

VIDEO PRE AND DE-EMPHASIS IN TRANSMISSION, WHY IS IT USED?

Video Pre-Emphasis and De-Emphasis is used with Frequency Modulation (FM) transmission systems. It is used to offset the triangular noise distribution created by FM transmission systems. FM Fiber, Satellite and microwave transmission systems exhibit this kind of triangular noise pattern. This noise reduction technique uses "ROOFING" that is the curve of the Emphasis bottoms out, goes to the minimum level and stops changing at predetermined frequencies. The use of Video Pre-Emphasis and De-Emphasis will result in substantial improvement in the received Signal-to-Noise Ratio.

NTSC VIDEO PRE/DE-EMPHASIS NETWORK LOSS

<u>FREQUENCY</u>	<u>PRE-EMPHASIS (dB)</u>	<u>DE-EMPHASIS (dB)</u>	<u>NOTATION</u>
1.00 KHz	-13.3999	- 0.0001	
10.00 KHz	-13.3880	- 0.0120	
100.00 KHz	-12.3650	- 1.0350	
195.75 KHz	-10.4000	- 3.0000	(3dB INFLECTION POINT)
404.53 KHz	- 6.7000	- 6.7000	(PRE/DE-EMPH. EQUAL LOSS)
761.60 KHz	- 3.0000	-10.4000	(3dB INFLECTION POINT)
1.00 MHz	- 2.3200	-11.0800	
2.00 MHz	- 0.7200	-12.6800	
3.00 MHz	- 0.3400	-13.0600	
4.00 MHz	- 0.1900	-13.2100	
5.00 MHz	- 0.1200	-13.2800	
		-13.4000	(THEORETICAL LIMIT)

FORMULA: $dB = 10 \text{ LOG } \frac{1 + 28.58(F \text{ squared})}{1 + 1.306(F \text{ squared})}$

F = FREQUENCY OF INTEREST

TIME CONSTANT = 0.8162 microseconds

ROOFED LOSS = 13.4 dB

In-line Pre-emphasis and De-emphasis passive filters are available from FM SYSTEMS, INC.



The VDE-NTSC is a video De-Emphasis Network for NTSC color video. It is used to offset triangular noise distribution created by FM transmission systems. FM fiber, Satellite and microwave transmission systems exhibit this kind of triangular noise pattern. This standard video De-Emphasis noise reduction technique requires "ROOFING". Roofing occurs when the video de-emphasis "signal curve" bottoms out, this prevents uncontrolled excessive high frequency roll-off.

The video de-emphasis network uses a video standard time constant of 0.8162 microseconds and is roofed at 13.4 dB. This inline network uses two 75 Ohm (female) BNC connectors mounted in a light weight die-cast aluminum housing that can be attached directly onto the video cables. The network is non-polar and can be connected in either direction on the video cables.

Use of pre-emphasis (VPE-NTSC) at the transmitter and de-emphasis (VDE-NTSC) at the receiver will result in a substantial noise improvement on your video signal.