IEEE Standard 519-1992 was developed for utility companies and their customers to limit harmonics and provide all users with better power quality. Some of the key areas of the standard are detailed in the following tables.

Bear in mind that dealing with harmonics may still be required, whether or not the goal is to meet IEEE 519 standards. In low-voltage systems (600V or less), capacitors are typically the lowest impedenace at harmonic frequencies, and experience very high RMS currents and increased heat which causes them to fail.

Voltage Distortion Limits

Bus Voltage at Point of Common Coupling	Individual Voltage Distortion (%)	Total Voltage Distortion THD (%)
69 kV and below	3.0	5.0
69.001 kV through 161 kV	1.5	2.5
161.001 kV and above	1.0	1.5

NOTE: High-voltage systems can have up to 2.0% THD where the cause is an HVDC terminal that will attenuate by the time it is tapped for a user.

Current Distortion Limits for General Distribution Systems (120 V Through 69 000 V)

Maximum Harmonic Current Distortion in Percent of I_L

Individual Harmonic Order (Odd Harmonics)

I_{SC} /I_L	<11	11<h<17	17<h<23	23<h<35	35<h	TDD
<20*	4.0	2.0	1.5	0.6	0.3	5.0
20<50	7.0	3.5	2.5	1.0	0.5	8.0
50<100	10.0	4.5	4.0	1.5	0.7	12.0
100<1000	12.0	5.5	5.0	2.0	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

Even harmonics are limited to 25% of the odd harmonic limits above.
Current distortions that result in a DC offset, e.g., half-wave converters, are not allowed

*All power generation equipment is limited to these values of current distortion, regardless of actual I_{SC} /I_L where
I_{SC} = maximum short-circuit current at point of common coupling
I_L = maximum demand load current (fundamental frequency component) at point of common coupling

Low-Voltage System Classification and Distortion Limits

	Special Applications*	General System	Dedicated System**
Notch Depth	10%	20%	50%
THD (Voltage)	3%	5%	10%
*Notch Depth (A_N)****	16 400	22 800	36 500

**Special applications include hospitals and airports*
***A dedicated system is exclusively dedicated to the converter load*
****In volt-microseconds at rated voltage and current*

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