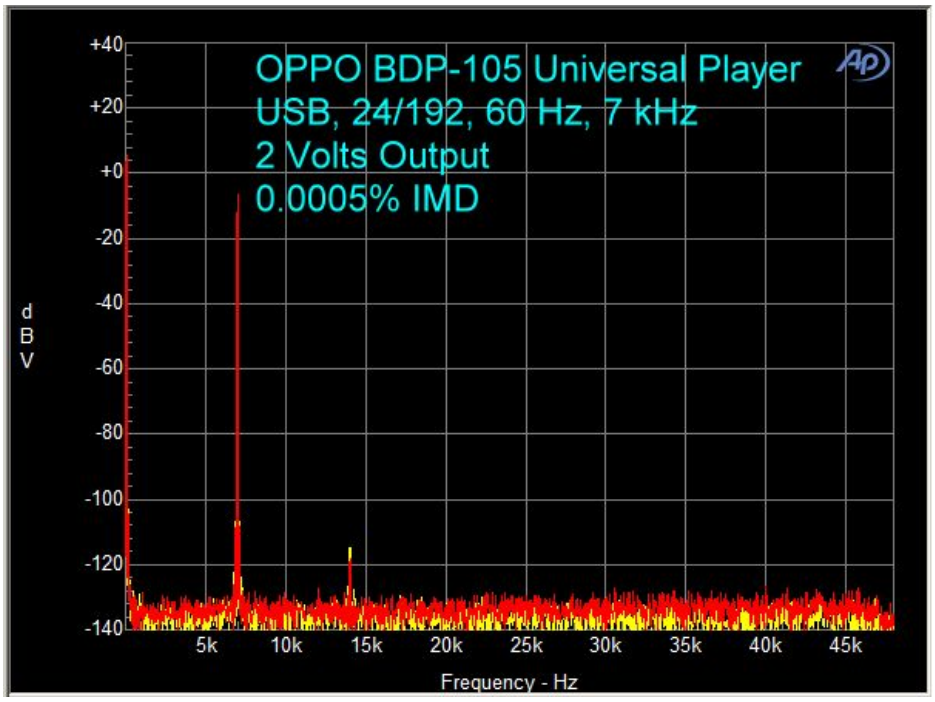
With 1 kHz at 24/192 sampling, through USB, distortion was 0.0003%, which is the same as the 24/192 signal played on the test DVD-A (see graph above).



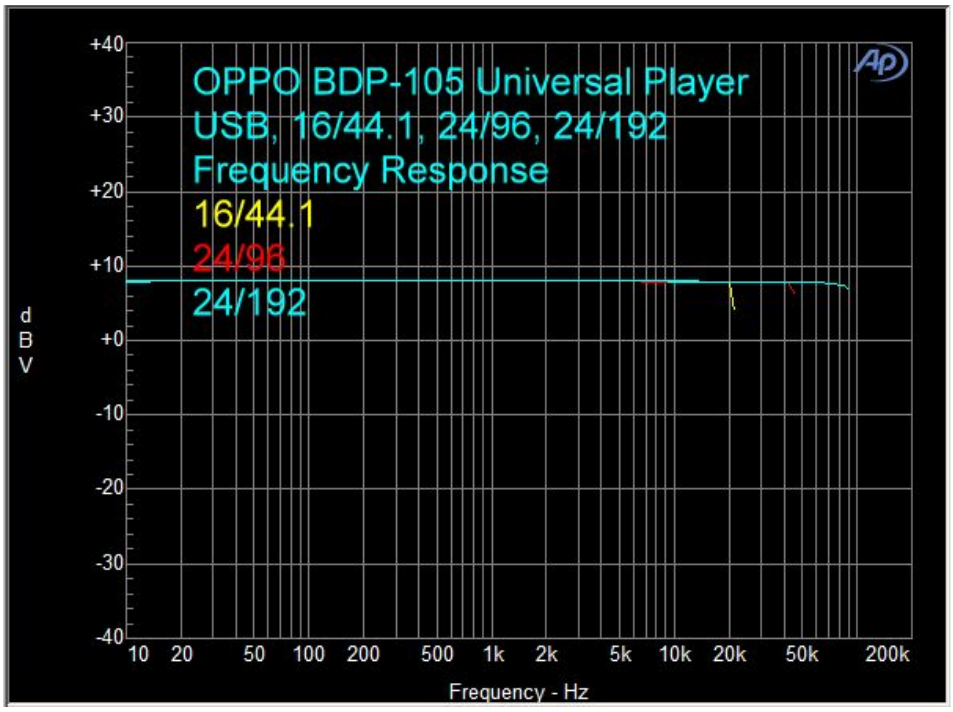
Using 19 kHz and 20 kHz signals, the B-A peak at 1 kHz was 103 dBV below the fundamentals.



