



Device Characterization Report

Device Engineering

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Chapter 1. Product Overview

This report documents the characterization results for **XR-9000** fabricated on the **5nm FinFET** process at **Example Foundry**.

| Field | Value |
|----------------|----------------------|
| Product | XR-9000 |
| Process Node | 5nm FinFET |
| Foundry | Example Foundry |
| Report Version | 3.0 |
| Author | Device Engineering |
| Date | April 2026 |
| Classification | Company Confidential |

1.1. Background

The **XR-9000** is a high-performance compute device designed for deployment in data center and edge inference workloads. This databook covers electrical characterization from silicon bring-up on the **5nm FinFET** node.

For support, contact device-eng@example.com.

1.2. Key Performance Targets

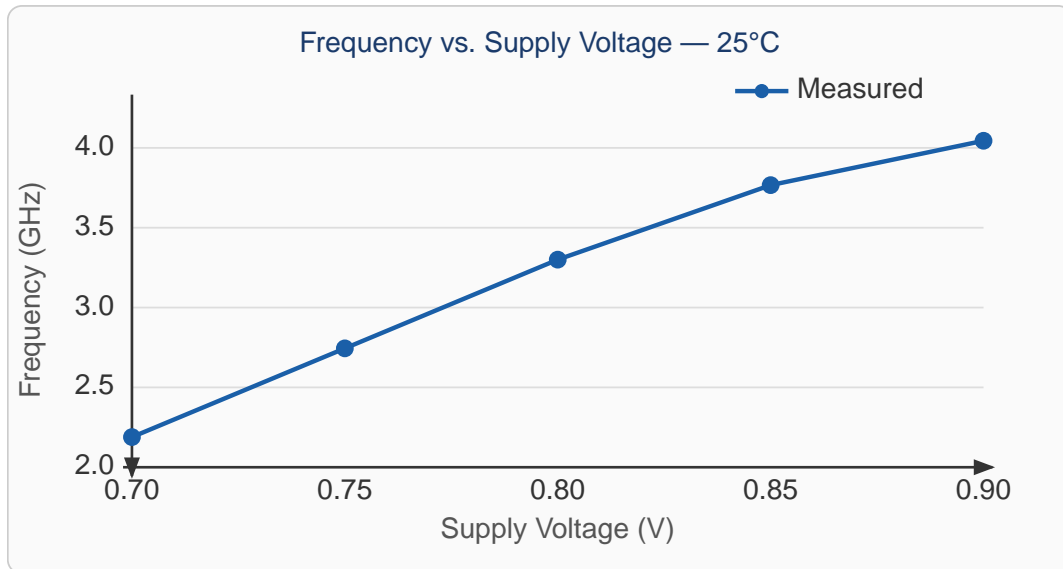
- **Frequency:** 4.2 GHz (nominal VDD, 25°C)
- **TDP:** 150 W
- **Process node:** 5nm FinFET
- **Foundry:** Example Foundry

NOTE | An appendix with raw measurement data is included at the end of this document.

Chapter 2. Electrical Measurements

This chapter presents key electrical measurements for **XR-9000** on 5nm FinFET.

2.1. Frequency vs. Voltage

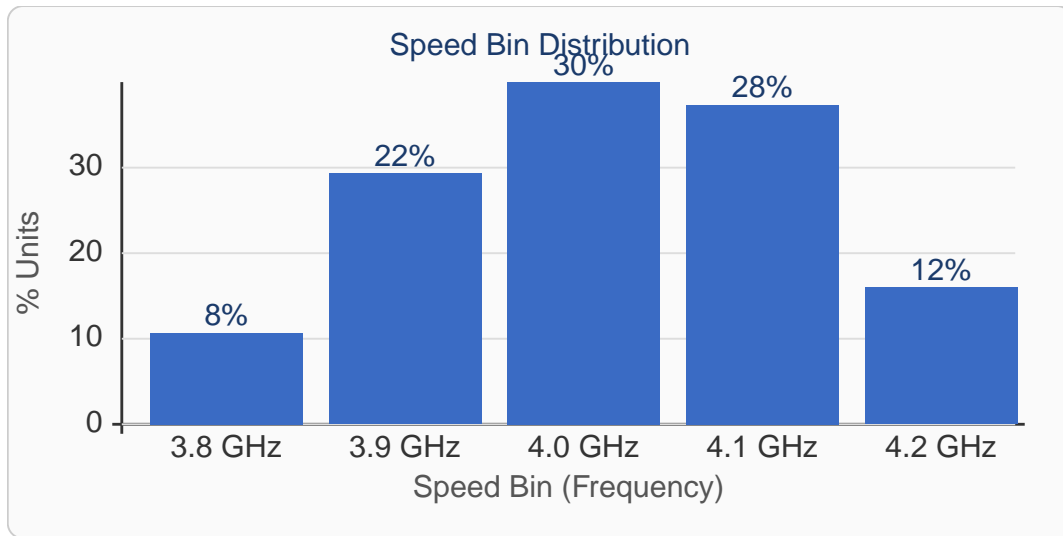


The chart above shows the frequency scaling behaviour across supply voltage for the **XR-9000** at 25°C.

2.2. Leakage Summary

| Condition | Leakage (mA) |
|--------------------|--------------|
| VDD = 0.75 V, 25°C | 12.3 |
| VDD = 0.75 V, 85°C | 38.7 |
| VDD = 0.85 V, 25°C | 19.1 |
| VDD = 0.85 V, 85°C | 61.4 |

2.3. Speed Bin Distribution



Speed bins are determined at:

- **VDD nominal** (0.80 V)
- **Temperature**: 25°C
- **Test pattern**: SPEC_PERF_V3.0

2.4. Process Variation

The following table summarizes the spread observed across the characterization lot for **Example Foundry** 5nm FinFET:

| Parameter | Min | Typical | Max | Unit |
|-------------------|------|---------|------|------|
| Gate length (Lg) | 14.8 | 15.0 | 15.2 | nm |
| Fin height (Hfin) | 51.5 | 52.0 | 52.5 | nm |
| Vt (nFET) | 285 | 300 | 315 | mV |
| Vt (pFET) | -315 | -300 | -285 | mV |

```
# Example analysis snippet used to generate these tables
import pandas as pd

df = pd.read_csv("char_data_XR-9000_v3.0.csv")
summary = df.groupby("condition")[["leakage_mA", "freq_GHz"]].describe()
print(summary)
```

2.5. Appendix: Raw Data Reference

Raw measurement files are archived at: </archive/XR-9000/v3.0/measurements/>

For access, contact device-eng@example.com.