Spot Logging and Power Quality Compliance Reporting

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Abstract: Power Quality (PQ) compliance cannot be assessed from spot logging. The IEC 61000 (adapted to AS/NZS 61000) define limits based on long-term behaviour. Additionally, the Distributed Network Service Provider (DNSP) typically require an assessment of at least one week of data aggregated at 10-minute intervals.

PQ Compliance for LV Networks:

PQ compliance in accordance with standards such as IEC 61000 (adapted to AS/NZS 61000) require multiple metrics such as voltage harmonics, flicker, unbalance, voltage limits etc. to be compliant at the Point of Common Coupling (PCC) [1]. It is important to note that the compliance levels and limits in these standards represent the *long-term behaviour* [1]. Therefore, compliance cannot be achieved from spot logging; however, spot logging is useful for commissioning mitigation equipment such as Active Harmonic Filters (AHF).

Length of Logging and Compliance

When assessing PQ compliance, it is important to capture all usual variations in the load profile and it is reasonable to assume a weekly profile is sufficient; hence why DNSPs such as Energy Queensland [2], Ausgrid [3] and Western Power [4] recommend at least one week of logging. An example is shown in Figure 1.

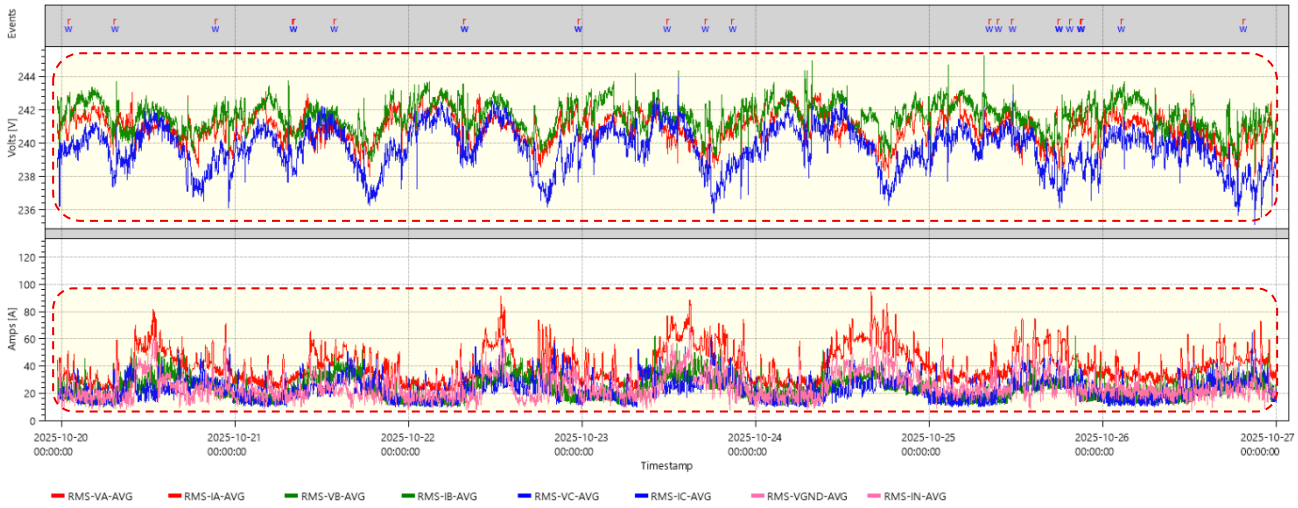

Figure 1: One week of Logged Data

Practical Logging Duration

From our experience, the full variation in the load profile can exceed one week, and on many occasions required three weeks of logging. In conclusion, spot logging may appear compliant however, a snapshot does not represent the full variation in the load.

References

[1] IEC, "IEC 61000-2-2: Electromagnetic compatibility (EMC) – Part 2-2: Environment", Mar. 2002.
[2] Energy Queensland, "Power Quality Reporting Guideline for Embedded Generators (30kVA–1,500kVA)", Jul. 2024.
[3] Ausgrid, "ES1: Premises Connection Requirements", Sept. 2024.
[4] Western Power & Horizon Power, "Western Australian Service and Installation Requirements (WASIR)", 6th ed., Rev. 3, Apr. 2023.