

**A CASE STUDY: THE PERFORMANCE OF POWER CONDITIONING
UNIT IN FREESCALE SEMICONDUCTOR SG.WAY PETALING JAYA
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ABSTRACT

Freescale Semiconductor (FSL's) primary concern in respect of removal of the Power Conditioning Units (PCUs) is the risk of production loss through the exposure of the tester and handler to unacceptable levels of power quality, voltage sag, and harmonic. In recent years, with the increase number of testers drawing non-sinusoidal currents, power quality distortion has become a serious problem in FSL electrical power systems. In this paper, to access the impact voltage sag on the selected testers and their associated handler, evaluations of harmonic and the performance of the power conditioner have been studied. Then after theoretical study, harmonic and several power quality indices have been measured in a factory. The measurements show that based on the results of the tests conducted both the Piller and Datawave Power Conditioning Units (PCUs) offer good isolation of the input power supply from the harmonic loads and vice versa. Both also offer voltage sag correction and harmonic mitigation.

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CHAPTER 1

INTRODUCTION

1.1 Background

Freescale Semiconductor Malaysia Sdn Bhd (FSL), located in Petaling Jaya, is a modern semiconductor facility for assembly and testing of integrated circuits (IC). With a built-up area of 750,000 square feet on a 20 acre site, this facility is dedicated to assembly and testing of microprocessors, microcontrollers, digital signal processors, mixed signals and radio frequency (RF), integrated circuits (IC) for the networking and computing systems, transportation and standard product systems, wireless and broadband systems market segments.



Figure 1 : Freescale Semiconductor Petaling Jaya

On the other hand, it has currently utilizing a significant number of tester systems namely J750 and Ultraflex. Since it has result an increase in non linear power to building systems. Non-linear power has an impact on various safety provisions, for example harmonics in neutral conductors, load calculations and over-current protection. Whenever testers are added to the plant, FSL is also required to purchase new PCUs to support the testers.

Based on the above, the apparent need for PCUs results in:

1. Additional capital expenditure (to purchase the PCUs) whenever testers are added to the plant.
2. Increased operation and maintenance cost of the PCUs.