

# 542

## 500 Series Tape Emulator



# Operations Manual

# Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases or beer glasses, shall be placed on the apparatus.
16. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
17. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
18. This apparatus has been equipped with a rocker-style AC mains power switch. This switch is located on the rear panel and should remain readily accessible to the user.
19. The MAINS plug or an appliance coupler is used as the disconnect device, so the disconnect device shall remain readily operable.



**20. NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**CAUTION:** Changes or modifications to this device not expressly approved by Rupert Neve Designs LLC, could void the user's authority to operate the equipment under FCC rules.

**21.** This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

**ATTENTION** — *Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

**22.** Exposure to extremely high noise levels may cause permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible noise level exposures shown in the following chart. According to OSHA, any exposure in excess of these permissible limits could result in some hearing loss. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels use hearing protectors while the equipment is in operation. Ear plugs or protectors in the ear canals or over the ears must be worn when operating the equipment in order to prevent permanent hearing loss if exposure is in excess of the limits set forth here:

Duration, per day in hours	Sound Level dBA, Slow Response	Typical Example
8	90	Duo in small club
6	92	
4	95	Subway Train
3	97	
2	100	Typical music via head phones
1.5	102	
1	105	Siren at 10 m distance
0.5	110	
0.25 or less	115	Loudest parts at a rock concert

**CAUTION AVIS**

RISK OF ELECTRIC SHOCK. DO NOT OPEN. RISQUE DE CHOC ELECTRIQUE. NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE.

