

Oscilloquartz Company

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OSCILLOQUARTZ SA

Who we are

Oscilloquartz was founded in 1949 in Neuchâtel, Switzerland, in the heart of Europe's traditional watchmaking region.

Since then, we've become a world leader in the design and manufacture of high-quality network and application timing technology.



Production site

- Location : Neuchatel
- Surface : 3000 m2
- Clock production capacity : >50 Clocks /month
- Site employee: >50 persons
- Production of Clock, test, environment sensibility evaluation
- MASTER Frequency/Time reference
- R&D present for Mechanical, Electrical, optical, SW & HW
- PCB automatic test benches



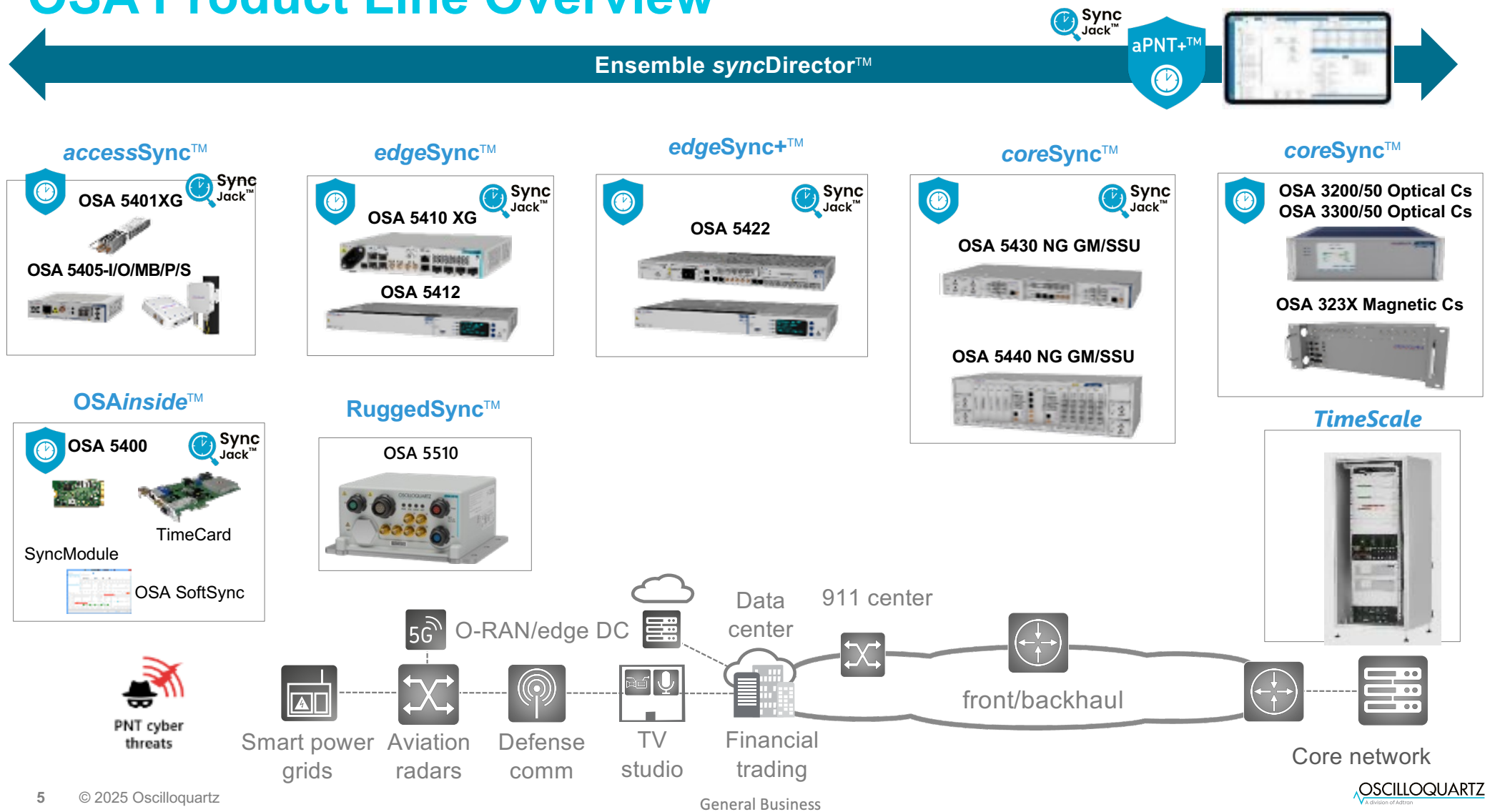
Oscilloquartz at a Glance

- Focused on sync solutions for communication, government and enterprise applications
- Longstanding relationship with customers worldwide since 1949
 - around **100 sync focused partners in about 80 countries** around the globe
 - driven by customer satisfaction
- State-of-the-art time phase and frequency systems
- End-to-end and most scalable and innovative solutions for all markets
- Cesium Clock R&D and production in Switzerland
- Timing delivery and assurance excellency



