

Phase	Subphase	Process	Defects Introduced	Possible processing	
Scene	Scene	Periodic signal	Pattern noise	Fourier	
		Subject at strong angle	Perspective effect	Perspective Correction	
		Long distance	Small detail of interest	Zoom (interpolation)	
		Wide angle	Most of the image is not of interest	Crop	
Camera	Optics	Light travels through the air	Turbulence blur	Deblurring	
		Light passes through the lens	Optical distortion	Lens correction	
		Light passes through the lens	Chromatic aberration	Compensation of chromatic aberration	
	Sensor	Light passes through the lens	Optical blur (out of focus)	Deblurring	
		Light passes through the lens	Motion deblurring (too fast subject)	Deblurring	
		Light passes through the lens	Loss of detail	Sharpening	
Processing	Sensor	Light hits the sensor	Brightness, contrast, color issues	Adjustment filter	
		Light hits the sensor	Noise - Random - Impulsive - Pattern / Periodic	Denoising - Denoising - Median - Fourier	
	Processing	Number of pixels in the sensor	Low resolution	Zoom (interpolation)	
		Interlacing	Interlaced images	Deinterlacing	
		Frequency of acquisition	Low frame rate Rolling shutter	Temporal interpolation Rolling shutter correction	
		Demosaicking	Color artifacts		
	Processing	Intensity adjustments (exposure compensation...)	Brightness, contrast, color issues - Saturation - Level compression		
		Denoising	Loss of detail	Sharpening	
		Sharpening	Noise amplification	Denoising	
		Advanced in-camera processing (AI, special modes...)	Artifacts and various image alterations		
Encoding	Encoding	Format conversion	Interlacing	Deinterlacing	
		Compression	Wrong aspect ratio Lossy compression - Artifacts - Loss of detail	Aspect ratio correction Deblocking Sharpening	
	Storage	Transmission	Transmission of digital signal	Transmission error, packet loss	Digital data recovery
View	Transmission	Transmission of analog signal	Noise - Random - Pattern noise (electromagnetic interferences)	Denoise Fourier	
		Multiplexing	Spatial multiplexing	Loss of resolution	Crop / Zoom / Interpolation
	Temporal multiplexing		Loss of frames	Demultiplexing	
	Encoding	Digital multiplexing	Proprietary format	Stream separation (digital analysis)	
		Encoding	Format conversion	Interlacing	Deinterlacing
		Encoding	Compression	Wrong aspect ratio Lossy compression - Artifacts - Loss of detail	Aspect ratio correction Deblocking Sharpening
			Analog	VHS defect: scratches	Median
	View	Acquisition and conversion	Analog	VHS defect: misalignment	Alignment of lines
			Possible ways of acquisition and conversion: - DVR export functions (closed box) - Forensic analysis of DVR HDD (open box) - Format conversion and transcoding - Screen capture - Analog capture (frame grabber)	Wrong or excessive processing in the conversion tool (interpolation, interlacing, deblocking, intensity, colors)	Disable all postprocessing
				Wrong aspect ratio / resolution	Play at native resolution
			Compression artifacts	Export in uncompressed format if possible	
			Loss of frames	Capture at the right frame rate (higher)	
			Duplicate frames	Capture at the right frame rate (Lower)	
			Loss of metadata	Analyze bytestream / Reverse engineering	
			Loss of integrity (converted file is not the original)	Make process repeatable / Authenticate	
Playback	Playback	Using bad quality equipment	Bad quality image display	Use better equipment	
		Playing VHS	Scratches and misalignments caused by wear and tear	Capture and then analyze the digital copy	