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TEYUN Q-12 *In-Depth Review*

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Why Did I Buy the Teyun Q-12

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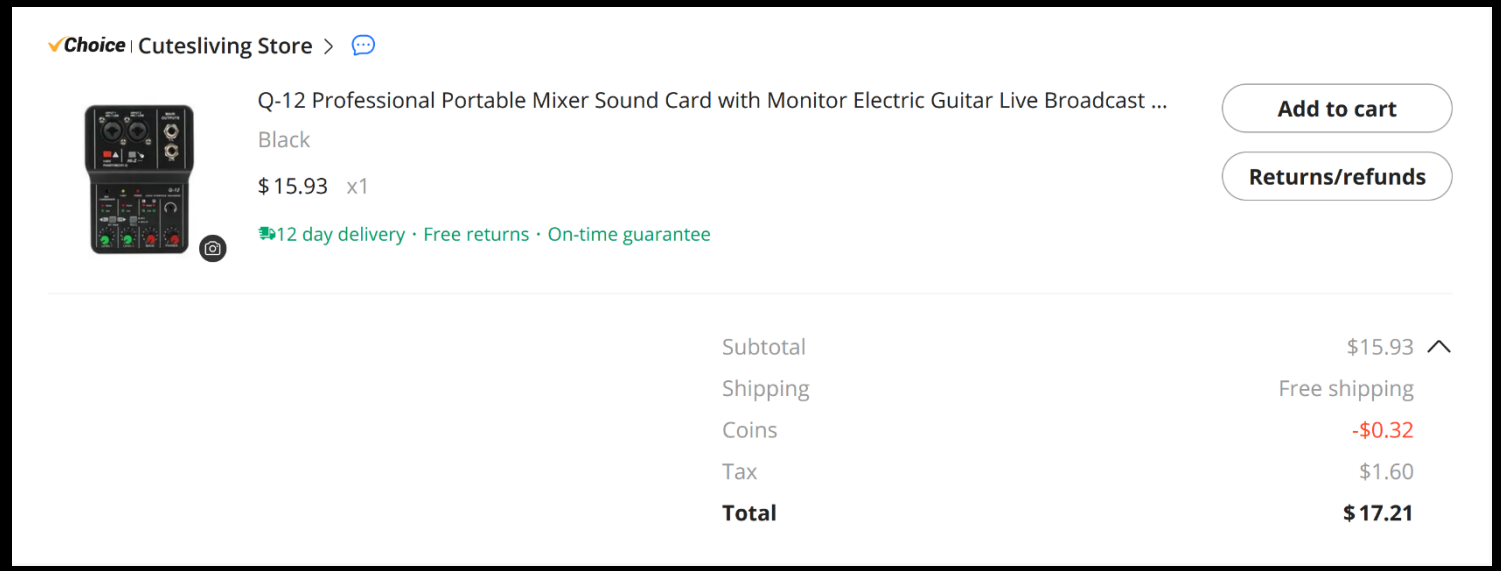
- I wanted a USB audio interface to use with OBS Studio that has the following features
  - A 3.5mm TS condenser mic input that will work with my headset microphones
    - This seems to be a very rare feature
    - This is different than phantom power for high-end condenser mics
  - A balanced XLR that input will work with my Electro Voice 664A super-cardioid dynamic microphone
  - A headphone monitor without any latency
  - Physical volume controls → knobs I can turn or sliders I can push
  - Affordable
- Features I don't need (now)
  - 48V phantom power
  - Line level inputs
  - Guitar inputs
  - Line level outputs
  - Idiotic sound effects
  - reverb



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Combination true differential XLR & ¼” TS phone plug inputs

¼” TS mono phone plug outputs

1/8” (3.5mm) TS phone plug mono condenser microphone input. RØDE and Sennheiser compatible. *3.16V 5.3K*

1/8” (3.5mm) TRS stereo phone plug headphone monitor output

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The LEVEL 2 control only controls the INPUT 2 level, it has no effect on other inputs

The LEVEL 1 control is shared by both INPUT 1 and the MIC CONDENSER input

MAIN OUTPUT volume only. It has no affect on the levels going to the ADC (*analog to digital converter*)

Headphone volume only

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DOWN to enable the flaccid 35V (not 48V) phantom power on both XLR inputs.
Rs are 8.2KΩ, not the standard 6.8KΩ

Adds 6dB (not 10dB) of gain to INPUT 2

UP for mono
DOWN for stereo
1 left - 2 right

DOWN to "Loop Back" or send the computer digital audio output with the audio inputs to the digital output stream.