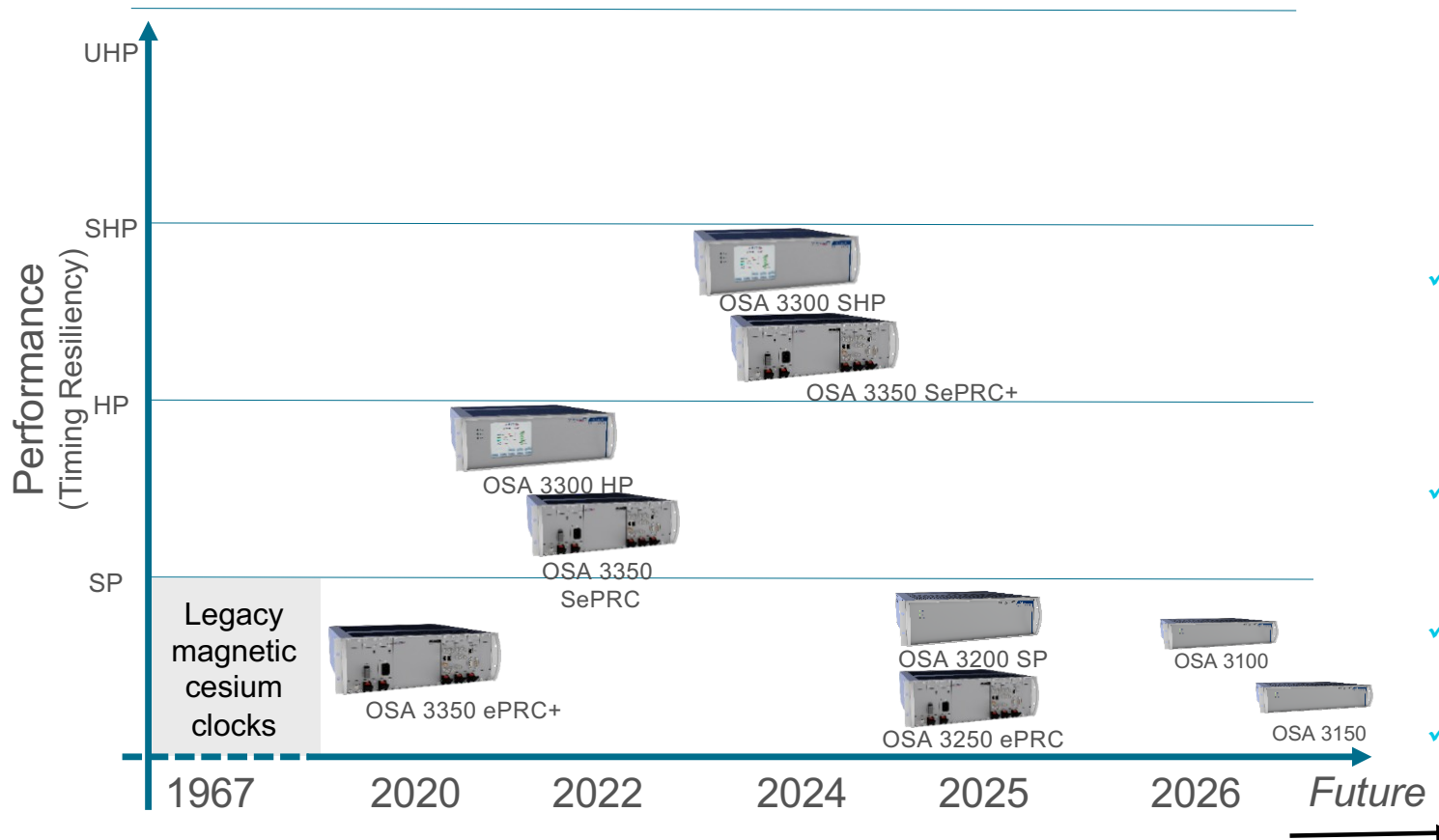
Synchronization & Timing - sources, distribution, assurance, monitoring

OSA Product Line Overview



State-of-the-art cesium Atomic clocks

Single, state-of-the art optical pumping technology addresses all performance requirements across verticals with unmatched price performance



- ✓ **Unprecedented accuracy and stability** setting set new precision and performance benchmarks
 - SHP has 2x the ADEV performance of HP
 - SePRC+ delivers holdover of 100ns for 100+ days vs ~40 days with magnetic HP
- ✓ **Exceptional long-term frequency stability** ensuring reliable performance for ~10 years – **twice the lifespan** of legacy high performance magnetic cesium solution
- ✓ The **only cesium clock with SNMP**, allows seamless integration into existing timing networks
- ✓ History of developing **best-in-class cesium clocks**
- ✓ **5 Cesium patents**