AVIS: POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

*Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'électrocution.*

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

*Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.*

This symbol indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

**WARNING** — To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

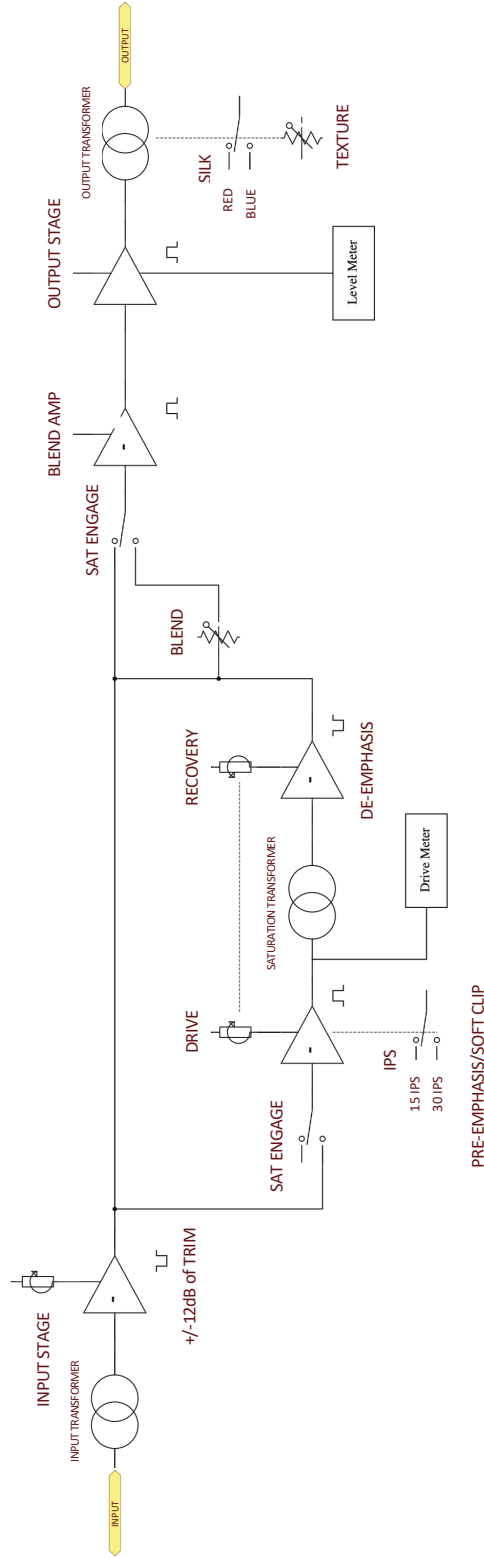
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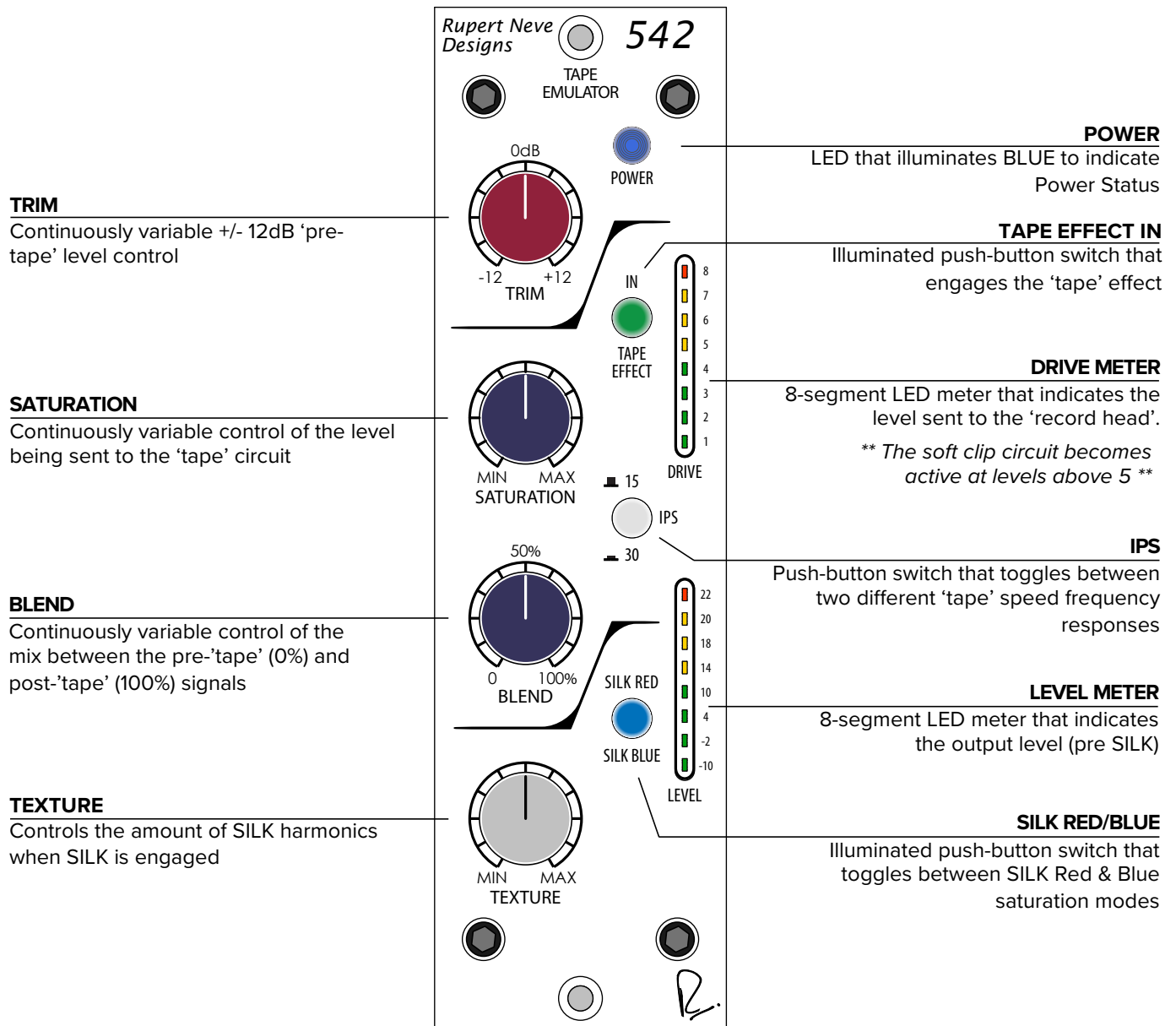
# 542 Block Diagram

## Rupert Neve Designs 542: Tape Emulator

Thank you for purchasing the Rupert Neve Designs 542 Tape Emulator. We hope you enjoy using this product as much as we have enjoyed designing and building it. The 542 is designed to emulate the unmistakable harmonic saturation of analog tape. Utilizing a custom RND interstage transformer to simulate a 'record head' in tandem with a 'replay' amplifier, 2 'IPS' 'tape' speed settings and our acclaimed SILK saturation circuit, the 542 provides many ways to introduce pleasing harmonics to any source.



# 542 Front Panel



# 542 Front Panel Features

## POWER

LED that illuminates BLUE to indicate Power Status of the 542.