UP sends only the audio inputs in the digital output stream.

The computer digital audio output is always in the MAIN outputs and headphones.

There is no knob to control the computer output level in the mix. You must use the output level on the computer.

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These PEAK and SIGnal lights are useless. The Analog to Digital Converter (ADC) clips many dB before either of these LEDs illuminate

When the MAIN volume is turned fully clockwise these LEDs are work for the levels going into the ADC

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The level indicator LEDs for the main output are useful for monitoring the digital output if the main volume control is rotated fully clockwise

Differential XLR Input Levels:

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Maximum Input without ADC clipping
-34 dBV
20 mVrms
56.6 mVpp

RED LEDs
-37.1 dBV
14 mVrms
39.6 mVpp

Green LEDs
-46 dBV
5 mVrms
14.1 mVpp

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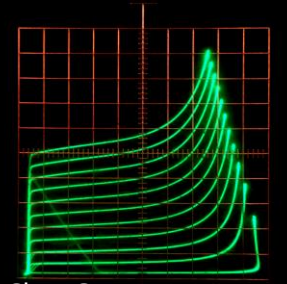
Teyun Q-12 Block Diagram



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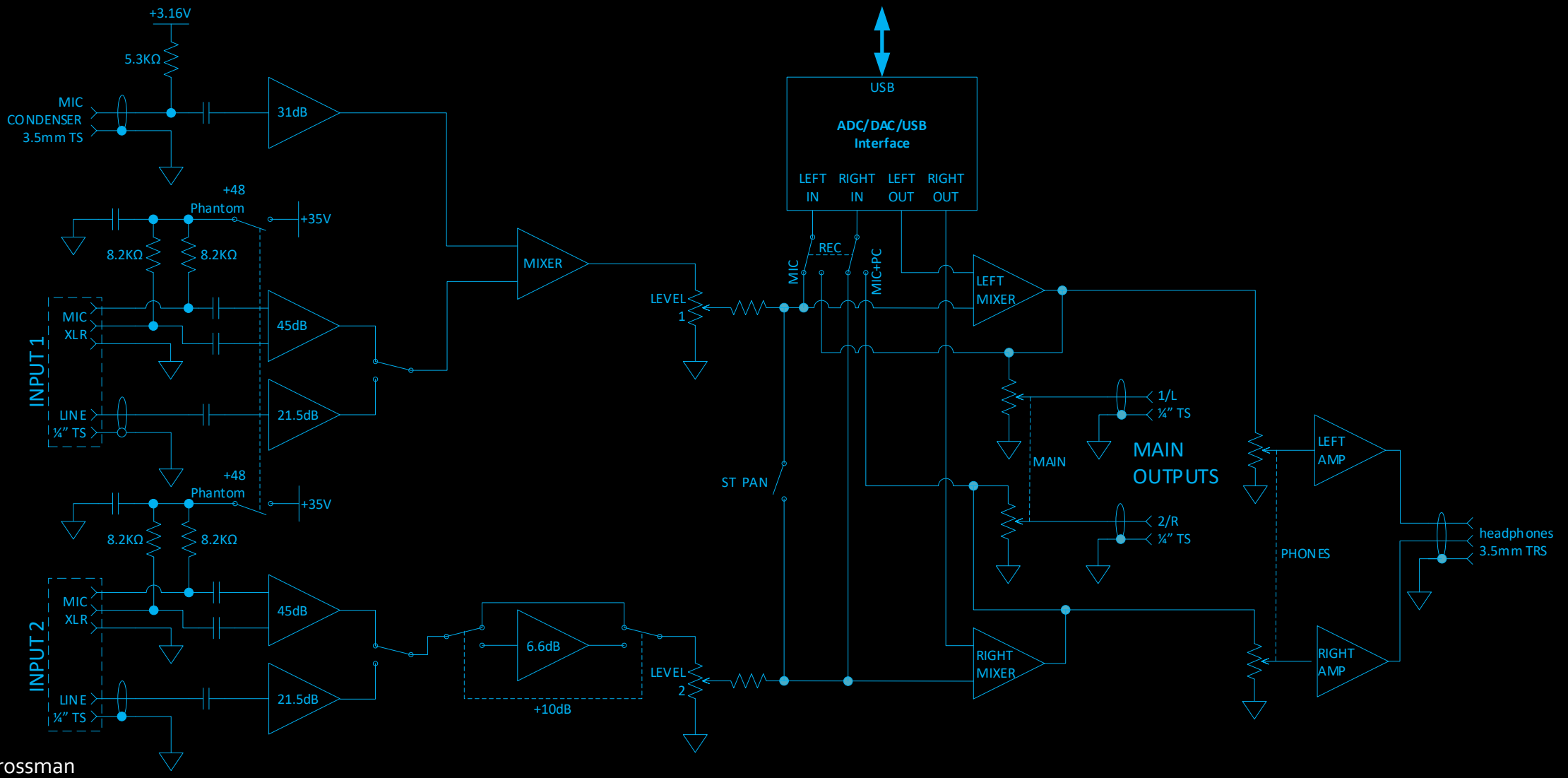