IMD at 24/192 through USB was 0.0005%.

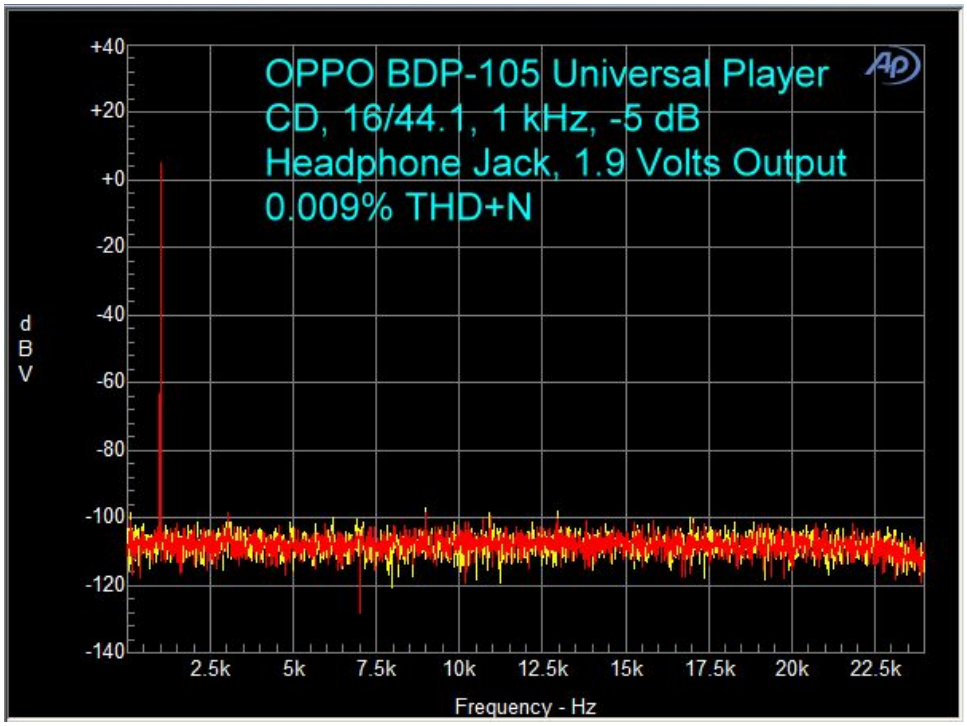


The frequency response through USB is shown below. It is down 0.5 dB at 20 kHz, and begins a roll-off at 65 kHz.



So, we finally have a signal being played through a USB port that is as good as playing it on a CD or DVD-A. This means you can store all your music, including high sampling rate (up to 24/192) on a hard drive, and connect it to one of the BDP-105's USB ports, and play it with the same quality as if you were using a disc. The end-of-days for putting CDs and DVD-As into the player is closer than we imagined.

I also measured distortion at 1 kHz through the headphone output, with the signal being played on a CD. Below is the resulting spectrum. The output was 1.9 volts compared to 2.5 volts output through the XLR jack, and this lower output in relation to the noise floor resulted in a higher measured THD+N of 0.009% (compared to 0.003% with the CD test signal). The signal is very clean, and is why the sound was so good using those HiFiMAN HE-500 headphones.



SACD appears not to be a hugely successful format for the release of music in the US, but Dr. David Rich, a Secrets Senior Editor noted that, *"In classical music, SACD is now a standard for releases from the UK, EU and Japan. The SFO continues to release in SACD. Nobody is dual issuing, so if want the recording, you get the SACD with about $2 added to the price of a CD from the same label. Not all of the labels have US importation, which makes them extraordinary expensive. Japan is reissuing older recordings as SACDs with crazy prices in the US based on what Amazon wants.*