## TRIM

Continuously variable +/- 12dB 'pre-tape effect' level control.

## SATURATION

Continuously variable control of the level being sent to the 'tape effect' circuit. As Saturation level is increased, saturation on the 'record head' rises and the 'replay' amplifier gain reduces so the output signal remains at a consistent level.

## TAPE EFFECT IN

Illuminated push-button switch that engages the 'tape effect' circuit.

## DRIVE METER

8-segment LED meter that indicates the level sent to the 'record head'.

*\*\* The Soft Clip Circuit will become active once the 'Drive' level has exceeded 5 \*\**

## BLEND

Continuously variable control of the blend between the pre-'tape' (0%) and post-'tape' (100%) signals.

## IPS

Push-button switch that toggles between two different 'tape' speed frequency responses.

## LEVEL METER

8-segment LED meter that indicates the output level. This meter is displaying the output level Pre-SILK.

## SILK RED/BLUE

Illuminated push-button switch that toggles through the three available SILK modes: OFF, RED, and BLUE. RED enhances harmonic content in high mid and high frequencies. BLUE enhances harmonic content in low and low mid frequencies.

## TEXTURE

Continuously variable potentiometer that controls the amount of SILK harmonics when SILK is engaged.

# 542 Specifications

## **TAPE EFFECT DISENGAGED:**

### **Total Harmonic Distortion and Noise (NO SILK)**

**1 kHz, +20 dBu Output Level**

Better than 0.0025%

**20 Hz, +20 dBu Output Level**

0.07% typical (2nd & 3rd order harmonics)

