

POWER QUALITY OF PLN HOME GRID ANALYSIS

Measurements & Analysis of Public Electricity Parameters

We applied the Immediate Measurement Method to measure the Public Electricity parameter's, with and without load. These measurements were conducted 4 times, as follows:

1. Measurements of Public Electricity parameters without load were conducted once.
2. Measurements of Public Electricity parameters with a load of 1000 W (lamp B).
3. Measurements of Public Electricity parameters with a load of 2000 W (lamps D).
4. Measurements of Public Electricity parameters with a load of 3000 W (lamps E).

Result of measurements can be seen at:

Attachment 5: Printout min/max of Public Electricity.

Attachment 6: Data Table of The Public Electricity parameters.

1. Voltage Public Electricity

See Table 4.19 and Chart 4.19. Voltage Public Electricity.

Parameter	Public Electricity			
	W/O Load	Lamp B	Lamp D	Lamp E
Voltage (Volt)	220.400	218.700	215.800	213.000

Table 4.19 Voltage Table Public Electricity.

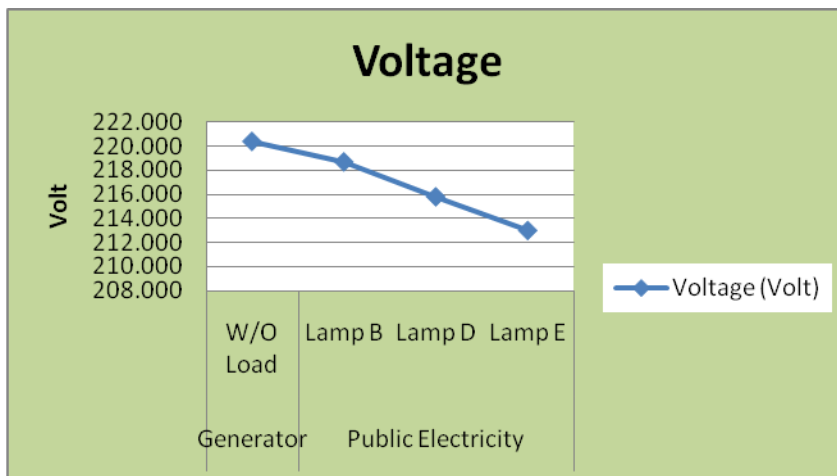


Chart 4.19 Voltage Chart Public Electricity.

Readings:

1. The Public Electricity supply voltage without load was 220.4 V.
2. The Public Electricity loaded with Lamp B (1000 W), dropped to 218.7 V.

3. The Public Electricity supply voltage loaded with lamps D (2000 W), dropped further to 215.8 V.
4. The Public Electricity supply voltage loaded with lamps E (3000 W), continue to drop to 213.0 V.

Analysis:

1. Public Electricity voltage dropped whenever a load was applied.
2. The decrease in voltage was proportional to the increasing in load, as shown in curve 4.20.

2. Current Public Electricity

See Table 4.20 and Chart 4.20. Voltage Public Electricity.

Parameter	Public Electricity			
	W/O Load	Lamp B	Lamp D	Lamp E
Current (Ampere)	0.000	4.110	8.110	12.040

Table 4.20 Current Table Public Electricity.