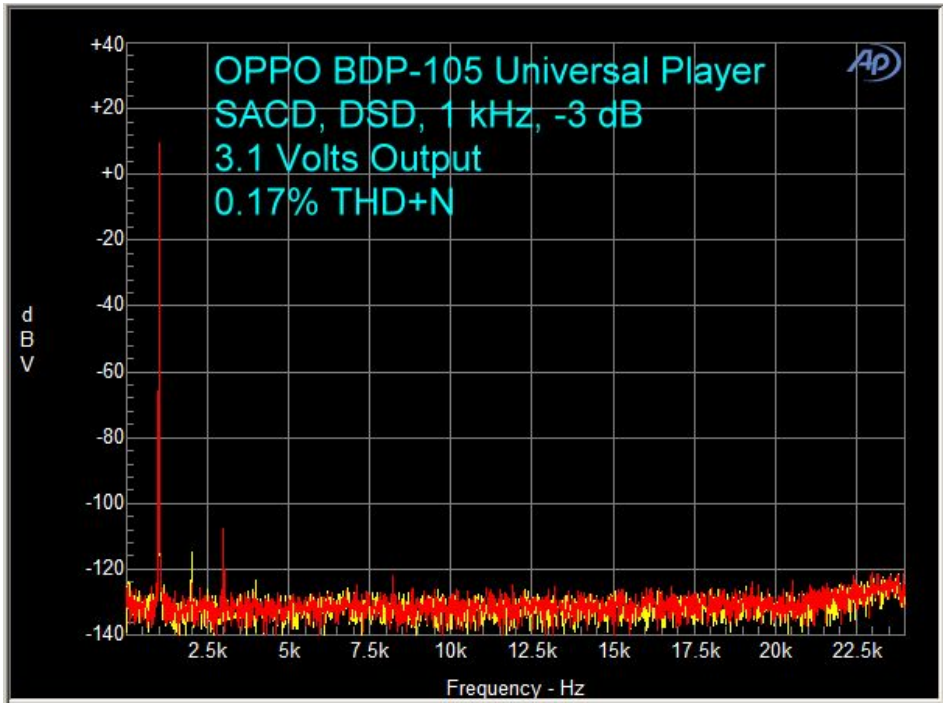
Polygram is not releasing in SACD, so in most cases, the SACDs are with second tier orchestras and conductors. With world class performances from 5 – 50 years ago going for $7.00 per disc (in some cases $2.00 disc in 50 disc packages), it is very hard to justify purchasing an SACD in this country. I think I purchased 100 CDs this year. Maybe three were SACDs. Naxos went with Blu-ray Audio a couple years ago. Those are more than twice the price of the Naxos CDs (some have a little more material). As far as I can tell, nobody else is following this method.

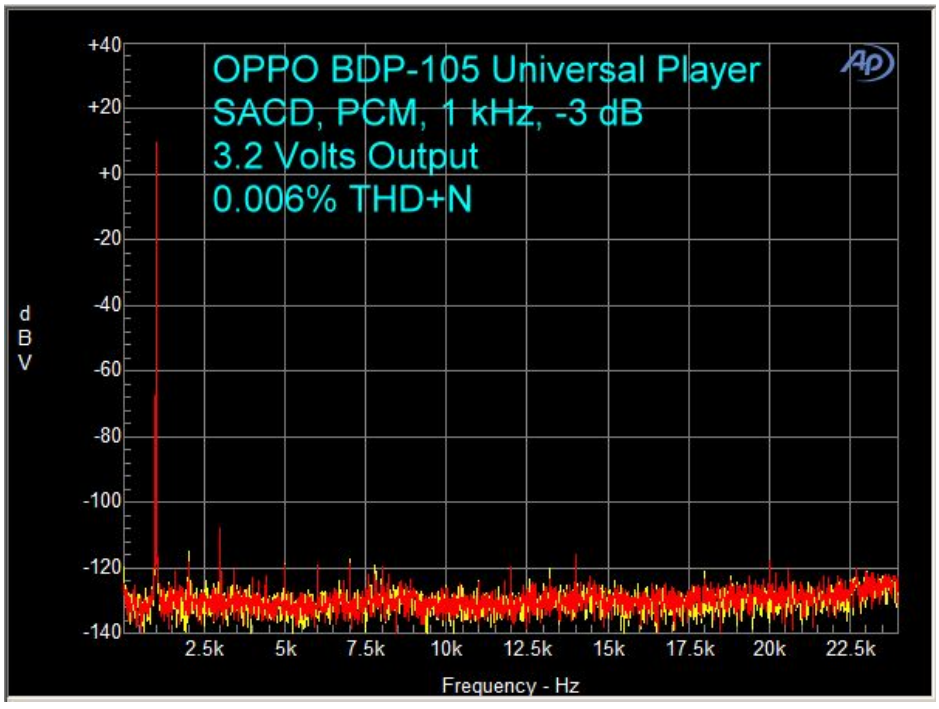
Most of the demand for SACDs appear to be from people who think DSD sounds better than red book in stereo. Very few people listen in multi-channel. The mixes I have heard have nothing but ambience in the center channel, as the engineers think most people will be using inexpensive speakers under the TV. Since 80% of the sound improvement comes with direct center information from the stage, the current SACDs sound no better than Dolby Pro Logic II, and in many cases worse (DPL II creates a real center). DPL II can be remarkably effective on the correct CD as was demonstrated at the CEDIA Learn to Listen class, but the demo was with seven identical speakers, all vertical at ear height."