Optical Cesium variants for different use cases

Cesium Type	Dual PSU Hot Swap	Battery	LCD Touch Screen	METU LPN Outputs	TELU BITS Outputs	1PPS	MNGU SNMP V3 Syslog SSH	ESTU20 (Option)	ESTU15 (Option)	100ns HO with 54XX Guaranteed	100ns HO with 54XX Typical	Comments
OSA 3350 ePRC+	✓				✓	✓	✓			40 days	60 days	10Y
OSA 3350 SePRC	✓				✓	✓	✓			55 days	90 days	10Y
OSA 3350 SePRC+	✓				✓	✓	✓			100 days	150 days	10Y
OSA 3250 ePRC	✓				✓	✓	✓			14 days		12-year lifespan
OSA 3300 HP	✓	✓	✓	✓		✓	✓	✓				10Y
OSA 3300 SHP	✓	✓	✓	✓		✓	✓		✓			10Y
OSA 3200 SP	✓	(✓)		✓		✓	✓					12-year lifespan (Battery Option)

CESIUM PRIMARY REFERENCE CLOCK SOURCE

OSA 3300 HP/SHP

Product description

- Super high accurate and stable primary reference clock
- Cesium clock based on optical pumping technology, target high end applications
- **HP : ADEV $8.5 \times 10^{-12} \tau^{-1/2}$, floor = 1×10^{-14}**
- **SHP : ADEV $4.5 \times 10^{-12} \tau^{-1/2}$, floor = 8×10^{-15}**
- Fully modular, compact 3HU design for ETSI and 19" racks

Key benefits

- 10 years of operations - no compromise between lifetime and performance
- Wide range of interfaces (1PPS, Analog...)
- Easy operation with user-friendly touch screen or Mosaic Network Controller

Ease of integration
into 3rd party NMS



Mosaic
Network Controller



SSH
SysLog

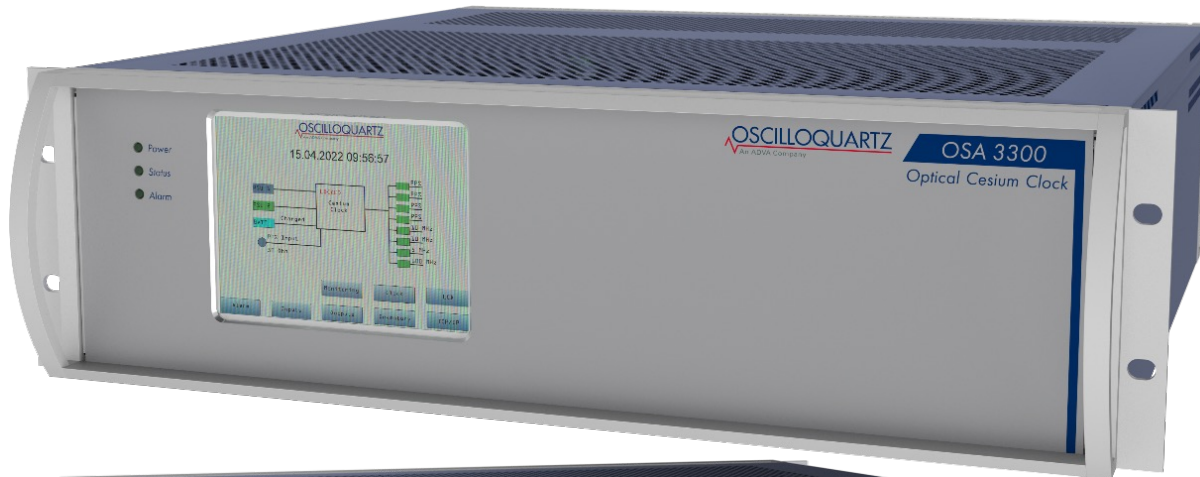
SNMPv3
(secured)



OSA 3300 HP/SHP

First ever Super-High-Performance optical cesium clock

OSA 3300 HP/SHP – Product Description



Front Panel

- Touch screen
- 3x LEDs



Rear Panel

- Main switch On/Off
- AC and DC power inputs (24V or -48V)
- Internal battery
- 4x sine outputs, 5MHz, 2x 10 MHz, 1x 100 MHz
- 4x 1PPS outputs
- 1x 1PPS input
- Management (TCP/IP for Remote Management & SNMP / Syslog / SSH, RS232, Alarm relays)