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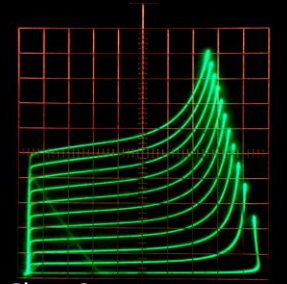
Teyun Q-12 3dB Measured Gain Differential Input XLR to Output Jack

All gain controls are at full clockwise rotation



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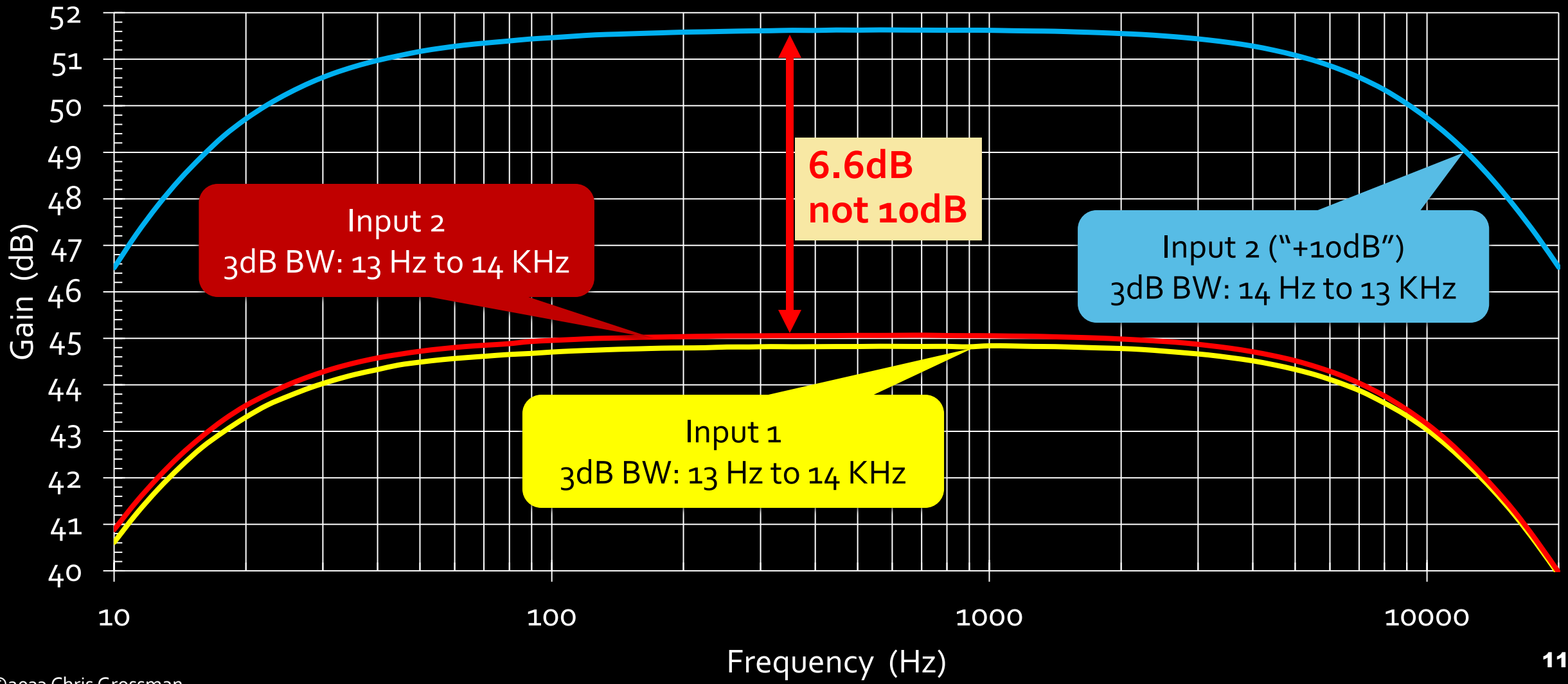