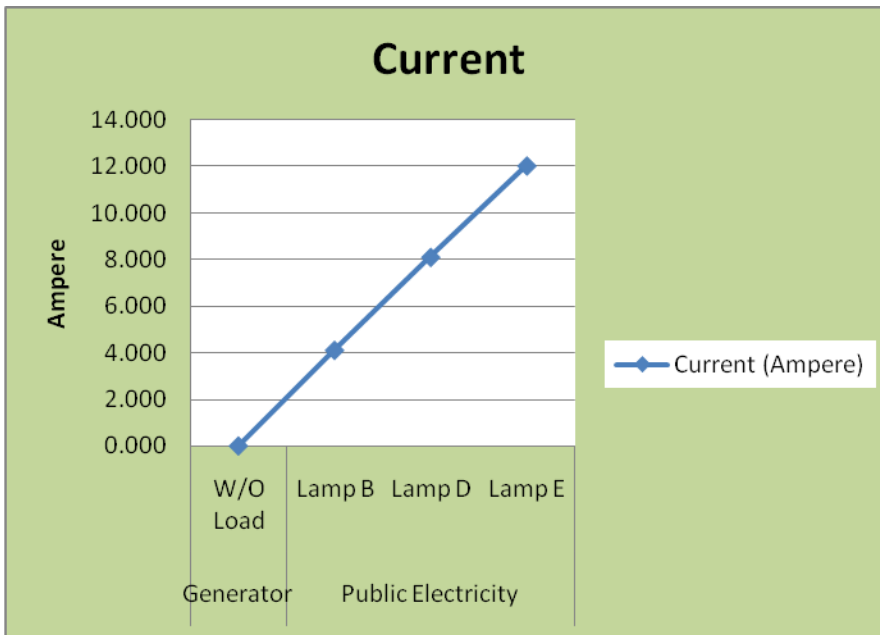


Chart 4.20 Current Chart Public Electricity.

Readings:

The Public Electricity's current increased linearly as compared to the increase of the load as seen in chart 4.20.

3. Active Power Public Electricity

See Table 4.21 and Chart 4.21. Active Power Public Electricity.

<i>Parameter</i>	<i>Public Electricity</i>			
	<i>W/O Load</i>	<i>Lamp B</i>	<i>Lamp D</i>	<i>Lamp E</i>
<i>Active Power (Watt)</i>	0.000	892.000	1742.000	2554.000

Table 4.21 Active Power Table Public Electricity.

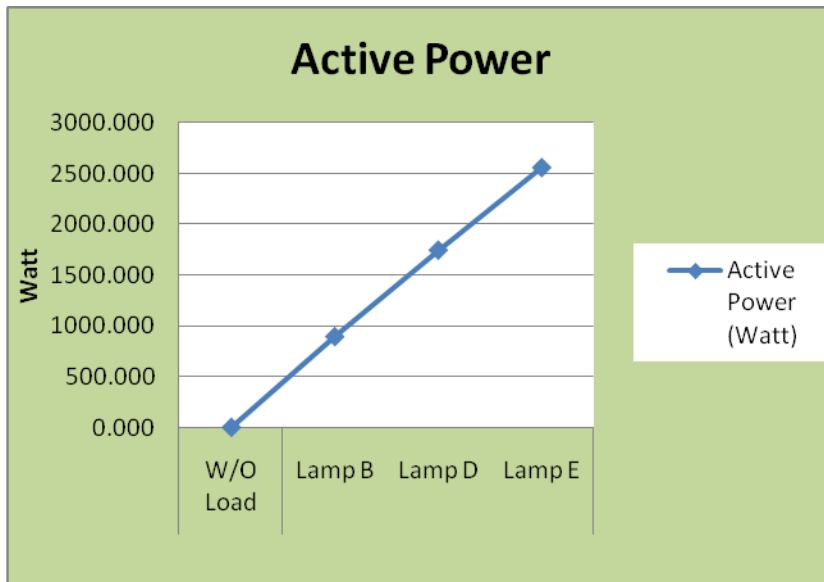


Chart 4.21 Active Power Chart Public Electricity.

Readings:

Active power is increasing linearly with the increasing load.

4. Apparent Power Public Electricity

See Table 4.22 and Chart 4.22. Apparent Power Public Electricity.

<i>Parameter</i>	<i>Public Electricity</i>			
	<i>W/O Load</i>	<i>Lamp B</i>	<i>Lamp D</i>	<i>Lamp E</i>
<i>Apparent Power (VA)</i>	0.000	898.000	1750.000	2564.000

Table 4.22. Apparent Power Table Public Electricity.