### **Noise (Measured at main output, Un-weighted, 20 Hz - 22 kHz, 40 ohm balanced source)**

**Unity Gain**

Better than -100 dBu

### **Frequency Response**

**(Main Output, no load)**

**5 Hz - 60kHz**

+/- 0.25 dB

**120 kHz**

-2 dB

## **TAPE EFFECT ENGAGED:**

### **Total Harmonic Distortion and Noise (NO SILK)**

**15 IPS, Input @ 0dB, Saturation @ MIN**

0.4 % @ 3 kHz typical

1 % @ 175 Hz typical

**15 IPS, Input @ 0dB, Saturation @ MAX**

1 % @ 6 kHz typical

0.3 % @ 1 kHz to 3 % @ 50 Hz typical

**30 IPS, Input @ 0dB, Saturation @ MIN**

1 % @ 1 kHz typical

0.6 % @ 400 Hz to 5 % @ 20 Hz typical

**30 IPS, Input @ 0dB, Saturation @ MAX**

1.5 % @ 20 kHz to 0.4 % @ 1 kHz typical

2 % @ 50 Hz typical

### **Frequency Response**

**15 IPS, Input @ 0dB, Saturation @ MIN**

-3 dBu @ 28 kHz

0 dBu @ 10 Hz

+5 dBu Peak @ 60 Hz

**15 IPS, Input @ 0dB, Saturation @ MAX**

-3 dBu @ 20 kHz

-3 dBu @ 12.5 Hz

+2.4 dBu Peak @ 60 Hz

# 542 Specifications (continued)

## Frequency Response (continued)

**30 IPS, Input @ 0dB, Saturation @ MIN**

-3 dBu @ 120 kHz  
-3 dBu @ 10 Hz  
+3.15 dBu Peak @ 125 Hz

**30 IPS, Input @ 0dB, Saturation @ MAX**

-3 dBu @ 100 kHz  
-3 dBu @ 12.5 Hz  
+1.3 dBu Peak @ 110 Hz

**Noise (Measured at main output, Un-weighted, 20 Hz - 22 kHz, 40 ohm balanced source)**

**Saturation @ MIN**

Better than -100 dBu

**Saturation @ MAX**

Better than -100 dBu

**Power Consumption (+/-16 VDC)**

110-125 mA

**Shipping Dimensions**

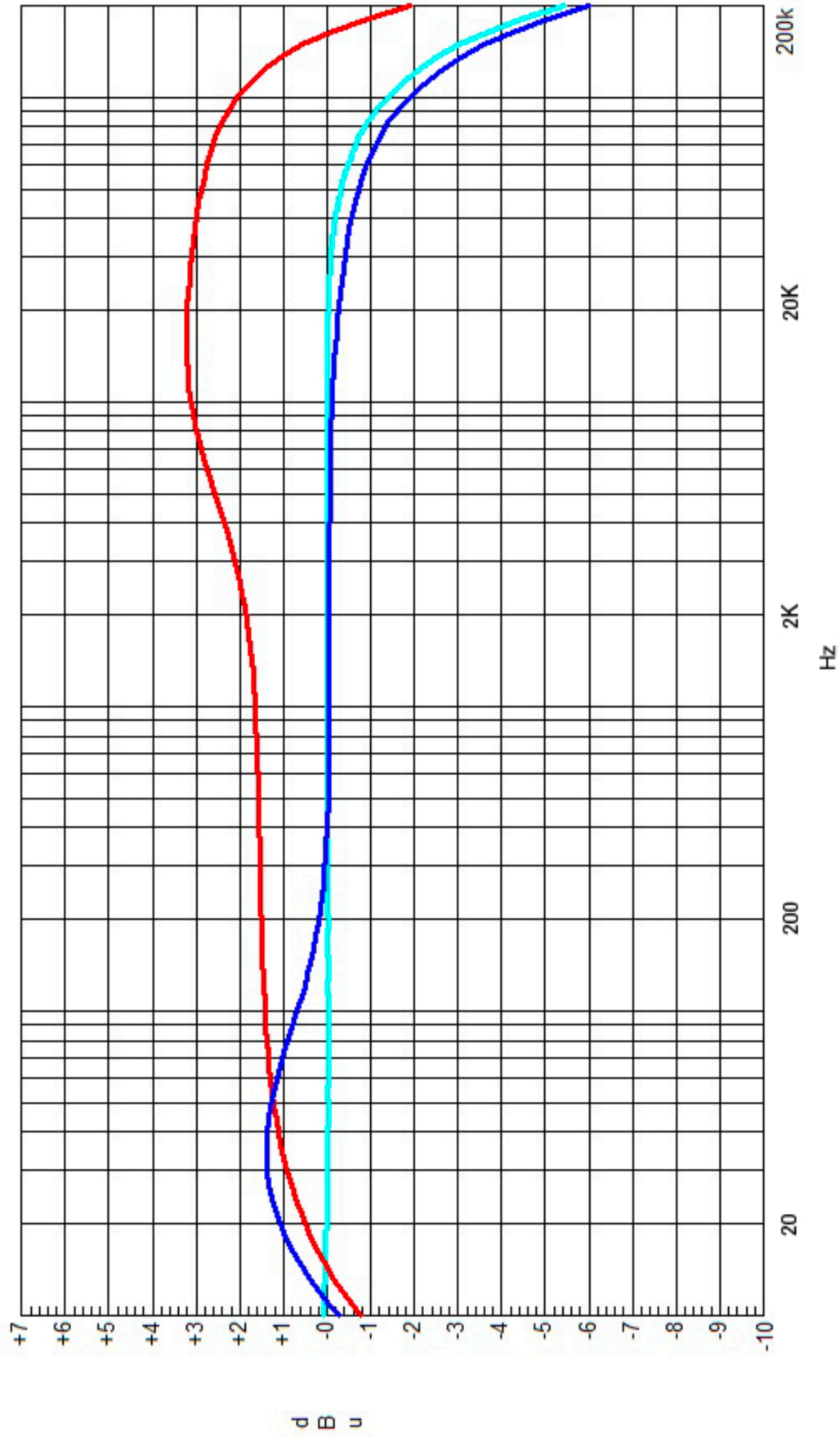
7.75" (19.7 cm) x 10" (25.4 cm) x 3" (7.62 cm)