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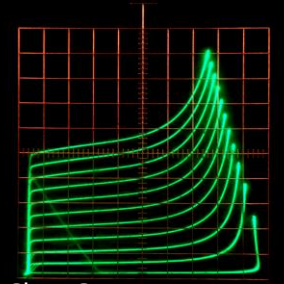
Teyun Q-12 Measured Phase
Differential Input XLR to Output Jack

All gain controls are at full clockwise rotation



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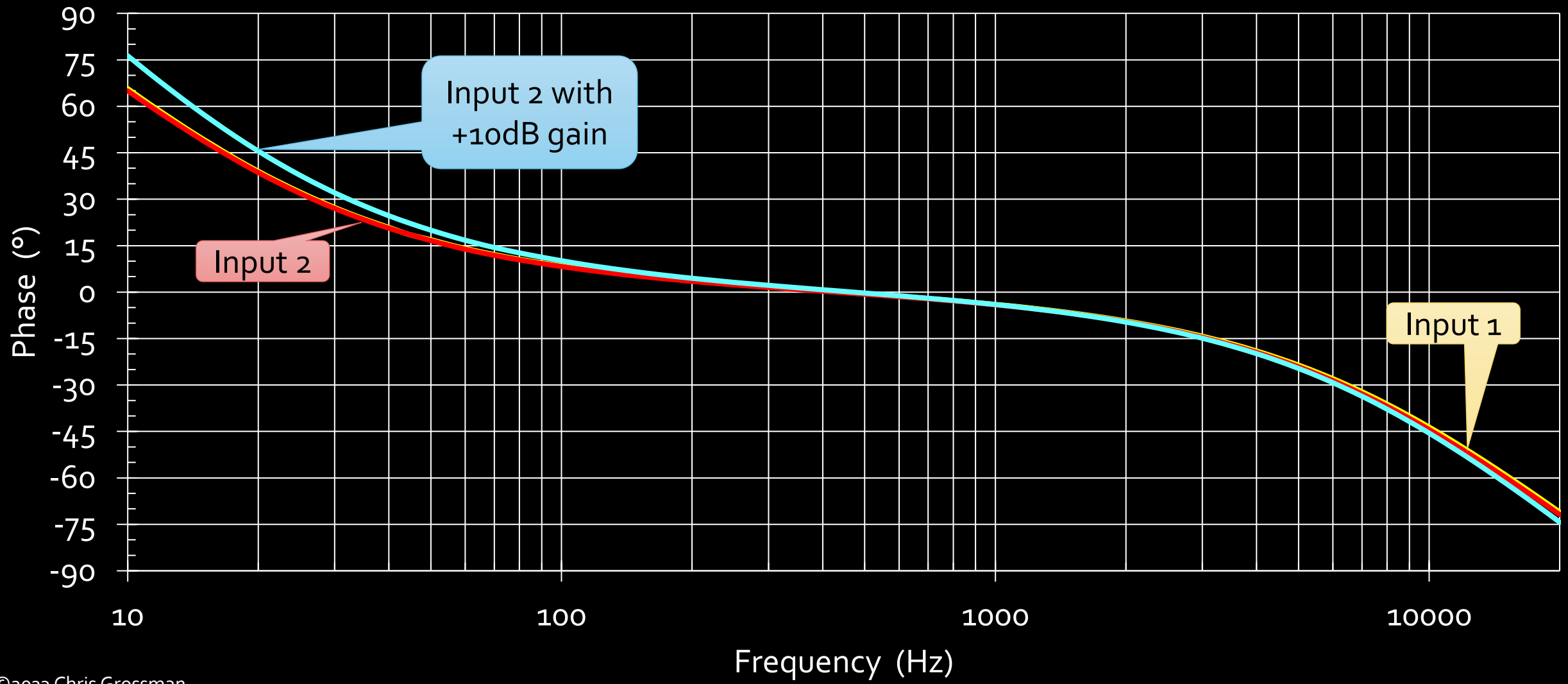

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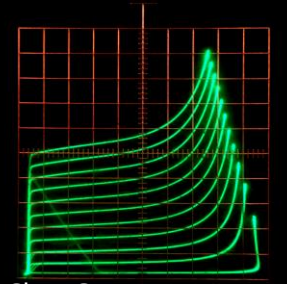
Teyun Q-12 Measured Gain
¼” Phone Jack Input to Output Jack

