



# MQXFA16 Structure & Shims Review

US-HiLumi-doc-4912  
Other:  
Date: August 10, 2023  
Page 1 of 4



## US HL-LHC Accelerator Upgrade Project

### MQXFA16 Structure & Shims Review



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US-HiLumi-doc-4912  
Other:  
Date: August 10, 2023  
Page 2 of 4

## TABLE OF CONTENTS

1. GOAL & SCOPE.....	3
2. CHARGES .....	3
3. TECHNICAL INFORMATION .....	4
4. REFERENCES .....	4



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US-HiLumi-doc-4912  
Other:  
Date: August 10, 2023  
Page 3 of 4

## 1. Goal & scope

The HL-LHC AUP project is starting the assembly of MQXFA16 magnet. This is the 9<sup>th</sup> series magnet of the MQXFA low-beta quadrupoles to be used in Q1 and Q3 for the High Luminosity LHC. If MQXFA16 meets MQXFA requirements [1] it will be used in a Q1/Q3 cryo-assembly to be installed in the HL-LHC.

AUP is planning to install MQXFA16 and MQXFA17 in a cold mass without previous vertical test.

MQXFA16 coils were reviewed on July 11, 2023 [2].

MQXFA16 is going to use the MQXFA13 structure if it passes all QC tests during MQXFA13 disassembly.

MQXFA Series magnet specifications are presented in [3]. Discrepancy or Non-Conformity Reports are generated whenever a component does not meet specifications [4]. The MQXFA16 structure was reviewed and approved during the MQXFA13 Structure and Shims Review [5]. The goal of this review is to evaluate the MQXFA16 shim plan and that MQXFA13 structure can be used for MQXFA16.

Reviewers should also assess that the discrepancies and non-conformities of MQXFA13 structure, found during MQXFA13 disassembly, have been adequately processed.

## 2. Charges

The committee is requested to answer the following questions:

1. Have all recommendations from previous reviews [6] been adequately addressed?
2. Have discrepancies and non-conformities been adequately documented and processed?
3. Is the MQXFA13 structure OK for use in MQXFA16?
4. Are the proposed shims adequate for allowing MQXFA16 to meet MQXFA requirements [1]?
5. Do you have any other comment or recommendation to assure MQXFA16 is going to meet requirements?



# MQXFA16 Structure & Shims Review

US-HiLumi-doc-4912  
Other:  
Date: August 10, 2023  
Page 4 of 4

## 3. Technical information

### Committee

Peter Wanderer, chairperson (BNL)  
Mike Anerella, (BNL)  
Rodger Bossert, (FNAL)

### Date and Time

August 10, 2023.  
Start time is 7:00/9:00/10:00 (LBNL/FNAL/BNL)

### Location/Connection

Video-link by Zoom, info by email.

### Link to agenda with talks and other documents

<https://indico.fnal.gov/event/60732/>

## 4. References

- 1) *MQXFA Functional Requirements Specification*, US-HiLumi-doc-36.
- 2) *MQXFA16 Coils Acceptance Review*, US-HiLumi-doc-4900.
- 3) *MQXFA Series Magnet Production Specification*, US-HiLumi-doc-4009.
- 4) *Handling of Discrepancies and Nonconformances*, US-HiLumi-doc-2484.
- 5) *MQXFA13 Structure and Shims Review*, US-HiLumi-doc-4747.
- 6) *MQXFA15 Structure and Shims Review*, US-HiLumi-doc-4852.