**Shipping Weight**

3 lbs, 1.4 kg

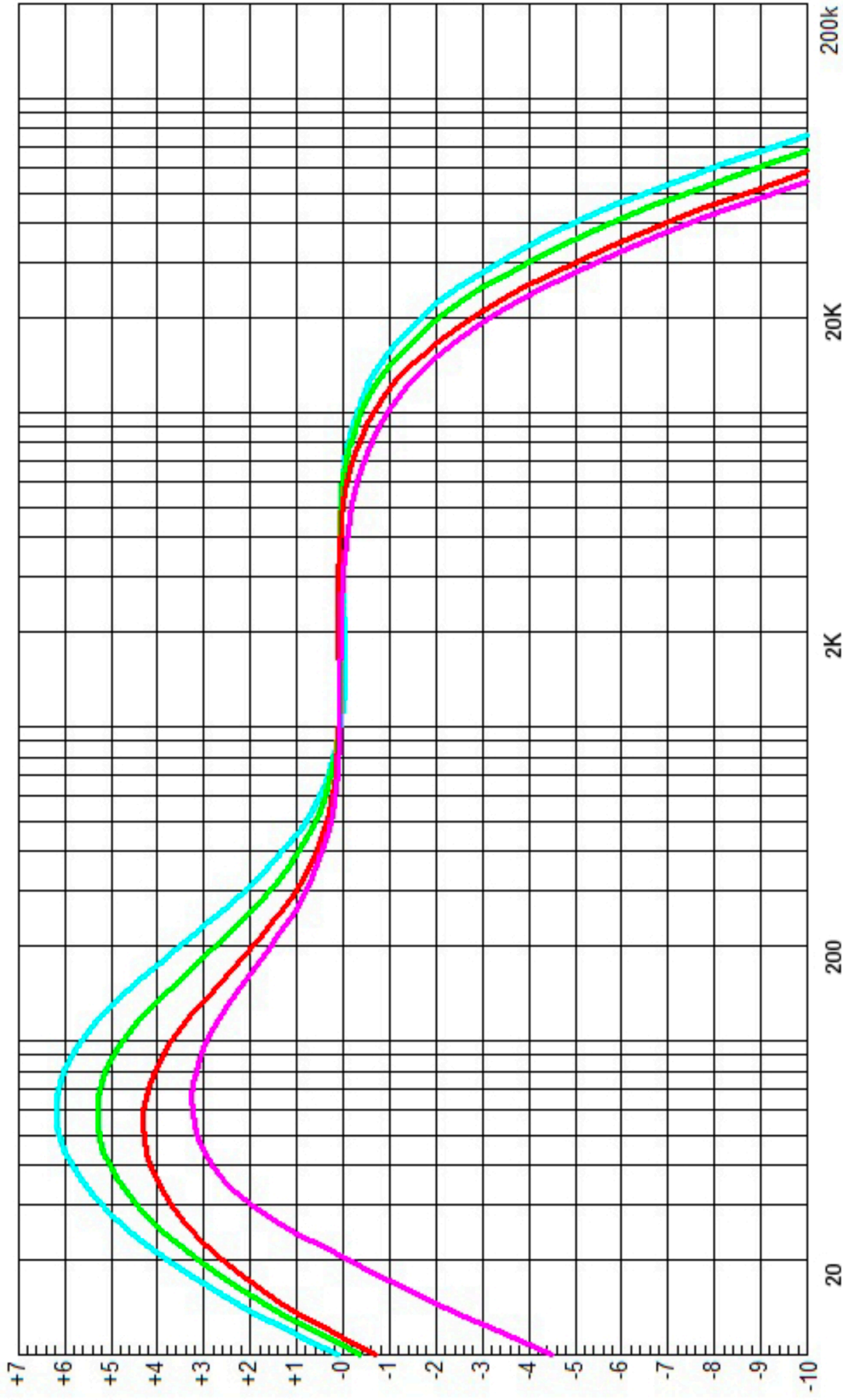


# 542 Frequency Response: Tape Effect