All gain controls are at full clockwise rotation



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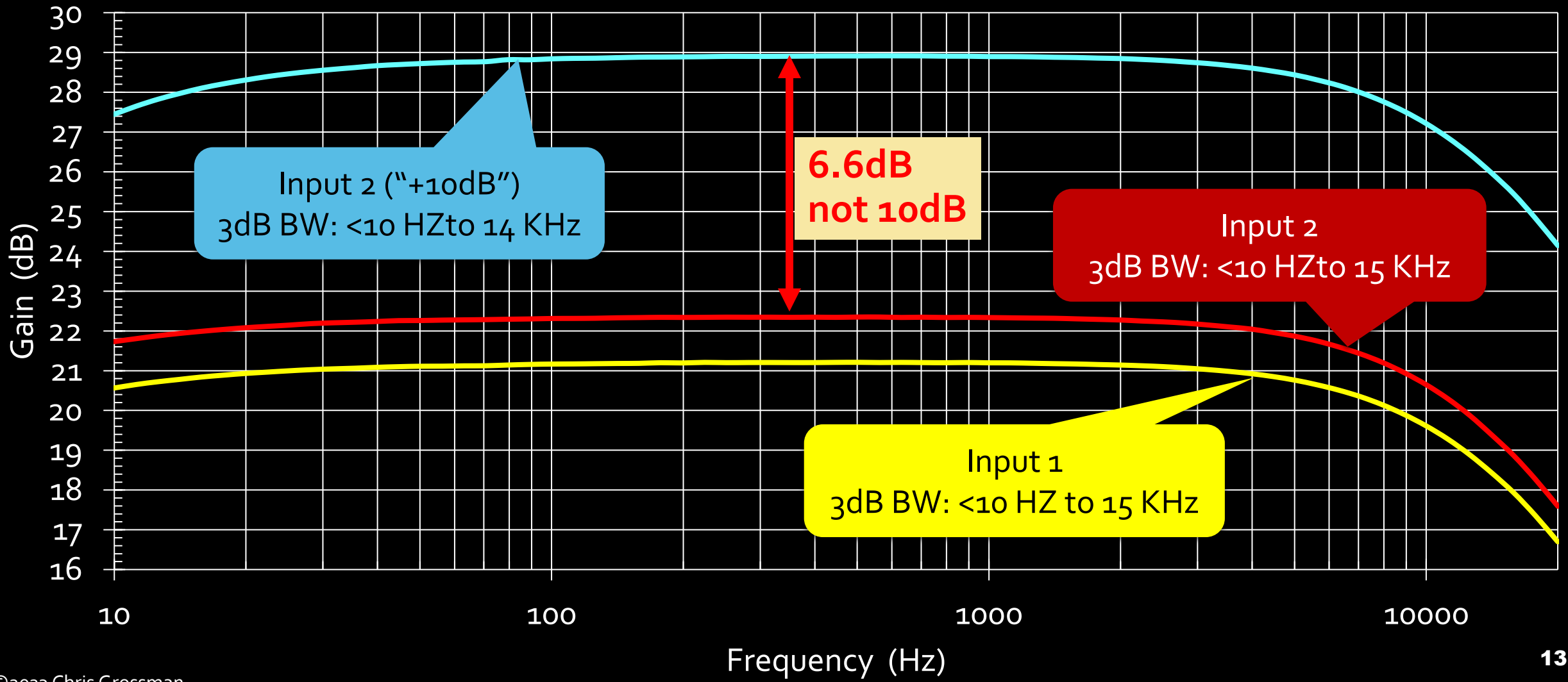

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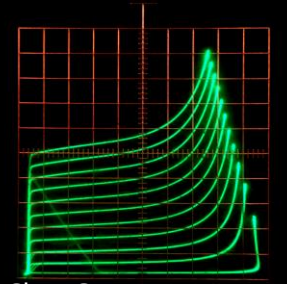
Teyun Q-12 Measured Phase
¼” Phone Jack Input to Output Jack