In any case, some of us have a significant SACD library, and the files cannot (at this point) be transferred to a hard drive and played through the USB port. So, here are measurements from a test

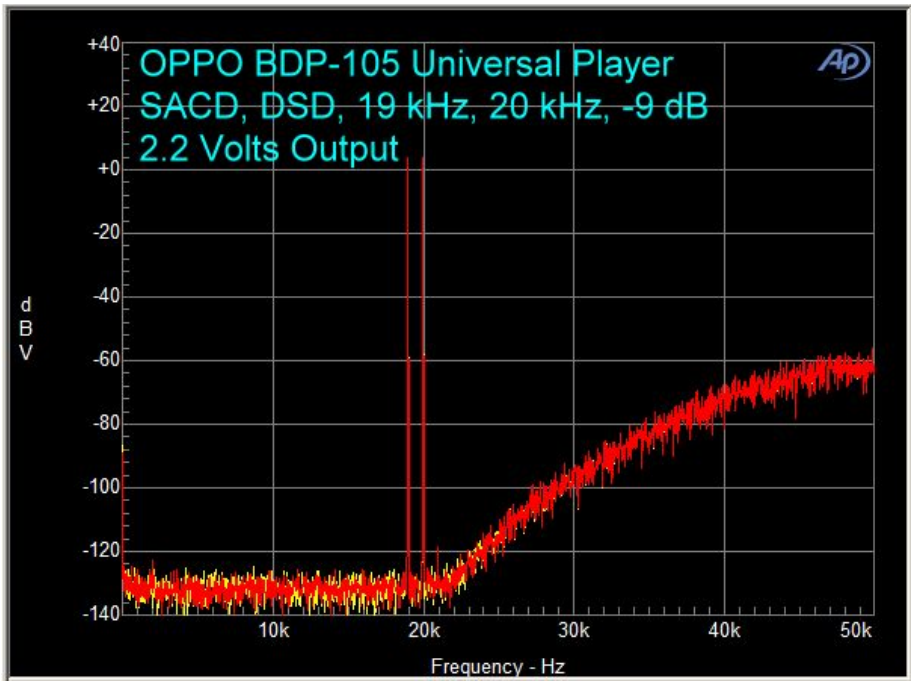
SACD. I tested the player's SACD capabilities with the SACD mode set to DSD as well as PCM. The internal DACs decode the SACD mode setting and output the analog signal to the player's analog output jacks as well as output the signal digitally through the HDMI port in that same mode setting. I limited the bandwidth to 22 kHz due to the large amount of noise in the out-of-audible-band high frequencies that is normal for SACD recordings.