Disengaged



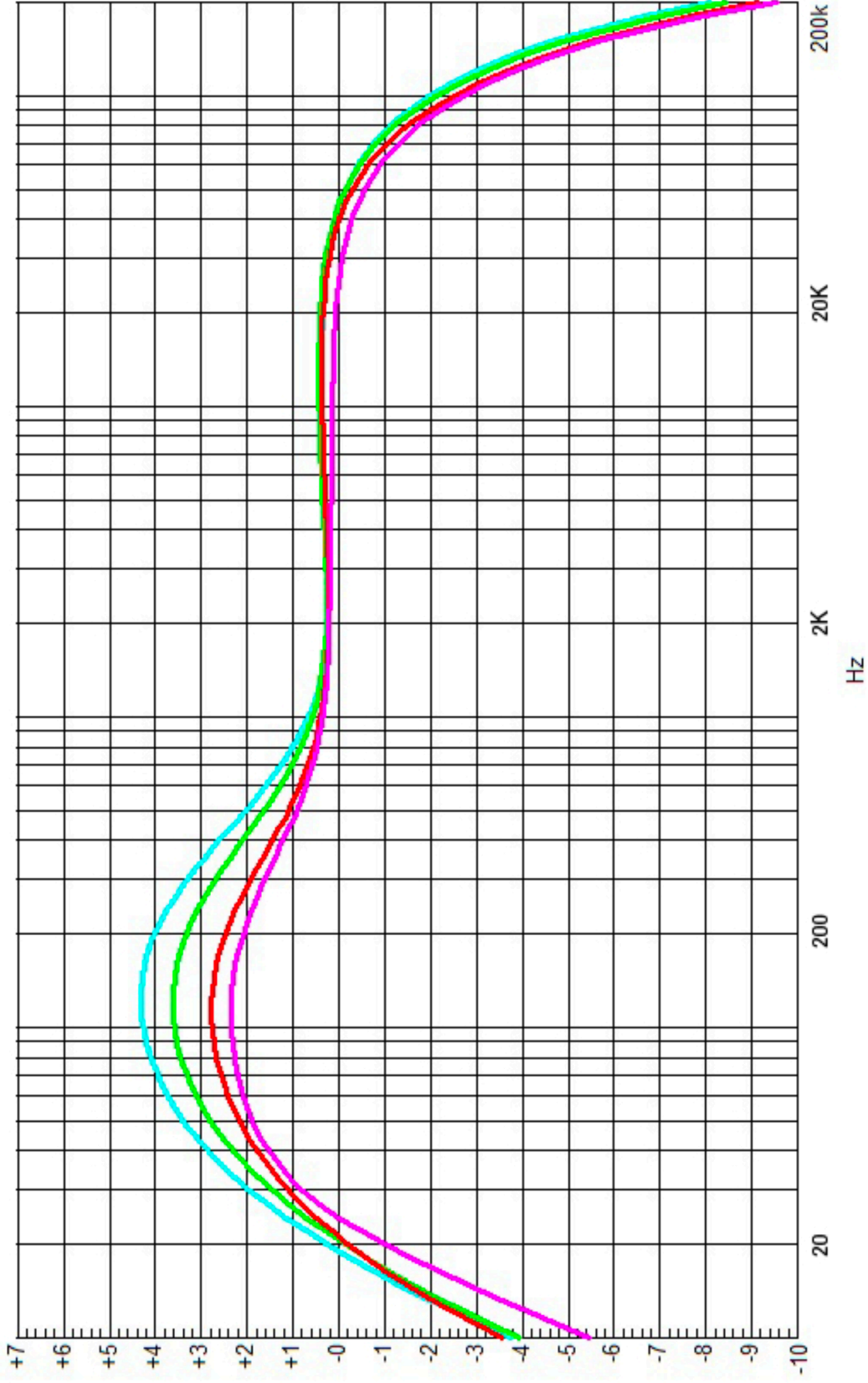
Cyan: No Silk  
Blue: Silk Blue Max Texture  
Red: Silk Red Max Texture