All gain controls are at full clockwise rotation



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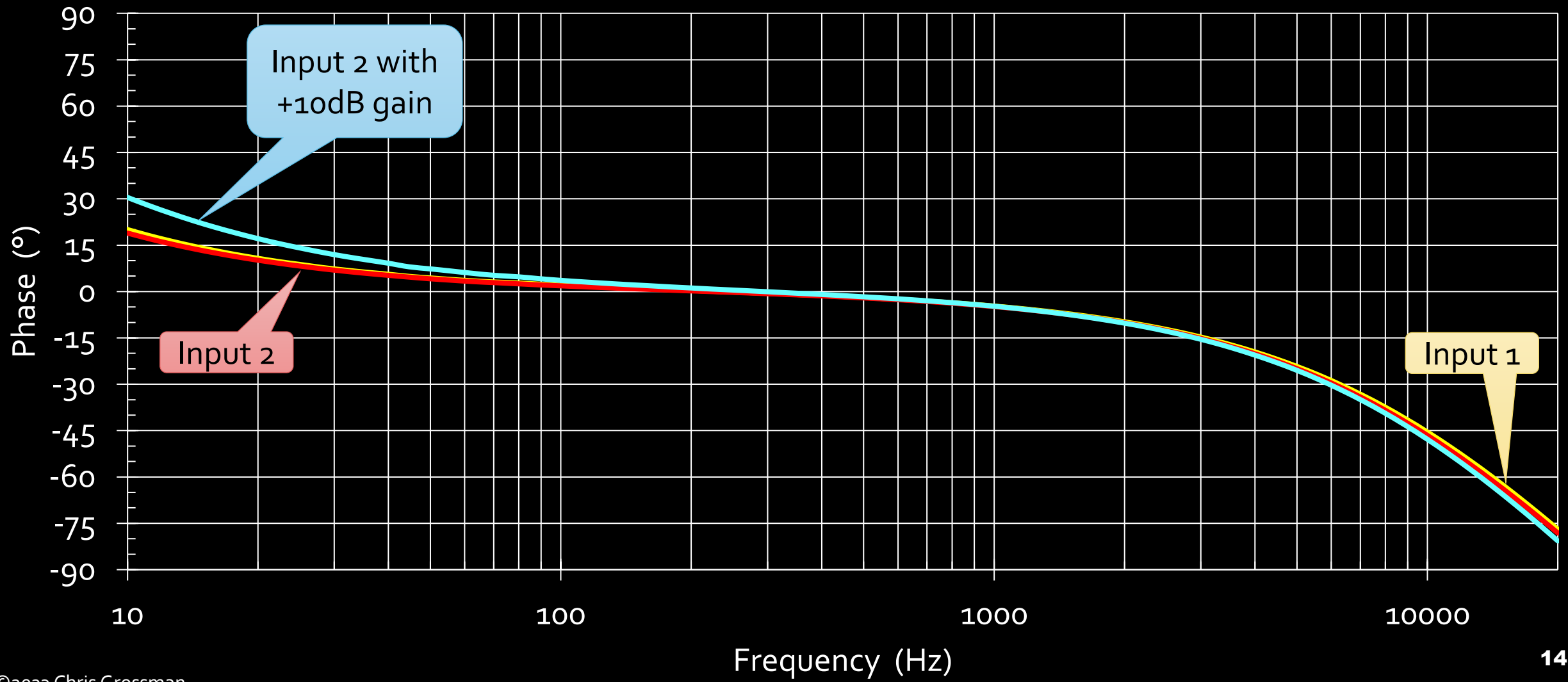

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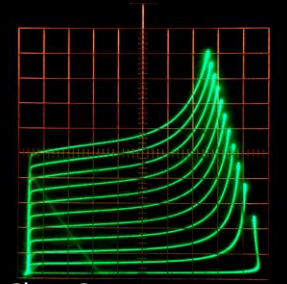
Teyun Q-12 Measured Gain & Phase Condenser Mic Input to Output Jack

