

# Patent-Focused Expert Technical Solutions



# The Model

- Intellectual Property / Patent Focus
- *Best-in-Class* SMEs, Principal Engineers and Technologists Spanning All Technologies
- *Client-as-Partner* Culture
- Offering Cost-Effective Solutions Since 2005

## ➤ *Our Mission :*

*To be our client's most knowledgeable, responsive, cost-effective, technical resource and trusted strategic partner.*

# IPE Technical Services:

## IP and Patent Asset Acquisition and Defense

- IP/Patent Technical / Commercial Review: Due Diligence
- IP Surveys, Landscaping and Competitive Intelligence
- Prior Art Searches
- M&A SME Support and Technology Transfer
- Forensic (Reverse) Engineering
- IPR, Post-Grant and PTAB SME Support

## Leveraging Existing IP and Patent Assets

- IP Sale and Licensing Strategies
  - IP Asset and Patent Portfolio Evaluation
  - IP Mapping: Identify Key Potential Buyers and Partners
  - Prepare IP Sales Packages/Value Proposition
  - License Audits

# IPE Technical Services:

## Leveraging Existing IP and Patent Assets (cont)

- **IP Licensing Strategies: Enforcement/Assertion**
  - IP Mapping: Identify Potential Targets/Products
  - Product Investigations/Reverse Engineering
  - Proof Packages and Evidence of Use (EOU) Charts
  - Litigation Support: Claim Charts, Expert Reports, and Expert Witness Services

# IP Enginuity provides:

- Prior Art and CI Searches
- Patent/Portfolio Evaluation & Mining
- Product Selection and Procurement
- Patent-to-Standard / Specification Analyses
- Product Investigation
- Forensic and Reverse Engineering
- Expert Reports and Claim Charts
- Litigation Support and Audits
- *Post-grant Review, IPR, and PTAB Strategic Support*

*A Full Spectrum of Expert Services!*

## ➤ The Variety of Products, Technologies and Client Needs Drive a Spectrum of Solutions

- ✓ Custom Patent Portfolio Analysis and Mining
- ✓ Product / Document Procurement and Examination
- ✓ Product Teardown and Bill of Materials
- ✓ Component and Materials Analyses
- ✓ Process Architecture and Fabrication Techniques
- ✓ “Black Box” Testing
- ✓ Circuit Design and Extraction
- ✓ Systems and Software Extraction and RE
- ✓ Licensing/Litigation Support: Claim Charts, Expert Witness
- ✓ Competitive Intelligence and Technology Landscaping

# IP *Expert* Solutions

- **Sample Technical Investigations and Analyses:**
  - ✓ Sample “Targeted” Patent Portfolio Mining Results
  - ✓ Commercial LED and Bio-Medical Device Investigations
  - ✓ Standard Essential Patent (SEP) Review: 3G WCDMA Specification Examination (*Patent and Standards Document Review*)
  - ✓ Snoop Activity Concurrent with PCI Express and Intel Front Side Bus (FSB) Memory Read Requests (*Systems Analyses and Combined Techniques*)
  - ✓ Flash, Microprocessor, and Smart Card Analyses (*IC and Component Process Technology RE and Analysis*)
  - ✓ SLMQW DFB Lasers (*Component/Materials Analysis*)
  - ✓ Optical Transmitter SBSS and Characterization (*Systems Functionality and Characterization*)