CESIUM PRIMARY REFERENCE CLOCK SOURCE

OSA 3200 SP

Product description

- Super high accurate and stable primary reference clock
- Entry-level for the new generation of cesium clocks based on optical pumping technology
- **SP : ADEV $2.7 \times 10^{-11} \tau^{-1/2}$, floor = 5.0×10^{-14}**
- Fully modular, compact 3HU design for ETSI and 19" racks

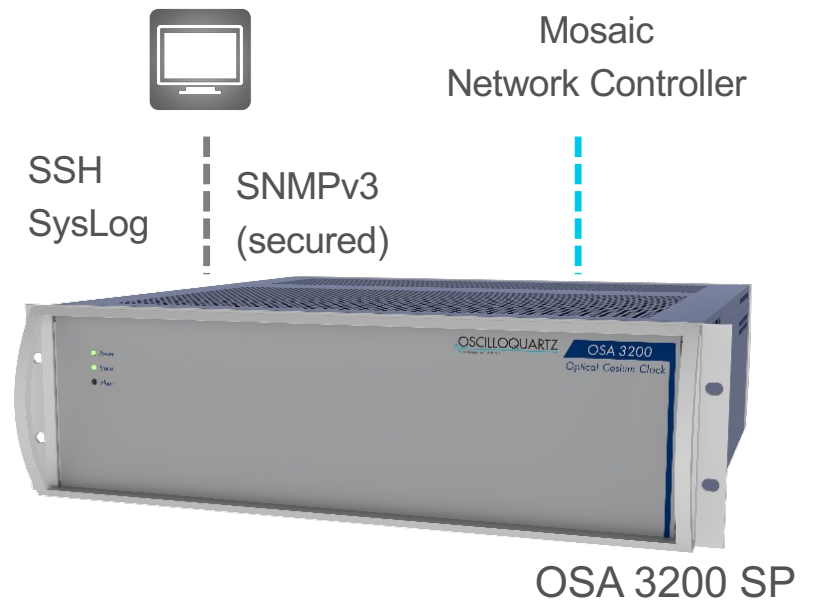
Key benefits

- **12 years of operations**
- Wide range of interfaces (1PPS, Analog...)
- Easy operation with Mosaic Network Controller or open and secure SNMP-integration in 3rd party NMS

Ease of integration
into 3rd party NMS

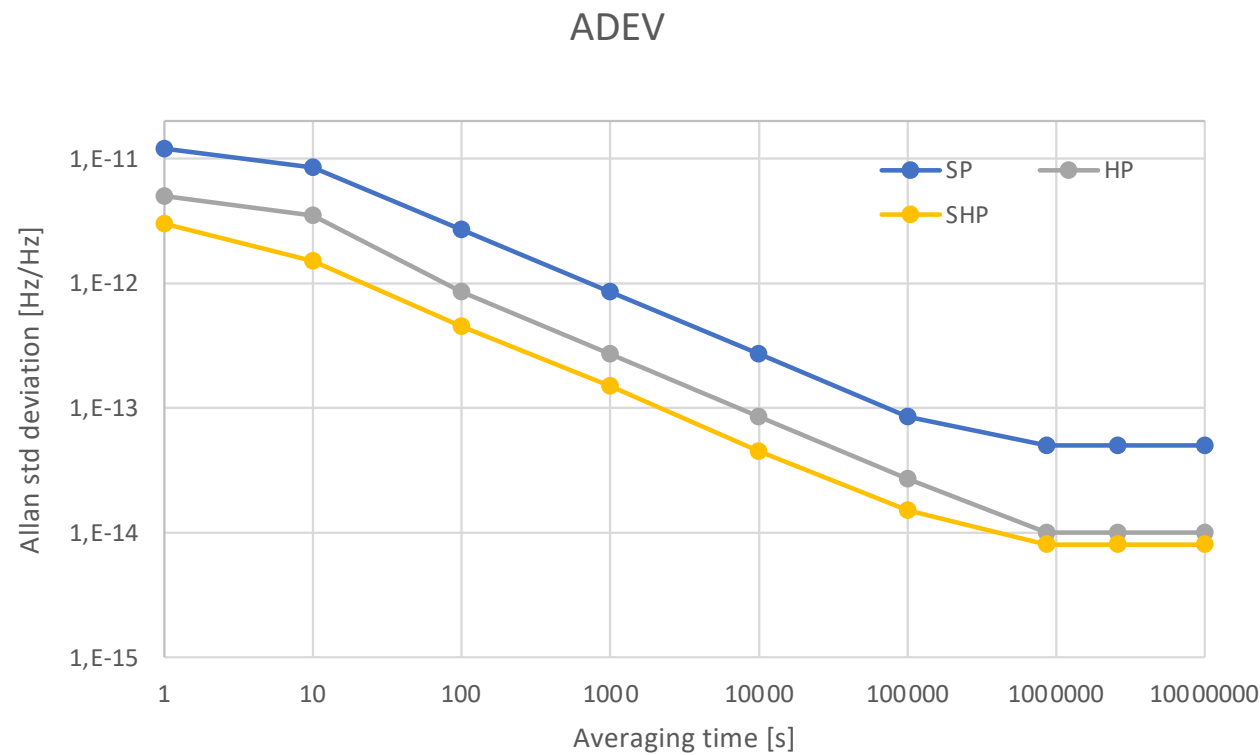


Mosaic
Network Controller



New generation of cesium clocks based on optical pumping technology available at entry level