# 542 Frequency Response: Tape Effect Engaged @ 15 IPS



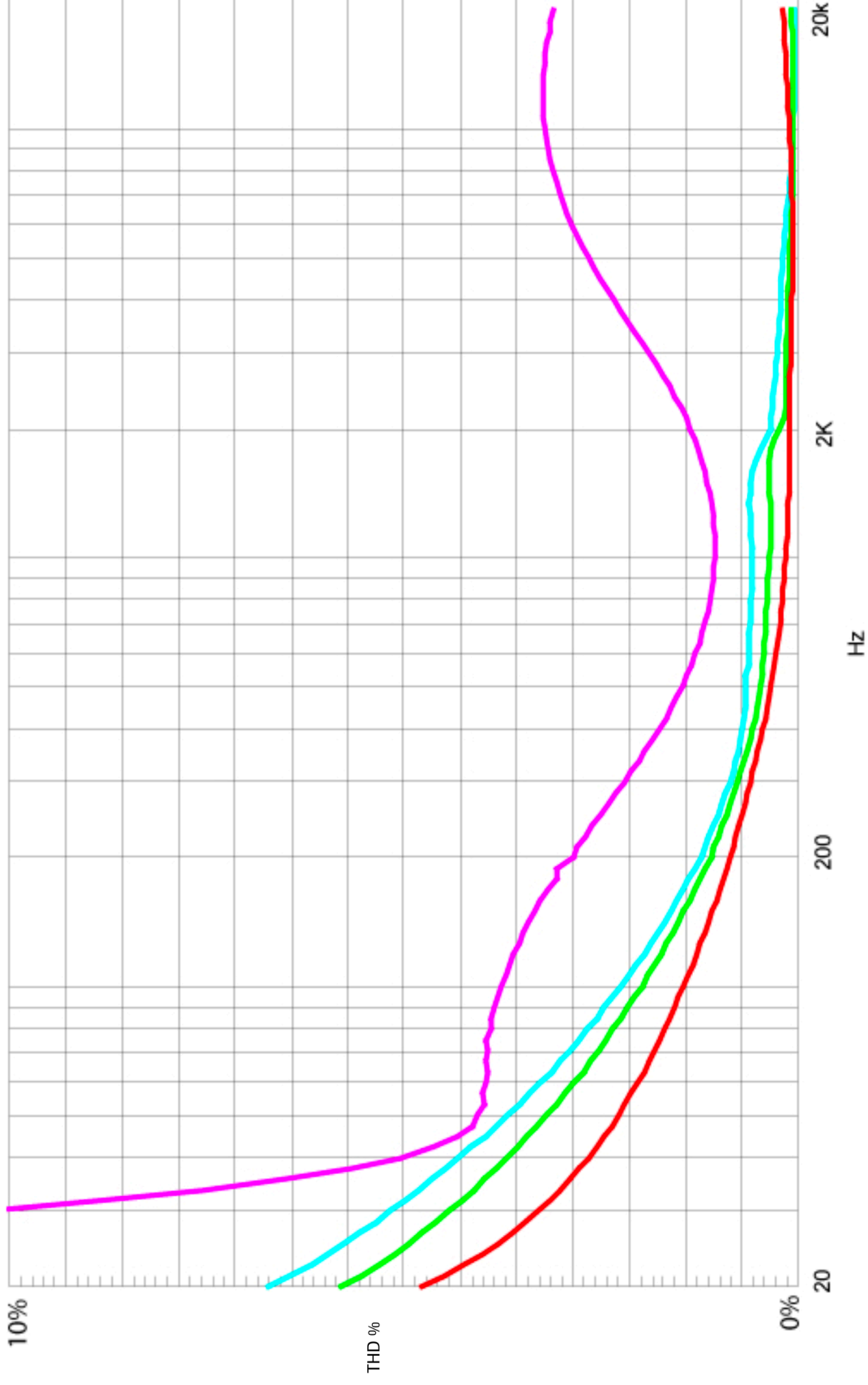
Magenta: Saturation at Max  
Red: Saturation at 2 o'clock  
Green: Saturation at 10 o'clock  
Cyan: Saturation at Min

# 542 Frequency Response: Tape Effect Engaged @ 30 IPS



Magenta: Saturation Max  
Red: Saturation @ 2 o'clock  
Green: Saturation @ 10 o'clock  
Cyan: Saturation @ Min

# 542 Total Harmonic Distortion by Saturation Level



Red: Input 0dBu Saturation at Min (Drive = 2)  
Green: Input 0dBu Saturation @ 10 o'clock (Drive = 2)  
Cyan: Input 0dBu Saturation @ 2 o'clock (Drive = 3)  
Magenta: Input 0dBu Saturation @ Max (Soft Clipping) (Drive = 6)

## **PRODUCT WARRANTY**

Rupert Neve Designs warrants this product to be free from defects in materials and workmanship for a period of three (3) years from date of purchase, and agrees to remedy any defect identified within such three year period by, at our option, repairing or replacing the product.

## **LIMITATIONS AND EXCLUSIONS**

This warranty, and any other express or implied warranty, does not apply to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, damaged by any dry cell battery, or which has been altered or modified in any way. This warranty is extended to the original end user purchaser only. A purchase receipt or other satisfactory proof of date of original purchase is required before any warranty service will be performed. THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, TO THE EXTENT ALLOWED UNDER APPLICABLE STATE LAW. IN NO EVENT SHALL RUPERT NEVE DESIGNS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of consequential damages or limitations on how long an implied warranty lasts, so this exclusion may not apply to you.

## **WARRANTY SERVICE**

If you suspect a defect in this product, please contact our support staff for troubleshooting by phone (512-847-3013) or email ([service@rupertneve.com](mailto:service@rupertneve.com)). If it is determined that the device is malfunctioning, we will issue a Return Material Authorization and provide instructions for shipping the device to our service department.



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