Life is 10% of what happens to me and 90% of how I react to it

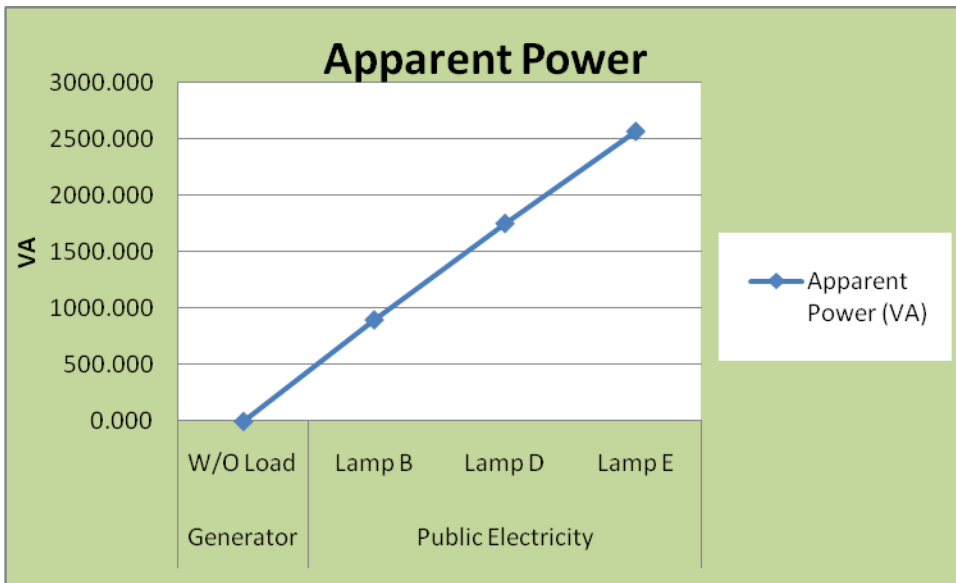


Chart 4.22. Apparent Power Chart Public Electricity.

Reading:

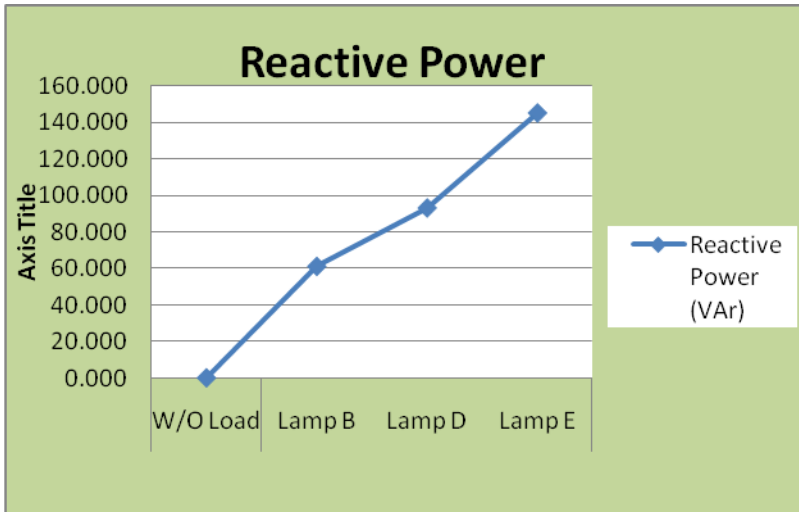
Apparent Power was increasing linearly as compared to the increase of the applied load.

5. Reactive Power Public Electricity

See Table 4.23 and Chart 4.23. Reactive Power Public Electricity.

<i>Parameter</i>	<i>Public Electricity</i>			
	<i>W/O Load</i>	<i>Lamp B</i>	<i>Lamp D</i>	<i>Lamp E</i>
<i>Reactive Power (VAR)</i>	<i>0.000</i>	<i>61.000</i>	<i>93.000</i>	<i>107.000</i>

Table 4.23. Reactive Power Table Public Electricity.



4.23 Reactive Power Chart Public Electricity.

Reading:

Reactive Power was increasing with the applied load.

6. **Power Factor Public Electricity**

See Table 4.24 and Chart 4.24. Apparent Power Public Electricity.

Parameter	Public Electricity			
	W/O Load	Lamp B	Lamp D	Lamp E
Power Factor	1.00	1.00	1.00	1.00

Table 4.24. Power Factor Table Public Electricity.

