

UCSB CMS Testing Times

Modules: Gantry Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
*Database entry of module components.	10 minutes	
Mount frames on assembly plate (pre-inspected and barcodes attached)	5 minutes	
Inspect and place sensors on supply plate.	5 minutes	
Inspect and place hybrids on assembly plate.	5 minutes	
Mixing glue, loading syringes and applying silver epoxy.	15 minutes	
Review “before starting gantry program check list”	2 minutes	
After cure OGP survey of modules (3)	5 minutes	
Loading modules (3) on to carrier plates.	8 minutes	
Total Time	55 minutes	
Total Technician Time	110 minutes	

*While these procedures are being followed, a 45-minute gantry assembly program is run, after which the plates are moved to a curing cabinet.

Module Wirebonding: Daily Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Inspect module	2-3 minutes	
Entering information in database.	1-2 minutes	
Load the module, wirebond, and unload the module.	7-8 minutes	
Post-bonding inspection	2-3 minutes	
Plucking channels that need to be left open	0-3 minutes	
Store module	1 minute	
Pull-test and enter information in database.	5-7 minutes	Performed on every 10 th module.
Clean wirebonder wedge and recalibrate bonder.	30-40 minutes	Performed after 10 modules.
Total Time	20 minutes	*6 chip modules takes
Total Technician Time	20 minutes	slightly longer.

*The bonding program runs about 30 seconds longer for 6 chip modules, but changing the wirebonder program and the bonding stage for a new type takes about 5-7 minutes.

Hybrid Wirebonding: Daily Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Inspect hybrid and clean if necessary	2-3 minutes	
Enter information in database.	1-2 minutes	
Load the hybrid, wirebond, and unload the hybrid.	5-6 minutes	
Post-bonding inspection	2-3 minutes	
Take hybrid to Test Room	1 minute	
Pull-test and enter information in database.	5-7 minutes	Performed on every 10 th hybrid.
Clean wirebonder wedge and recalibrate bonder.	30-40 minutes	Performed after 20 hybrids.
Total Time Total Technician Time	15 minutes 15 minutes	Changing the wirebonder program for a new type of hybrid takes about 5-7 minutes.

Hybrid Testing: Daily Operation Timing Summary (First run of the day)

Procedural Step	Approximate Time Required	Comments
Initialization procedure	3 minutes	Only performed at the start of the first run. Involves turning of all equipment and checking for failures.
Hybrid Preparation and Mounting	5 minutes	
Software Procedure Testing Hybrids Cooling cycle Preparation of next batch of 4 Hybrids XML uploading.	50-55 minutes	Includes XML Uploading Includes cooling cycle of 10-15 minutes. This run is the slowest due to high temperature of cooling fluid.
Close all software. Re-start datasocket as well as ACDC. Unload Hybrids and mount prepared Hybrids for next run	2 –3 minutes	
Total Time Total Technician Time	1 hour 6 mins	

Hybrid Testing: Daily Operation Timing Summary (Regular runs after the first)

Procedural Step	Approximate Time Required	Comments
Exchanging prepared for finished hybrids	5 minutes	
Software Procedure Testing Hybrids Cooling cycle Preparation of next batch of 4 Hybrids XML Generation Procedure Unplate the 4 tested Hybrids, label, Place in boxes and store in Cabinet	45-50 minutes	Includes XML Uploading Includes cooling cycle of 10-15 minutes. Includes the preparation of the next run.
Total Time Total Technician Time	55 mins	

Module Testing: Daily Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Load module into clamshell, make connections, power on	1 minute	
Download Checklist	1 minute	
Run ARCS test *	22 minutes	During this time, next module can be prepared for testing (including adding test tails), and test area can be maintained.
Upload Checklist	1 minute	
Unload module from clamshell and store.	1 minute	
Switching between TOB-TEC.	3 minutes	Performed a few times each day.
Database upload of test results and data handling.	0	Done automatically once per day. No man-time needed.
Total Time	20 minutes	
Total Technician Time	20 minutes	

* Because of time available during ARCS testing time, it is possible to run two stands with one person. However, this is not recommended for long periods of time.

Daily Wien Box Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Quick visual inspection of overnight run. Record pertinent information from LT	5 min	
Begin analysis of overnight run. Load box for day run.	30 min 20 min	Done simultaneously
Day Run (5 modules) Periodically check progression of run Check validity of night run analysis. Review any modules flagged by lt.pl	6 hours 1 hour	Done simultaneously
Begin analysis of day run data. Reload box for night run.	15-20 min 20 min	Done simultaneously
Overnight Run (10 modules) Check validity of day run analysis. Review any modules flagged by lt.pl	11+ hr. 30 min	Done simultaneously Sometimes takes longer depending on quality of run.
Total Time Total Technician Time	18 hours 2.5 hours	Varies depending on quality of run.

*Currently testing 15 modules. This can be increased to 16 modules per day with minimal changes. Each additional module will require an extra hour of time either one hour earlier in the morning, or one hour later in the afternoon.

SS Rod Assembly: Daily Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Database Entry	5 minutes	
Dismount rod from shipping box and mount in rotisserie	5 minutes	
Place module on the rod Install screws, make electrical connections and tape HV wire	7 minutes 5 minutes	Repeat this step 6 times, i.e. a total of 72 minutes
Glue the HV tails to CF frame.	20 minutes	
Cure epoxy	2 hours	
Total Procedure Time Total Technician Time	3 hours 42 mins 1 hour 42 mins	Includes curing time

DS Rod Assembly: Daily Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Database Entry	8 minutes	
Dismount rod from shipping box and mount in rotisserie.	5 minutes	
Place r-phi module on the rod. Place stereo module on the rod. Install screws, make electrical connections and tape HV wire.	7 minutes 7 minutes 7 minutes	Repeat this step 6 times, i.e. a total of 72 minutes
Glue the HV tails to CF frame.	25 minutes	
Cure epoxy	2 hours	
Total Procedure Time Total Technician Time	4 hours 41 mins 2 hours 41 mins	Includes curing time

Multi Rod Testing: Daily Operation Timing Summary

Procedural Step	Approximate Time Required	Comments
Load Rods	1.5 hours	
Unload Rods	1.5 hours	
Software	1 hour	
Total Time	4 hours	A Single Rod Test takes
Total Technician Time	4 hours	45 minutes.