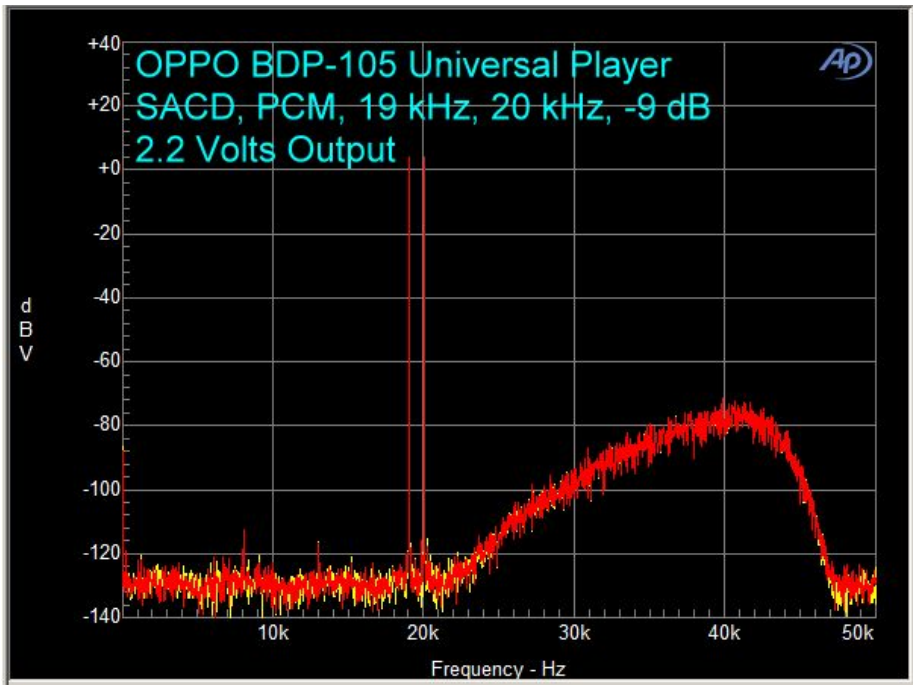
The graphs are shown in pairs, with the first one in DSD mode, and the second one in PCM mode.* At 1 kHz, THD+N was 0.17% in DSD mode, and 0.006% in PCM mode