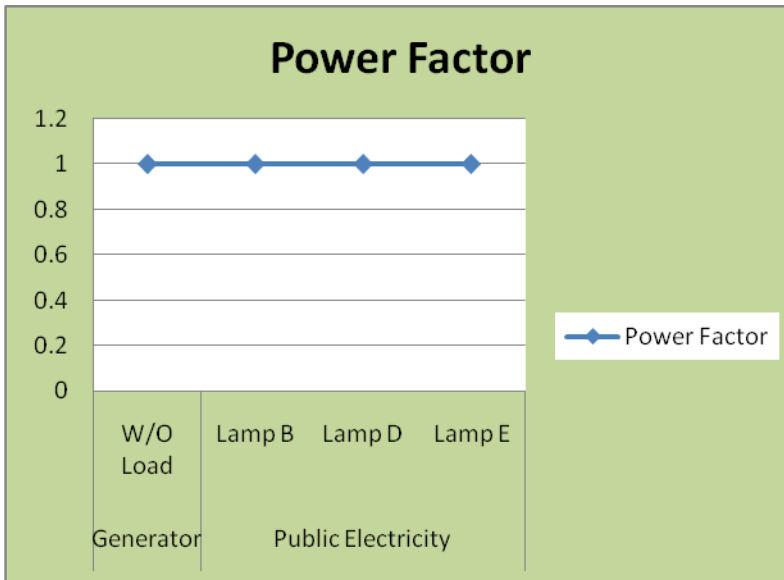


Chart 4.24 Power Factor Chart Public Electricity.

Reading:

Power Factor remains stable at 1, even though load was not increased.

7. Frequency Public Electricity

See Table 4.25 and Chart 4.25. Apparent Power Public Electricity.

Parameter	Public Electricity			
	W/O Load	Lamp B	Lamp D	Lamp E
Frequency (Hz)	50.170	49.850	49.630	49.730

Table 4.25 Frequency Table Public Electricity.

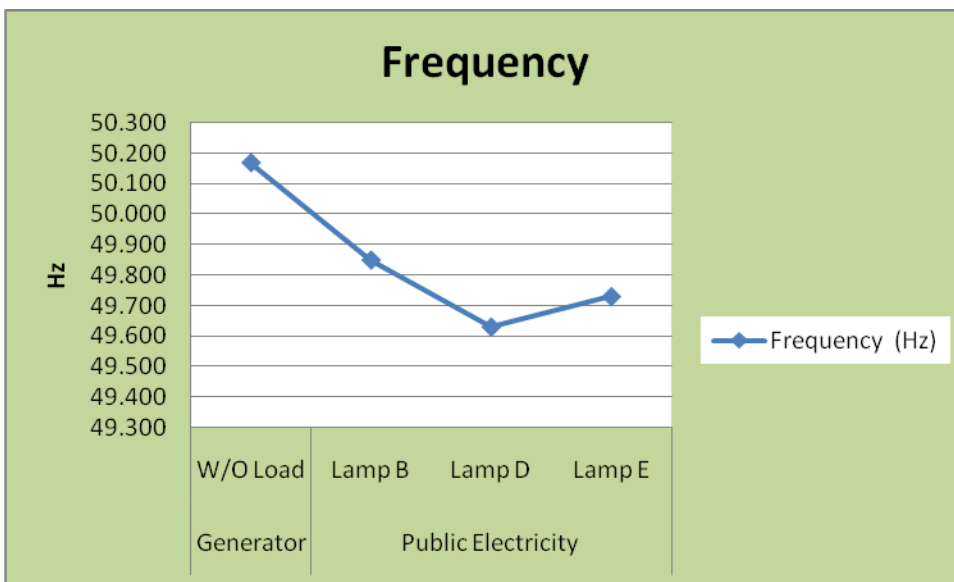


Chart 4.25 Frequency Public Electricity.

Readings:

1. The Public Electricity network frequency without load is 50.17 Hz.
2. The Public Electricity was loaded with lamp B (1000 W), the frequency dropped slightly to 49.85 Hz.
3. The Public Electricity was loaded with lamp D (2000 W), the frequency dropped to 49.63 Hz.
4. The Public Electricity was loaded with lamp E (3000 W) the frequency increased to 49.73 Hz.

