Impact of USP <1058>

Regulatory Spotlight on Analytical Instrument Qualification (AIQ)

Technical Overview

Introduction

The 2017 version of USP general chapter <1058> on analytical instrument qualification (AIQ) became effective on August 1, 2017[1]. This is the first update to this general chapter since it was implemented in 2008, and will bring AIQ into greater focus during laboratory audits. This focus means that deficiencies, incomplete AIQ protocols, or noncompliance with <1058> represents an increased audit risk. Table 1 shows some of the changes to <1058>, and their potential impact.

Table 1. Recent changes to USP <1058>.

Change in USP <1058>	Potential impact
Evolution and update of <1058>	AIQ and supporting SOPs need updating for alignment
User requirement specification (URS)	Requirement to develop URS for laboratory systems
Clarification of OQ and PQ requirements	Requirement to perform both OQ and PQ testing
OQ testing linked to URS/DQ	Requirement to associate OQ testing to intended use
Expansion of the section on software	Stronger GAMP alignment, possible simplification of AIQ
No instrument examples in groups A, B, or C	Requirement to justify an instrument is group A, B or C
Risk assessment	To determine group A, B, or C and the extent of testing

USP <1058> for 2017 states:

"The risk assessment for an AIQ enables the classification of the instrument to determine the extent of qualification and actions needed to demonstrate fitness for purpose."

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Regulatory Citations

Data integrity has dominated FDA warning letters in recent years. However, recent FDA 483 observations, before the <1058> update, show an increased audit focus on AIQ for HPLC and GC instruments. This includes organizations receiving 483 observations for not performing tests that are a standard part of the Agilent-recommended AIQ.

AIQ Deficiencies

Auditors are reviewing instrument qualification reports in greater detail. This includes reviewing the technical content, and looking for deficiencies in how the work was performed. Any failure to satisfactorily respond to auditor questions may result in an audit observation (for example, an FDA 483) or worse, an FDA warning letter (or equivalent). Manual calculations and use of unvalidated spreadsheet files in AIQ represent an audit risk.

Examples of AIQ deficiencies identified during audits

- AIQ report, but no electronic data
- Errors in manual calculations
- Instrument used outside of the qualification test range
- No PQ performed for the system
- No justification for repeat work
- Noise and drift tests not done
- Parts of the instrument not tested
- Tools used not calibrated

AIQ Audit Challenges

Some of the challenges associated with defending AIQ during audits include:

- **Fixed protocols:** May not match URS/DQ
- **Fixed protocols:** May need extra testing
- **System suitability:** Is not a PQ
- **Validation of in-house protocols:** May not be available
- **Answering question:** Can need support
- **SOPs and AIQ policy:** Must align with <1058>
- **PQ Testing:** Must be done

Agilent Automated Compliance Engine (ACE) and USP <1058>

Agilent certified compliance engineers use Agilent ACE software to perform AIQ. The Agilent Equipment Qualification Plan (EQP), used by ACE, is designed to provide controlled flexibility across a range of analytical technologies[2], so that EQPs can be configured to ensure that the qualification matches the instrument user User Requirement Specification (URS)/Design Qualification (DQ) requirements. Laboratories must define the intended use of the instrument in the URS/DQ documentation. With Agilent ACE, the set points and tests can be configured to match the range of use of the instrument. Therefore, ACE is already aligned to 2017 <1058> requirements. Testing the intended use/range-of-use is a requirement of both <1058> and Annex 15 of European GMP.

Benefits of Agilent Compliance Services

AIQ must demonstrate that an instrument is suitable for its intended use (that AIQ testing aligns with the URS/DQ).

The regulatory focus on data integrity will drive laboratories towards harmonization to reduce risk. ACE is validated to support harmonization across:

- HPLC, GC, SFC, CE
- HPLC-MS, GC-MS
- ICP-OES, ICP-MS
- Dissolution
- FT-IR, UV, AA
- Software, and so forth

To ensure compliance with data integrity requirements, Agilent has developed Network Distributed ACE (NDA)[3].

Fully complying with 2017 <1058> represents a significant challenge. However, dedicated Agilent compliance specialists are available, and can help you:

- Create PQ protocols
- Update SOPs
- Review AIQ policies
- Perform gap analysis

Contact Agilent to find out more about ACE and our compliance consultancy services.

References

1. USP <1058>, USP 40-NF 35, first supplement
2. www.agilent.com/chem/ink-approval
3. http://www.agilent.com/cs/library/flyers/public/5991-8563EN_CrossLab_NDA_compliance_flyer.pdf

www.agilent.com/chem/qualification

Published in the USA, October 1, 2017
5991-8463EN

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