Allan Deviation (ADEV) Stability performance 3200/3300



Transforming precision timing with ESTU Option

- Industries like metrology, defense and satellite navigation depend on ultra-stable synchronization for mission-critical operations
- The Enhanced Short-Term Unit (ESTU) module for OSA 3300 HP/SHP combines cesium's unmatched long-term stability with short-term performance on par with a passive hydrogen maser (PHM)
- Applications such as radar systems, quantum computing, GNSS infrastructure benefit from ESTU's PHM-class short-term stability.
- By setting new benchmarks in Allan Deviation, the module ensures superior synchronization accuracy for high-stakes operations
- The ESTU module is available for the OSA 3300 HP/SHP optical cesium clocks.

OSA 3300 HP/SHP with ESTU



Unmatched performance:

- ADEV comparable to passive hydrogen masers
- Significant stability improvements

Frequency outputs:

- Supports 5MHz, 10MHz and 100MHz sine wave outputs
- Ultra-low phase noise for critical synchronization tasks

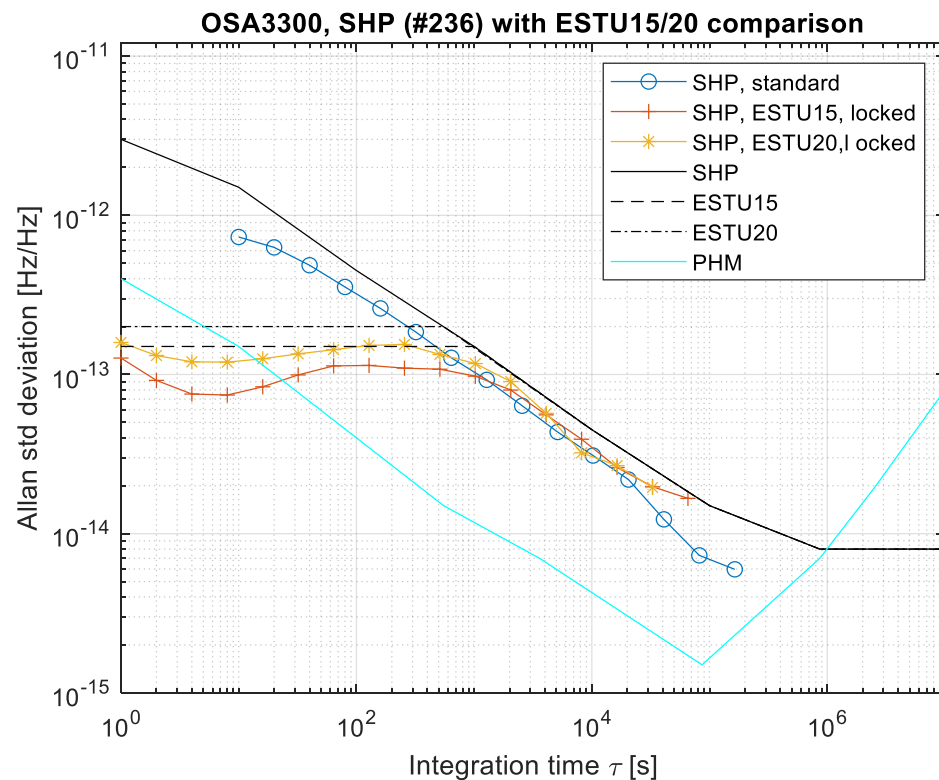
Robust design:

- Compact 19" 3RU rack-mountable unit
- Suitable for space-constrained environments

Versatile compatibility:

- Integrates seamlessly with mission-critical infrastructure

Comparison ESTU15 vs ESTU20

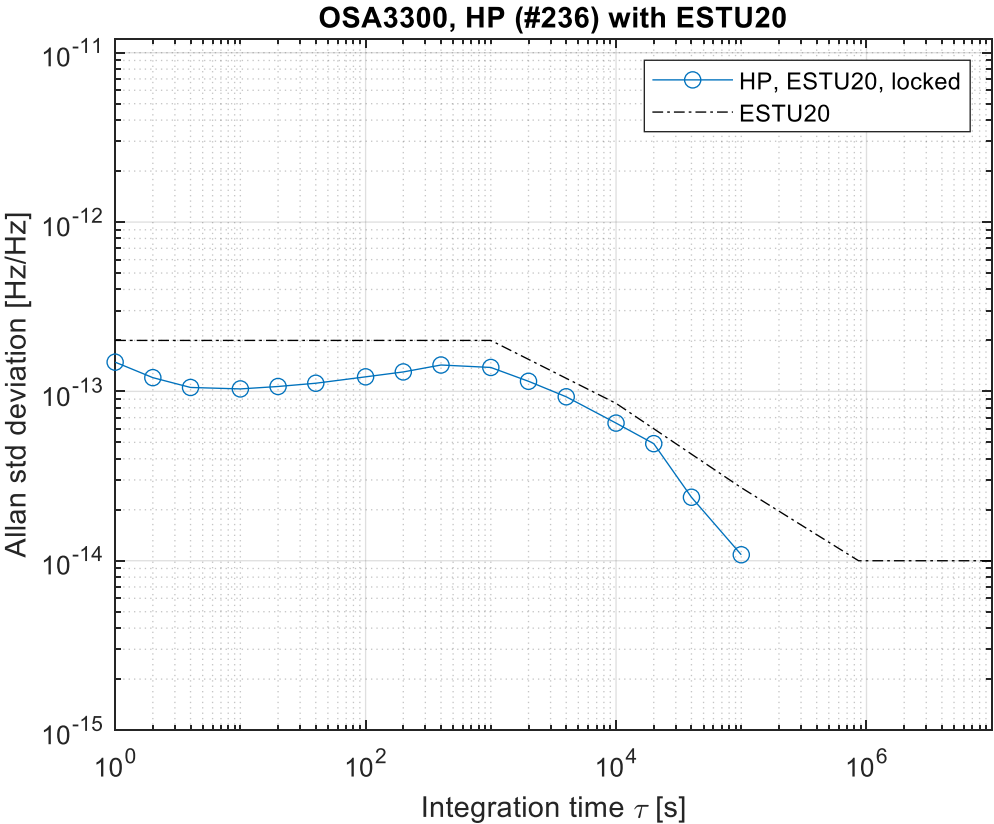
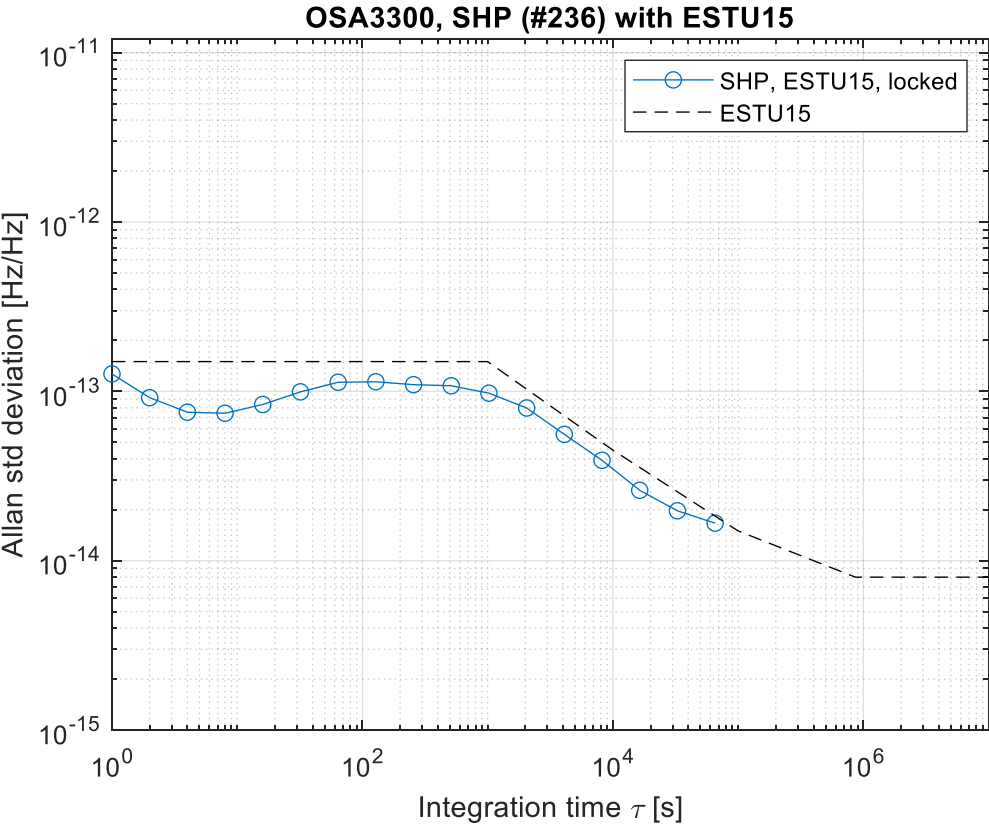


