[GUIDE] Shield Best Practices Checklist 2022 edition

Hey there fellow Shielders;

This is it. The good stuff. No BS. Go through this list and enjoy a better experience.

For information about audio, see the Shield Audio Guide;

For information about video, see the Shield Display Guide;

I present to you the

Best Practices checklist

- GET THE CONNECTIONS RIGHT

Reach out for your TV and AVR spec sheets and make sure of what it supports.

Direct connection to the AVR's **HDMI-IN is best for audio because it allows for more PCM channels and higher sampling rates**, but it may not allow for Dolby Vision passthrough. Decisions, decisions.

	PCM	Dolby Digital	DTS	Dolby Digital Plus	Dolby TrueHD	DTS-HD	Dolby Vision
Shield - TV ARC - AVR	2 channels up to 96 kHz 24 bit	if passthrough allowed by the TV and decoding supported by the AVR	if passthrough allowed by the TV and decoding supported by the AVR	if passthrough allowed by the TV and decoding supported by the AVR	no	no	if supported by the TV
Shield - TV eARC - AVR	up to 7.1 channels (Some TVs may downmix LPCM to stereo) up to 96 kHz 24 bit	if passthrough allowed by the TV and decoding supported by the AVR	if passthrough allowed by the TV and decoding supported by the AVR	if passthrough allowed by the TV and decoding supported by the AVR	if passthrough allowed by the TV and decoding supported by the AVR	if passthrough allowed by the TV and decoding supported by the AVR	if supported by the TV
Shield - AVR HDMI-IN - TV	**up to 7.1 channels** **up to 192 kHz 24 bit**	if decoding supported by the AVR	if decoding supported by the AVR	if decoding supported by the AVR	if decoding supported by the AVR	if decoding supported by the AVR	if passthrough allowed by the AVR and supported by the TV
Shield - Extractor - TV	2 channels up to 96 kHz 24 bit	if decoding supported by the external decoder	if decoding supported by the external decoder	if decoding supported by the external decoder	no	no	if supported by the extractor and TV
Shield - USB DAC	up to 5.1 channels if supported by DAC **up to 192 kHz 24 bit**	if decoding supported by DAC	if decoding supported by DAC	if decoding supported by DAC	no	no	if supported by the TV

- **TV PREPARATION**

ENABLE HDMI 2.0

Some brands will call this Enhanced HDMI Format, or Deep Color, or UHD colors; and some TVs will have a global toggle on top of the regular per-port option, but if you get 4K@30 max, that means you have a HDMI 1.4 bottleneck somewhere in your HDMI chain.

Could be the TV, the soundbar/avr or the HDMI switch if you have any.

DISABLE TV POST PROCESSING

People looking for a pure cinematic experience will want to make sure all types of post processing picture enhancements are disabled: motion enhancement/compensation/clearness, noise reduction; take everything off. Filmmaker mode can be left on/auto.

CONSIDER ENABLING GAME MODE

If your TV doesnt support ALLM and you are a gamer, you should consider engaging your TV's Game Mode manually, which will completely stop all image post processing and radically cut down the lag.

Please note: TVs will often use a different profile when HDR is engaged. A TV can be set to "Game mode" but switch to "HDR theatre" or whatever when HDR content is on. See if you can select "HDR Game" instead and cut down the TV processing lag. Also note that this setting might be only accessible when HDR content is actually playing.

- MAIN SHIELD DISPLAY SETTINGS

- ENABLE DOLBY VISION IF YOUR TV SUPPORTS IT

Shield / Settings / Device Preferences / Display & Sound / Display mode

USE 120hz IF YOUR 1080p MONITOR/TV SUPPORTS IT

Using a 120hz refresh rate can greatly reduce the amount of situations where the display might need to switch modes and blink. Unfortunately, official HDMI 2.0 modes cannot handle 4K@120, and using 1080p on a 4K screen is quite a loss in resolution. But on a 1080p monitor/TV? Go for it!!

Shield / Settings / Device Preferences / Display & Sound / Advanced display settings / custom display mode

- MAKE SURE AUTO COLORIMETRY IS ENABLED

Shield / Settings / Device Preferences / Display & Sound / Advanced display settings / Match content color space

MAKE SURE ALLM IS ENABLED IF YOUR TV SUPPORTS IT

Shield / Settings / Device Preferences / Display & Sound / Advanced display settings / Automatic Game Mode

REVIEW THE CUSTOMIZE LIST MENU

Keep in mind many apps like Xbox Game Pass are not categorized as "games" or are just not tagged appropriately and won't be enabled by default, so take a minute to review the list:

Shield / Settings / Device Preferences / Display & Sound / Advanced display settings / Customize Game Mode app list