Analysis:

The Public Electricity frequency is unstable yet still accommodates the IEEE standards.

8. %VTHD Public Electricity

See Table 4.26 and Chart 4.26. Apparent Power Public Electricity.

Parameter	Public Electricity			
	W/O Load	Lamp B	Lamp D	Lamp E
% VTHD	2.500	2.7	2.400	2.400

Table 4.26 Public Electricity %VTHD.

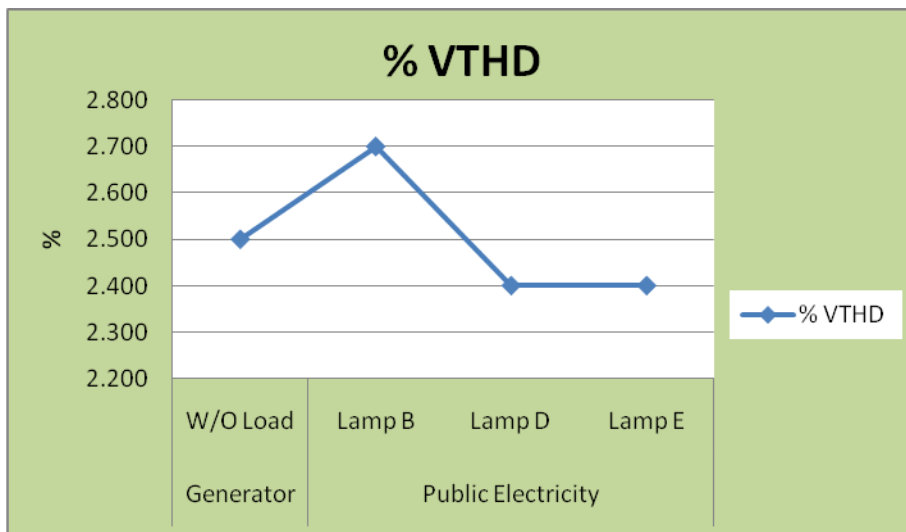


Chart 4.26 Active Power Chart Public Electricity.

Reading:

%VTHD is unstable yet still accommodates the IEEE standards.

9. %ITHD Public Electricity

See Table 4.27 and Chart 4.27. Apparent Power Public Electricity.

Parameter	Public Electricity			
	W/O Load	Lamp B	Lamp D	Lamp E
% ITHD	0.000	2.900	2.600	2.300

Table 4.27. %ITHD Table Public Electricity.

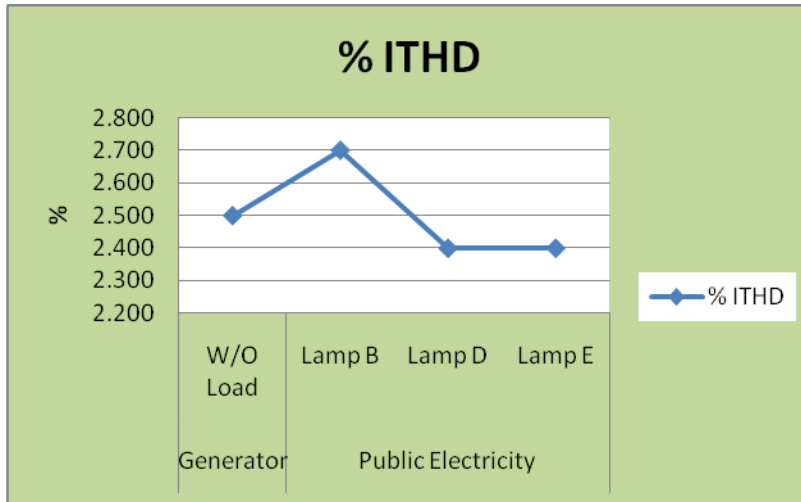


Chart 4.27 %ITHD Chart Public Electricity.

Reading:

Public Electricity %ITHD is unstable yet still accommodates IEEE standards.