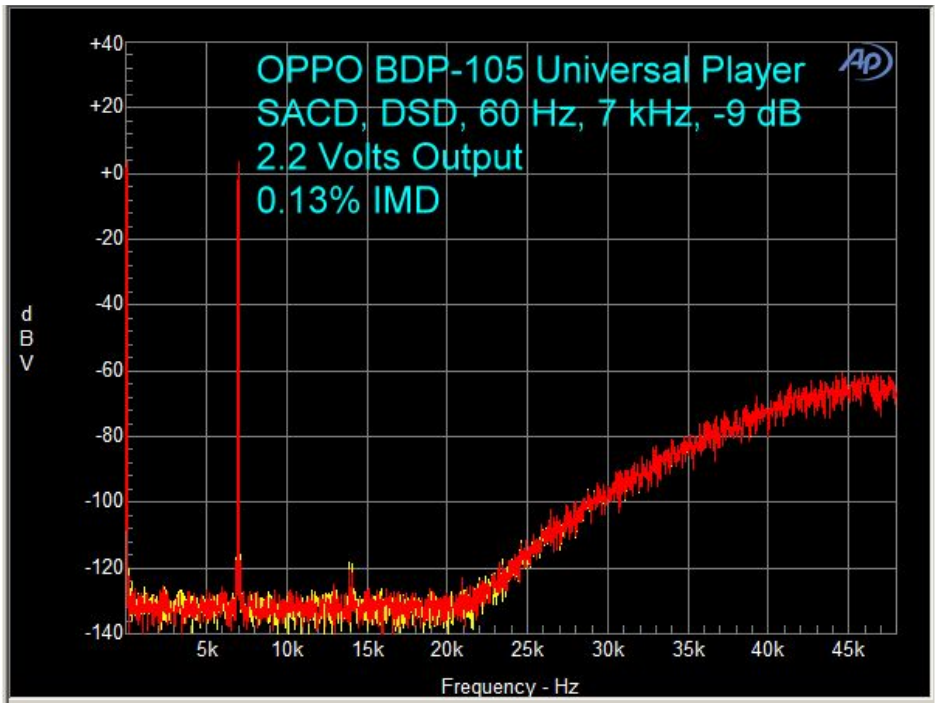


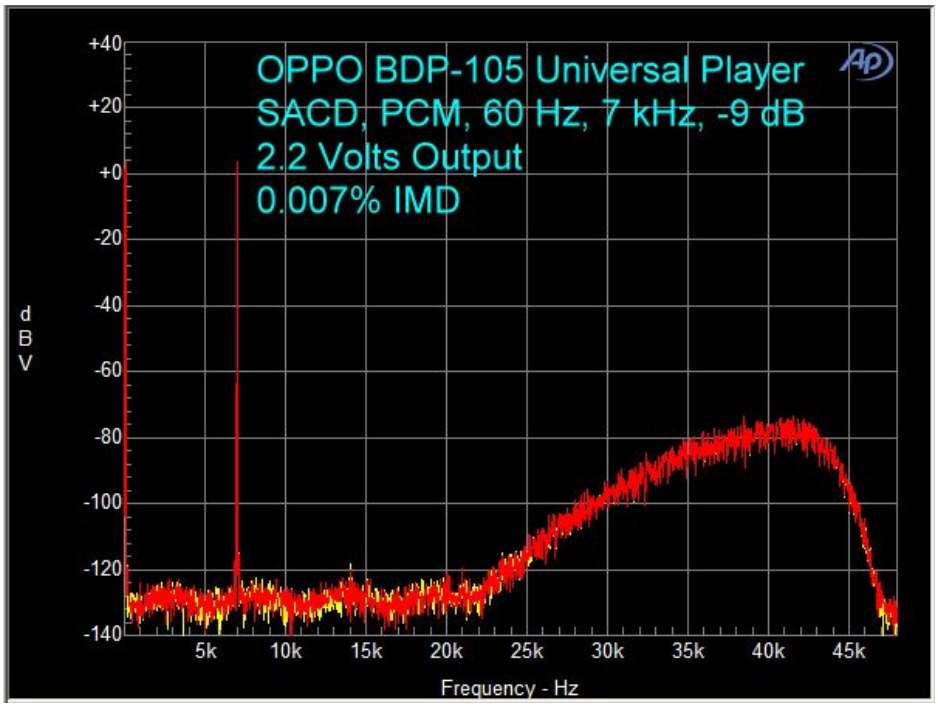
The 19 kHz, 20 kHz test showed no clear evidence of a B-A peak at 1 kHz in either DSD mode or PCM mode. Notice, however, the truncation of the frequencies above 40 kHz in PCM mode (through filtration in the conversion process).





IMD was 0.13% in DSD mode, and 0.007% in PCM mode. There seems to be a bit less second harmonic at 14 kHz in PCM mode.





Notes from Dr. David Rich regarding DSD vs. PCM modes: *"I noted in the OPPO BDP-105 review you discussed issues of connecting an AVR so it would send DSD to the DACs. It is important to understand this will bypass the DSPs (multiple ones in a high end AVR). The room correction is lost, as is the added delay for distance correction. Surround synthesis overlays are lost (5 to 7 channels etc.). Bass management is lost. I would let the OPPO do the DSD to PCM conversion to bring all this back.*

One might consider sending DSD as analog from the OPPO to the AVR (if the AVR has a 6 channel input), but these also bypass the DSP.

For stereo direct, simple bass management may be included. An analog 2nd order HPF at 80 Hz is added in the stereo path. The LFE channel goes to the ADC and then goes into the DSP section with the 4th order LPF. The LFE DAC then converts this to analog post DSP.

You cannot do signal processing on DSD, and even delay is very difficult since the DSP instruction set is expecting PCM. All the DSD direct mode does is send the digital signal from the HDMI decoder that supports DSD to the DAC with a DSD input. In the DAC, all the digital filtering is bypassed. In the analog section of the DAC, the MSB bit is toggled (DSD is a one bit system). Some modification of the MSB section may be needed to get it to work at the very high DSD switching speed. Only a few DACs will take DSD in. and they cost more. This is why most AVRs do not support DSD.

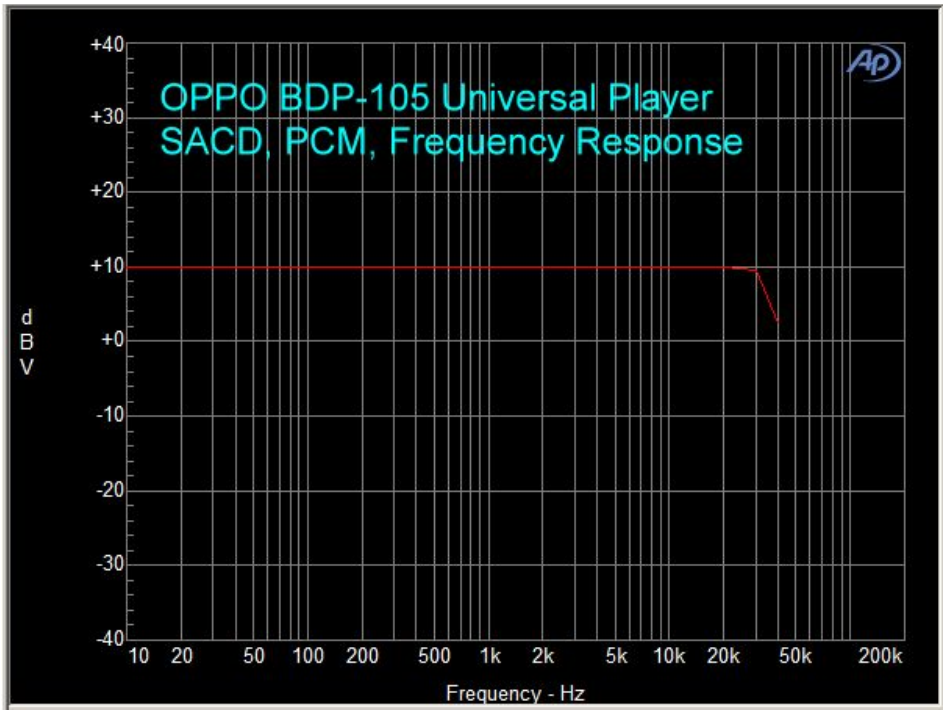
Getting DSD from the HDMI chip to the DAC is a microscopic modification in the microcontroller which issues the command to disconnect the DSP from the DAC and connect direct to the DAC (a couple of NAND gates) to the HDMI chip.