All gain controls are at full clockwise rotation



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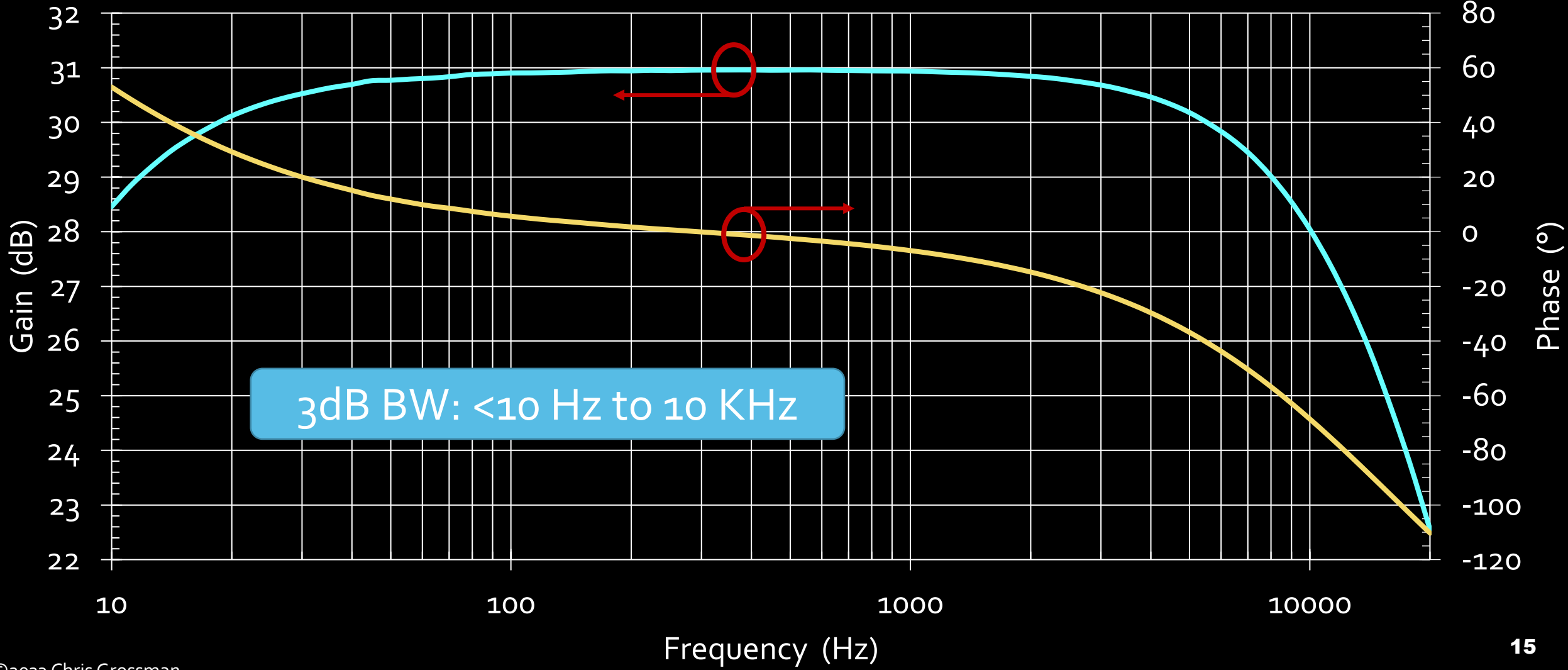

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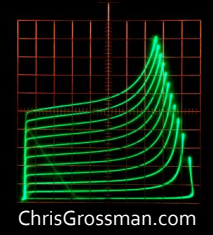
Specifications on the Teyun Q-12 Box



PRODUCT PARAMETER:

MIC INPUT 1-2(balanced)

~~Frequency response: -1/-1dB, 20Hz – 20kHz~~ 20 Hz to 13 KHz (3dB)

Dynamic Range: 82 dB, A weighting

CMRR > 36dB

0.1% to 0.18% ~~THD+N 0.03%, 1kHz~~

~~Maximum input level: +6dBu Input resistance 4kΩ~~ -34dBV (20mVrms)

+45dB or +51.6dB ~~Gain range: +3dB- +60dB~~

HI-Z INPUT 2 (Unbalanced)

~~Maximum input level: +3.0dBV~~ -10.5dBV (300mVrms)

Input resistance: 1 MΩ

+21.5dB or +28.16dB ~~Gain range: 0dB – +40dB~~

LINE INPUT ½(balance)

Maximum input level: +10dBu not tested

Input resistance: 18.5kΩ

Gain range: -10dB – +40dB not tested

~~MAIN OUTPUT(Impedance balance)~~

~~Frequency response: -1/-1dB, 20Hz–20kHz~~

~~Dynamic Range: 82 dB, A weighting~~

~~THD+N 0.03%, 1kHz,~~

~~Maximum input level: +6dBu~~

~~Input resistance 100kΩ~~

PHONES

subjectively sounds very good, but not tested Maximum input level: 15mW +15mW, 40Ω

USB

Technical specifications: full speed USB2.0,

16-bit, 48kHz Plug & play compatible with Windows 10 (USBAudio2.0) & Mint Linux

XLR INPUT

Polarity: 1 Grounding 2: Hot wire (+) 3: Cold wire (one)

