

	<b>Batch-traveller procedure for module production and test</b>		
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**(DRAFT)**

**SCT Barrel Module Site Qualification**

**Batch-traveller procedure for module production and test**

**Abstract**

In the fabrication of SCT barrel modules in Japan, various works to complete the modules are shared by KEK and industries. In this document, major fabrication works and the flow of critical components and their datasheets to complete the modules are described particularly to specify what to be done where.

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*Distribution List*

**SCT Barrel Module Community**

## 1 Introduction

There are three major works in the fabrication of the modules:

- i) ASIC mounting on the hybrid ,
- ii) production of a sensor-baseboard assembly,
- iii) Attaching the hybrid on the sensor-baseboard assembly.

Each works requires QA tests thereby produce data and documents. Those QA items are summarised in Table 1.

The critical components used or produced in those fabrication works are

- i) passive component staffed hybrid,
- ii) ASIC's,
- iii) ASIC mounted hybrids,
- iv) silicon sensors,
- v) baseboards,
- vi) sensor-baseboard assemblies and finally
- vii) Completed modules.

Since KEK and industries share the works, those components travel among the work sites. Flows of the major components are illustrated in Table 2.

## 2 Components and datasheets

KEK delivers ASIC's and passive component-staffed hybrids to an industry where the ASICs are mounted on the hybrids. Wire bonding is also done at the same industry. The industry finishes all required QA tests (mechanical and electrical items) to the completed hybrids and fills datasheets. The hybrids equipped with the datasheets are delivered to KEK.

KEK delivers sensors and baseboards to HPK together with instructions to specify which sensors to be assembled with which baseboards. The sensor-baseboard assembly is fabricated at HPK. HPK performs 3D Metrology and I-V measurement to the sensor-baseboard assembly. The results are filled in datasheets by HPK.

KEK sends the ASIC mounted hybrids to HPK where the hybrids are attached to the sensor-baseboard assembly, which is prepared at HPK as described above. All the wire bonding between the hybrid and the sensors are also finished at HPK to complete the barrel modules. Minimum initial QA items are covered at HPK before the delivery to KEK. HPK delivers the modules together with the datasheets.

QA tests to the modules are continued at KEK. After the completion of the QA, whole associated data and documents are collected and properly processed by KEK. Finally, the modules are stored at KEK for the barrel cylinder assembly.

## References

Assembly, Sensor-baseboard, Hybrid-Module datasheets:

Accessible at the web address, <http://jsdhp1.kek.jp/~unno/SCTbarrelmod.html>

*Table 1. QA items*

Components and work (place to be done)	QA items
ASIC mounting on hybrid (at industry)	Wire bond pull test Initial DAQ test Long-term electrical test Final DAQ test
sensor-baseboard assembly (at HPK)	3D Metrology I-V measurement
Completed module (at HPK)	3D Metrology I-V measurement DAQ test
Completed module (at KEK)	Long term I-V measurement Temperature cycling 3D Metrology I-V measurement DAQ test Long term electrical tests 3D Metrology I-V measurement DAQ test

**Table 2** *Flows of major components and datasheets in Japan*

Components/datasheets	Sites (From ==> To)
Passive hybrid;	KEK ==> Hybrid industry
ASIC;	KEK ==> Hybrid industry
ASIC mounted hybrid;	Hybrid industry ==> KEK ==> HPK
Sensor;	KEK ==> HPK
Baseboard;	KEK ==> HPK
Sensor-baseboard assy;	HPK. ==> HPK
Completed module;	HPK ==> KEK