Improvement of short-term ADEV compared to HP/SHP

Overpass short-term ADEV of PHM for $\tau < 10$ s (OCXO)

Overpass long-term ADEV of PHM for $\tau > 1$ Ms (Cs beam)

ESTU-15/SHP and ESTU-20/HP options for OSA 3300



OSA 3350 ePRC+ / SePRC / SePRC+

Product description

- Ultra-precise frequency source; outperforming ITU-T G.811.1 ePRC specification
- Combined with OSA core grandmaster, max holdover perf:
 - 100ns over 40/60 days with ePRC+
 - 100ns over 55/90 days with SePRC
 - 100ns over 100/150 days with SePRC+
- Fully modular, compact 3HU design for ETSI and 19" racks

Key benefits

- 10 years of operations - no compromise between lifetime and performance
- Wide range of interfaces (BITS, 1PPS, Analog...)
- Easy operation with Mosaic Network Controller or open and secure SNMP-integration in 3rd party NMS

Ease of integration
into 3rd party NMS



SSH
SysLog

SNMPv3
(secured)



Mosaic
Network Controller



OSA 3350
ePRC+/SePRC/SePRC+

Better accuracy, longer lifetime, excellent stability with optical cesium technology

CESIUM PRIMARY REFERENCE CLOCK SOURCE

OSA 3250 ePRC

Product description

- Ultra-precise frequency source
- Outperforming ITU-T G.811.1 ePRC specification
- Combined with OSA core grandmaster: ePRTC for outstanding holdover of up to 100nsec over 14 days
- Fully modular, compact 3HU design for ETSI and 19" racks

Key benefits

- **12 years of operations**
- Wide range of interfaces (BITS, 1PPS, Analog...)
- Easy operation with Mosaic Network Controller or open and secure SNMP-integration in 3rd party NMS

Ease of integration
into 3rd party NMS



SSH
SysLog

SNMPv3
(secured)



Mosaic
Network Controller



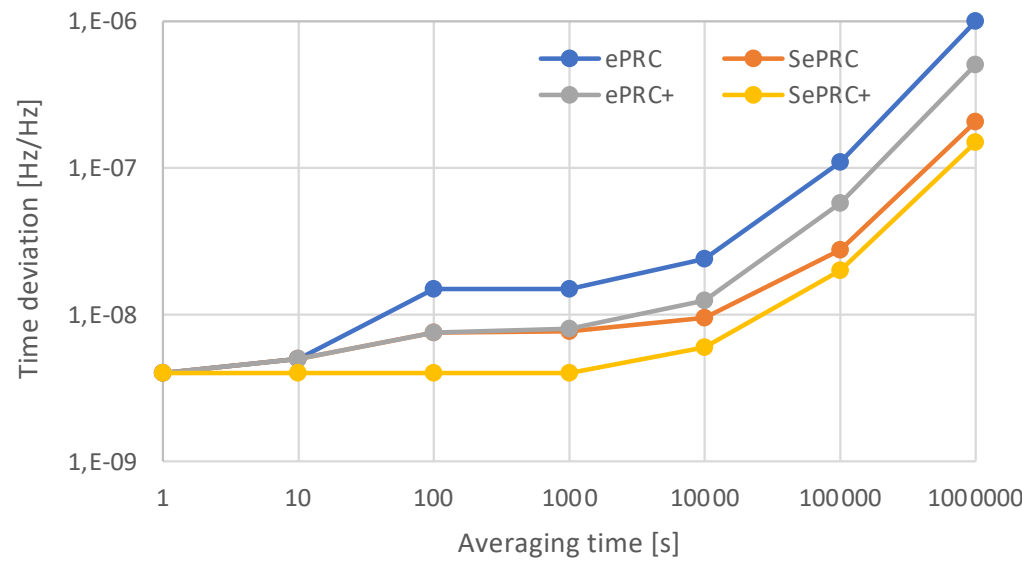
OSA 3250 ePRC

New generation of cesium clocks based on optical pumping technology available at entry level