Issues can occur with the analog post the DAC with DSD since DSD has so much out-of-band energy. SACD players have special analog designs to deal with this but no AVR designer would add the overhead for a feature 0.1% of the users would use.

With HDMI (PCM (HDMI 1.1), Dolby lossless or DTS lossless (HDMI 1.3) , SPDIF, or USB, the PCM goes direct to the DSP, and you get all the functionality. This is the standard mode of operation for an AVR or Pre/Pro.

The jitter problem is worse with DSD since high frequency jitter modulates with the high out-off-band noise in a DSD signal and moves it to baseband. PCM does not have this problem since the out-of-band noise floor is flat at a very low level, and also does not occur in DSD mode save the Sony ES when driven with the one Sony SACD audio only player that slaves to a clock in a compatible Sony AVR.”

Below is the measured frequency response, in PCM mode. Roll-off begins at about 25 kHz, with a sharp decline beginning at 30 kHz. This is done to minimize the effects of the large noise hump above 30 kHz.



*Here is some correspondence that I had with Jason Liao from OPPO (12-5-12):

"The DSD/PCM setting in the player affects both the analog and HDMI output. However to ensure that the player indeed uses DSD and not fall back to PCM mode, please either completely disconnect the HDMI output, or connect the HDMI output to a DSD-compatible AV receiver, or set HDMI Audio to Off. If there is an HDMI device that does not support DSD and HDMI Audio is not set to Off, the player will force PCM so the HDMI output has sound. The "Track Type" shown on the TV screen will tell you whether it is played as PCM or DSD. – Jason Liao"

"OK, well, I published the SACD results today, and I suspect that it may all be PCM rather than DSD. I will have to set the test equipment up again in the next few days and unplug the TV monitor that I was using to select the SACD test tones. – John Johnson"

"What happens if I use one HDMI output that goes to the SSP and the second output directly to an HDTV (which does not support DSD)? – John Johnson"

"In that case, there is a "Dual HDMI Output" setting in the "Video Setup" section. It should be set to "Split A/V" mode. HDMI 1 will be for video only and its audio output will be disabled. HDMI 2 will be for audio output. If the SSP on HDMI 2 can support DSD, the player will honor the DSD setting for "SACD Output" and send DSD to both HDMI 2 and the internal DAC.
On the other hand, if you set "Dual HDMI Output" to "Dual Display", the player will convert DSD to PCM so both HDMI ports can have sound. – Jason Liao"

