

PERFORMANCE TEST REPORT

DPC Latency Reduction using OnAir

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1. Test Objective

Evaluate real-time audio performance under typical DAW and multitasking conditions, with a focus on Deferred Procedure Call (DPC) latency. Results demonstrate the effect of sequential system tuning.

2. Test Configuration

- **Hardware:**
 - Dell XPS 15 9510 with Intel Core i9-11900H @ 2.5GHz
 - 32GB RAM
 - NVIDIA GeForce RTX 3050 Ti
- **Operating System:** Windows 11 Pro
- **Concurrent Applications:**
 - Microsoft PowerPoint, Word, Excel, Outlook
 - Web browser with 6 active tabs
- **Digital Audio Workstation (DAW):** Cakewalk Sonar
 - Session with 205 audio tracks
 - Active vocal recording on Track 1

3. Function Group Tuning States

FUNCTION GROUP	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6	TEST 7
ACTIONS	OFF	ON	OFF	ON	OFF	ON	ON
SERVICE	OFF	OFF	ON	ON	OFF	ON	ON
APPS	OFF	OFF	OFF	OFF	ON	ON	ON
DYNAMIC TICKING	OFF	OFF	OFF	OFF	OFF	OFF	ON

4. DPC Latency Measurements

All values in microseconds (μ s)

MEASUREMENT TYPE	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6	TEST 7
INTERRUPT TO PROCESS LATENCY	604	375	397	306	415	355	251
ISR ROUTINE EXECUTION TIME	689	456	426	385	423	399	409
DPC ROUTINE EXECUTION TIME	923	911	871	871	877	872	865

5. Performance Gains Over Baseline

Percent improvement relative to Test 1

MEASUREMENT TYPE	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6	TEST 7
INTERRUPT TO PROCESS LATENCY	n/a	38%	34%	49%	31%	41%	58%
ISR ROUTINE EXECUTION TIME	n/a	34%	38%	44%	39%	42%	41%
DPC ROUTINE EXECUTION TIME	n/a	1%	6%	6%	5%	6%	6%

6. Summary

The staged application of OnAir performance tuning shows clear and measurable improvements in system responsiveness. The greatest gains are observed in interrupt and ISR handling, key contributors to audio performance.

7. Disclaimer

The performance metrics and DPC latency measurements detailed in this document are derived from controlled testing environments and are intended to illustrate potential system behavior under optimized conditions. These results are not intended to serve as guarantees of performance in all user scenarios.

System latency is inherently variable and influenced by a wide range of factors, including but not limited to:

- The specific hardware platform in use (e.g., CPU architecture, chipset, storage type, memory type and size, and peripheral configuration);
- The nature and volume of concurrently running applications, including resource-intensive or real-time workloads;

- The presence and activity level of background services, such as antivirus software, system telemetry, cloud synchronization clients, and email applications;
- The configuration, version, and operational state of the operating system and associated drivers.

It is important to note that even seemingly passive background processes—such as periodic data fetching by email clients or scheduled antivirus scans—can result in measurable DPC latency increases and adversely affect the reliability of real-time processing applications.

Accordingly, the results provided herein should be interpreted as representative of the specific system and software configuration tested. Users are strongly encouraged to conduct validation within their own operating environments to account for system-specific conditions and performance variability.