Stability of frequency outputs 3350/3250

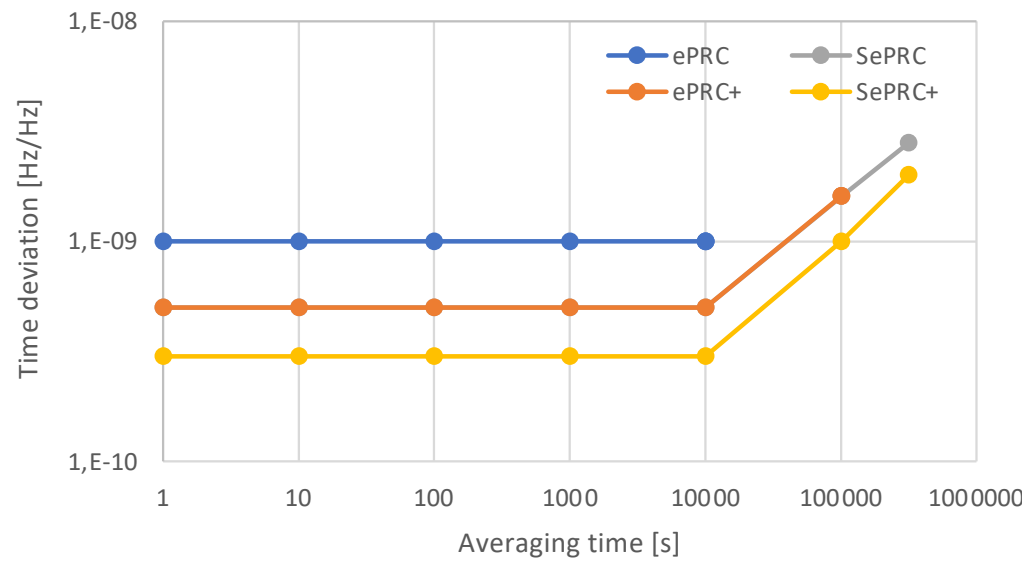
G.811.1 MTIE ePRC vs OSA ePRC+ vs OSA SePRC vs OSASePRC+

MTIE

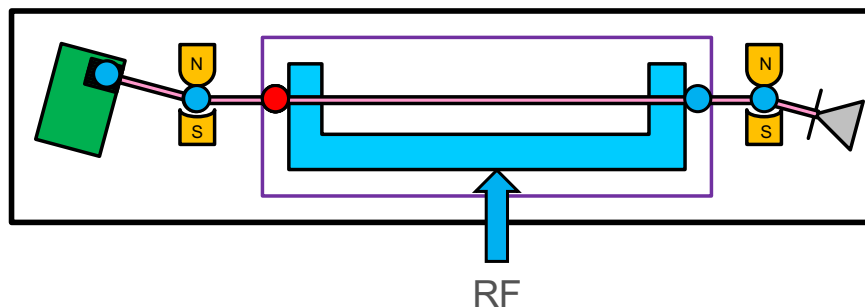


G.811.1 TDEV ePRC vs OSA ePRC+ vs OSA SePRC vs OSASePRC+

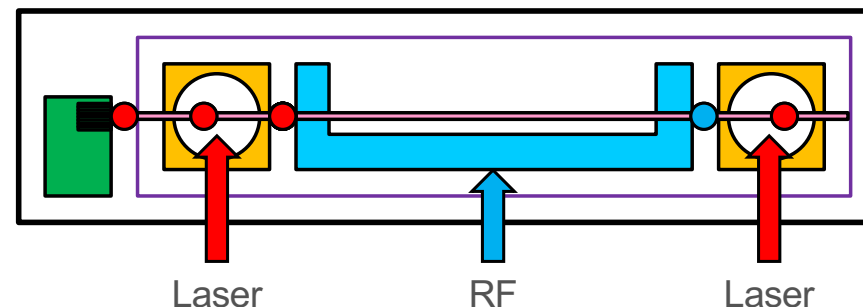
TDEV



Magnetic vs. Optical Cesium clock technology



- Weak flux
 - Strong **velocity selection** (bent)
 - Magnetic deflection (**atoms kicked off**)
- Typical performances (SP):
 - $2.7 \times 10^{-11} \tau^{-1/2}$, **floor** = 5×10^{-14}
 - 10 years
 - HP can be achieved with a 7-year lifespan
- **Stringent** alignment (bent beam)
- Critical component **under vacuum** (electron multiplier)



- High flux (x100)
 - **No velocity selection** (straight)
 - Optical pumping (**atoms reused**)
- Typical performances (SHP):
 - $4.5 \times 10^{-12} \tau^{-1/2}$, **floor** = 8×10^{-15}
 - **10 years**
- **Relaxed** alignment (straight beam)
- Critical component **outside vacuum** (laser)

Facilities



OSA 33XX/32XX Cesium _ Advantages

- | | |
|---|---|
| ✓ | High-performance (HP) and Super High-performance (SHP) with a 10-years lifespan |
| ✓ | ESTU option |
| ✓ | Modular chassis |
| ✓ | Cesium clock based on optical pumping technology |
| ✓ | Critical component outside vacuum (laser) |
| ✓ | Fully redundant and hot-swappable PSUs |
| ✓ | SNMPv3 including authentication and encryption |
| ✓ | Syslog (alarm log, audit log, security log and clock data) / SSH / Web Server |
| ✓ | Made in Switzerland |

Thank You

