

12-12-11

GFP - Capability indicators - GaN-PDK1

# **GaN-on-Silicon TSRP: Device Characterization and Process Design Kit (PDK) Establishment**

- TSRP
- Project Leader and Team Members
  - Project Leader: Shane Todd
  - Project Team: Yuan Li, Zuhui Chen
- Collaborators (University/RI/Hospital)
  - Zhou Xin (NTU)
- Project Duration
  - 3 years (01 April 2011 – 31 March 2014)

# KPI Status

KPI Indicators	Total target as per grant		IME Stretch KPI in FY11	Actual	
	Collaborator KPI	IME KPI		Collaborator KPI	IME KPI
No. of Prestigious Journal Papers published	4	4		0	1 (under review)
No. of Prestigious Conference Papers published	3	3		0	2
No. of Invention Disclosure	1	1		0	0
No. of patent filed	1	1		0	0
No. of patent granted	1	1		0	0

# What new capabilities have been developed?

New Capabilities to be developed	Status of Capability Development	Capabilities beneficial to	Plan for next phase		
			Industry Project with RCAS	Next phase for future development	Integrated Capability / Cross lab Project
Load Pull Measurement	Setup almost complete, verifying characterization procedure	Characterization of high power/high frequency transistors under large signal biasing	Huawei		NTU/NUS
High Voltage/High Power Power Device Analyzer Measurement	Tender Requisition submitted, receiving product demos	Characterization of breakdown voltage > 3000 V, current measurement > 20 A, Power measurement > 400W	Azzurro		NTU/NUS
Pulsed IV Characterization Measurement	Tender Requisition submitted, receiving product demos	Characterization of device performance while eliminating self heating effects and characterization of trap behavior	Azzurro		NTU/NUS



# The challenges & problems the project are facing and how to address them

Challenges / Problems <i>(e.g. Technical constraints etc.)</i>	Impact	Mitigation action
NTU CMOS-compatible GaN HEMT process development has been delayed. Estimated completion date is Feb 2012 ( 6 month delay)	No ability to characterize devices for PDK establishment	Developing process independently at IME, will use IME process for PDK establishment
Yong Zhong leaves IME	Transfer of responsibilities causes project delay, especially for equipment purchase / measurement setup	Shane taking over project leadership

The objective is to identify potential show-stoppers.

# Contributions/Problems from External Collaborators



The objective is to assess true collaborations and the leverage factor.



**TAB 10**