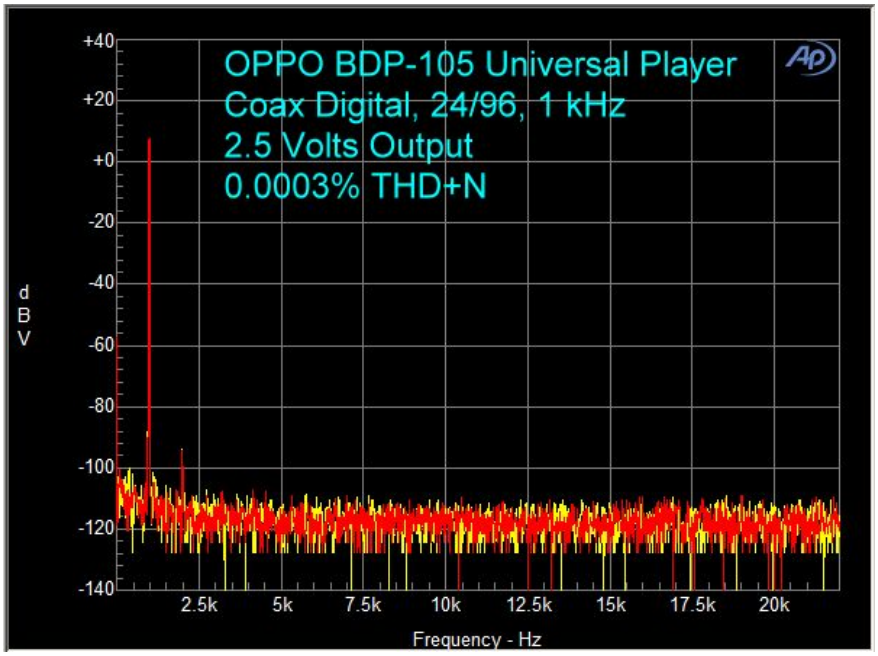
I re-measured the distortion with SACD, making sure that I was in PCM mode, by unplugging the HDTV that was connected to the HDMI input. I noticed that I could make the output from the player

change from DSD to PCM and back by plugging and unplugging the HDMI connection from the HDTV. This should not occur when using an HDMI connection to your SSP, unless it is incapable of decoding DSD.

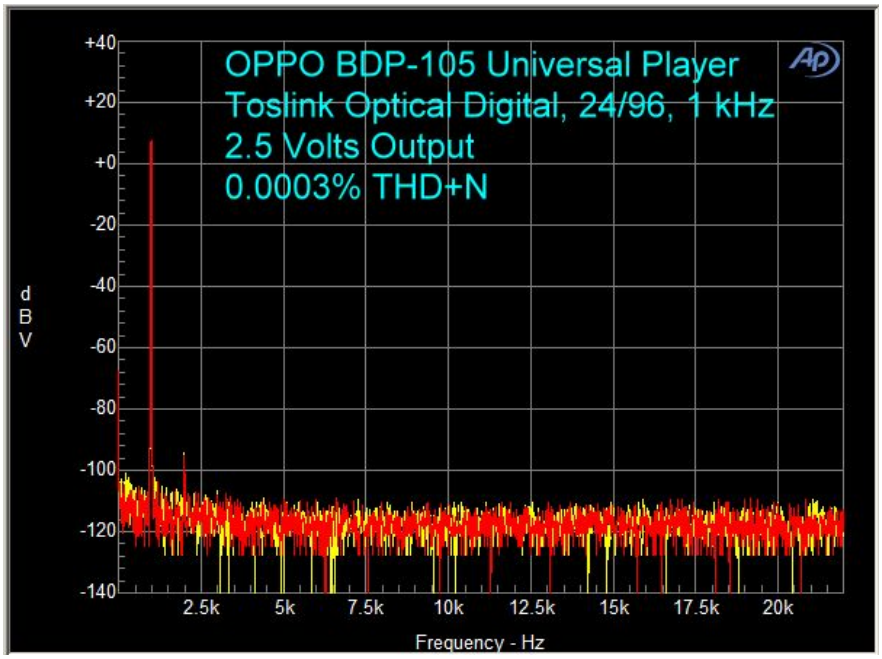
The OPPO BDP-105 has coax digital and Toslink optical digital inputs. They are limited to 24/96 rather than 24/192 because they are designed for connecting digital out from your HDTV if it has one, and they decode Dolby Digital as well as DTS signals, unlike a standard outboard DAC.

Here are the bench test results (they were similar to the USB input bench test results, so I am only showing the 1 kHz test):

With the coaxial digital input, distortion at 1 kHz (-5 dB) was 0.0003%.



With the Toslink optical digital input, distortion was the same as with coaxial.



Conclusions

What we see here is not just another universal Blu-ray player, but a player that is morphing into a media server. It has every type of input that one could ask for, including a connection for a hard drive through the USB port, that gives you unlimited space to store your music and video files, as well as an HDMI input, coaxial and optical digital inputs, and wireless network, which allows you to access music and video files anywhere in your wireless home network. It was designed as a Blu-ray player that has superb video and audio, with the media server features added, rather than a conglomerate of several terabytes of storage with a network connection, and a Blu-ray player added.

The result is something magical. When the iPad app is completed, we will truly have an audiophile-grade universal source, universal server, or whatever name you want to put to it, that is almost limitless in capability.
Well done, OPPO!