~~Power requirements: > 5W~~ <1.8W without headphones

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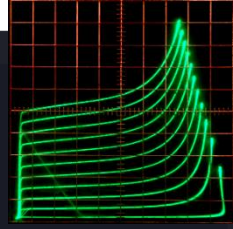
Using the Teyun Q-12 with OBS Studio



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OBS 29.1.3 - Profile: Untitled - Scenes: Untitled

File Edit View Docks Profile Scene Collection Tools Help

Advanced Audio Properties

Name	Status	Volume %	Mono	Balance	Sync Offset	Audio Monitoring	Tracks
Desktop Audio	Active	0.0 dB		L R	0 ms	Monitor Off	1 2 3 4 5 6
Teyun Q-12	Active	16.0 dB		L R	0 ms	Monitor Off	1 2 3 4 5 6

Add 16dB to 20dB of gain here

Active Sources Only

Close

BenQ 4K Monitor Properties Filters Display BenQ LCD: 3840x2160 @ 0,0 (Primary Monitor)

Sources

- Asus 1080 Display
- BenQ 4K Monitor
- Teyun Q-12
- microphone rear panel
- LifeCam
- LINE IN
- dell webcam

Audio Mixer

Desktop Audio 0.0 dB

Teyun Q-12 16.0 dB

Right click and select "Advanced Audio Properties"

Controls

Start Streaming

Start Recording

Start Virtual Camera

Studio Mode

Settings

Exit

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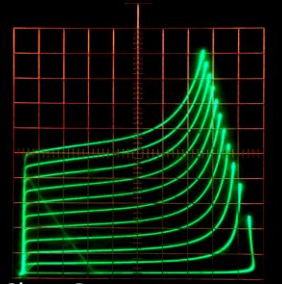
LIVE: 00:00:00 REC: 00:00:00 CPU: 0.2%, 30.00 fps

Teyun Q-12 Cell Service EMI Susceptibility



- I live near cell phone towers the sometimes cause EMI issues
- With no analog inputs connected I do not detect any EMI susceptibility in the unit
- With differential XLR microphones connected I do not detect any EMI susceptibility in the unit
- When I connect my Shure PGA31 condenser headset mic I detect low level cell phone EMI in the headphone audio
  - I have no way to know if the EMI is being detected (converted to audio) by the mic or the Teyun
- The "Noise Suppression" filter in OBS Studio eliminates the noise in the recording
  - I have two short examples with and with the OBS "Noise Suppression" filter

Please note that I have turned up the volume on the following recordings to make the noise more audible than in practice

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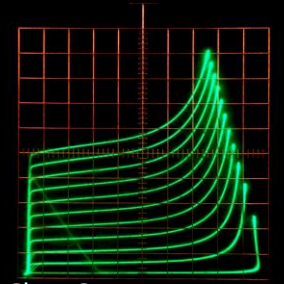
The Good & Bad of the Teyun Q-12



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👍 GOOD

- Excellent physical construction
  - ☆ I will release a Teyun Q-12 teardown & measurement detail video after this one
- True differential XLR inputs
  - Good common mode rejection!
- 3.5mm TS condenser mic input
  - Hard to find feature
- Headphone monitor
  - real time / no latency
- Usable with OBS Studio
  - 16dB to 20dB of gain added with "Advanced Audio Properties"
- It has knobs I can use to adjust microphone and headphone levels
- It is plug-and-play with Windows & Linux (Mac?)
  - No special software is needed

👎 BAD

- Flaccid 48V phantom power
  - 31-35V is too low and not stable
  - 8.2KΩ resistors are too large
    - Should be 6.8KΩ
- Needs more gain
  - 20 dB or more
- Signal Level LEDs
  - Input level LEDs have no relation to the ADC input levels
  - Since I must add gain in OBS Studio the MAIN LEDs are not useful either
- 3.5mm TS condenser mic input
  - 3.16V is on the low side, should be 5V to 10V
  - Barley perceptible "pop pop" noise from local cell service
    - The OBS "noise suppression" filter kills it
- Mostly questionable specifications
  - Unfortunately, this is true with many audio devices

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Teyun Q-12 Conclusion

- 48 KHz 16 bits
  - I have been using my 16 bit motherboard inputs for years
  - I use a 48 KHz sample rate for all my videos
- It is flawed but still useful
  - I'm using it to record the sound for this video
- I only paid $17 for it delivered to my door!
  - I put a link in the description text below the video
  - A Yamaha AG03 is more than 10× the price of the Q-12
- Hopefully, I've given you enough information to decide if the Teyun Q-12 right for you!
  - I've decided to keep mine

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