CONSIDER ENABLING PLAYER-LED DOLBY VISION

Some TVs will give buggy colors when (*and only when*) using regular TV-Led Dolby Vision. (red push or just plain weird colors) In those cases, it is recommended to force the lesser pre-processed player-Led Dolby Vision. Start by enabling developer options by going to:

Shield / Settings / Device Preferences / About / Build

Click Build number 8 times, and congrats; you are now a dev. Now go to:

Shield / Settings / Device Preferences / Developer options / Default to Low Latency Dolby Vision when available

- MAIN SHIELD AUDIO SETTINGS:

CONSIDER ENABLING DOLBY PROCESSING (Shield 2019 only)

Shield / Settings / Device Preferences / Display & Sound / Advanced audio settings / Dolby processing

Very useful to avoid audio sync gaps and normalize the volume level across the board. An absolute must for users stuck with vanilla ARC / USB / Optical audio solutions. Vastly improved from past implementations where it would use MAT frames and get in the way of passthrough rules. Now fully recommended; old users should give it another shot.

More information on that in the Audio Guide.

CONSIDER CUSTOMIZED QUICK SETTINGS

Makes fast toggles much easier without deep-diving into settings each time. There are a bunch of those shortcuts available, but Audio options are the most handy because High Resolution Audio and Dolby audio processing cannot be enabled at the same time:

Shield / Settings / Device Preferences / System / Customize Quick Settings

REVIEW THE AVAILABLE FORMATS MENU

100% HDMI setups should be able to rely on the EDID alone and stay on Auto, but that information might be obfuscated be something on the HDMI chain, and will straight up not be available for users stuck with extractors, USB DACs, or optical solutions; so they will have to go manual and enable only what is supported by the decoder:

Shield / Settings / Device Preferences / Display & Sound / Advanced audio settings / Available Formats

- **KODI RECOMMENDATIONS:**

Enable Refresh rate switching

Kodi / System / cogwheel: enable expert mode

System / Player / Videos: Set Adjust display refresh rate to “On stop/start”

Enable HDR10

Kodi / System / Player / Videos / Processing: "Use display HDR capabilities" should be enabled.

Enable Audio Passthrough

Kodi / System / System / Audio / Audio Passthrough / Allow Passthrough

If enabled, Kodi will pass the selected formats down to Shield. Other codecs will be transcoded into PCM channels, following the number of channels specified in Kodi's Audio Decoder section before being passed down to Shield, where Dolby Processing will be applied if enabled.

If disabled, Kodi will transcode everything to PCM channels, in as many channels as specified in its Audio Decoder section before passing it down to Shield, where Dolby Processing will then be applied if enabled.

Shield 2015/2017 owners stuck on vanilla ARC or optical solutions

Kodi / System / System / Audio / Audio Passthrough / Dolby Digital (AC3) capable receiver - ON

Kodi / System / System / Audio / Audio Passthrough / - Enable Dolby Digital (AC3) transcoding - ON

If you want resolution switching and have the TV do the upscaling

Kodi / System / System / Display / Whitelist; select every item in the list to make them green

- **PLEX RECOMMENDATIONS**:

Enable Refresh Rate Switching

Plex / Settings / Advanced / Set Refresh Rate Switching to ON.

Enable audio passthrough

Plex / Settings / Advanced / Passthrough / HDMI

- "HDMI" means Plex will pass over every format down to Shield, where choices made in the "Available formats" menu will apply.
- "Optical" means Plex will only pass down PCM 2.0, Dolby Digital and vanilla DTS. DTS-HD/DTS:X tracks will be stripped of their lossless metadata. Everything else will be transcoded to Dolby Digital before being sent down to Shield, where choices made in the "Available formats" menu will apply.

If you want resolution switching and have the TV do the upscaling:

Plex / Settings / Advanced / Set Resolution Switching to ON.

- REFRESH RATE APP RECOMMENDATIONS

App-based OS-wide display mode switching

Most major streaming services will freak out when trying to switch display modes while content is playing, or even when the app is simply open. That's why I recommend using the Refresh Rate app to set a fixed Startup display mode rather than any kind of on-the-fly framerate matching solution:

1. Install the Refresh Rate app (Available via the Play Store directly on Shield) and open it.
2. Select any app.
3. Go to *Startup display mode*, and select a framerate / resolution matching the kind of content it delivers the most:

Netflix, D+, HBO+, Amazon Prime	**4K@24**
European TV streaming services	4K@50
BBC iPlayer	Base Shield display mode MUST be set to 25 or 50hz for the app to work, so leave here.
Plex, Kodi, Nvidia Games, Moonlight	Leave them alone; they already support the API

With all that said, you should now be able to get the best of your Shield. Hopefully anyway..

See you around!