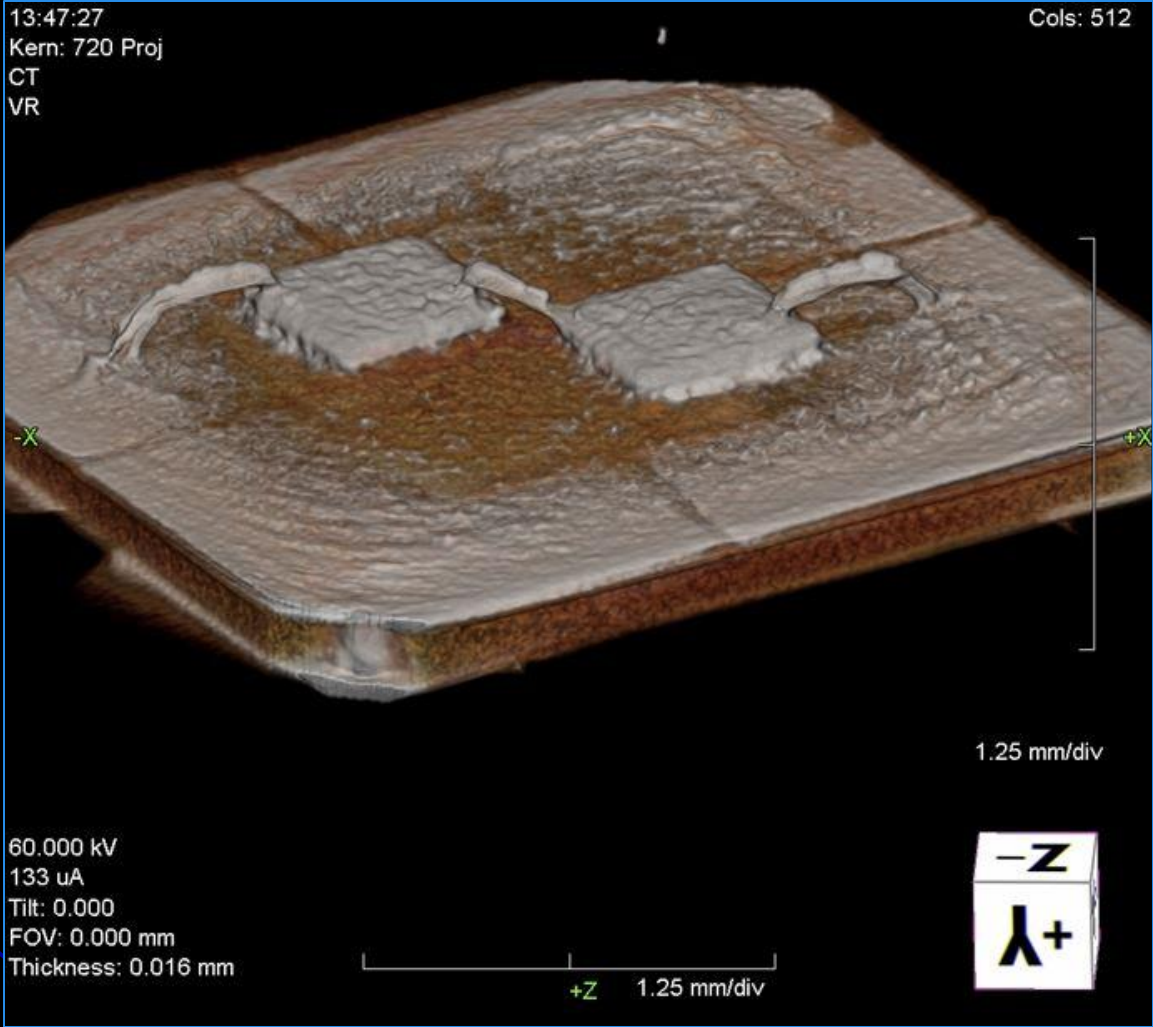
# IPE Patent Portfolio Mining: Targeted

IPE Technology/Product Category	Document No.	Google Patent Link	Title	Normalized Assignee (current)	Top Citing Assignees	Cited By Sample Tech	Times Cited By Sample Tech	Target Citation Strength	Forward Cites	Citation Strength	Publish/Grant Date	Family Size Count	Family Strength	Pendency (Days)	Pendency Strength	Claim 1 (Total Words)	Claim Strength	RVI	RVI Strength	IPE Power Score	Likelihood of Use 1=Low, 5=High	Observability/Detectability in Literature 1=Low, 5=High	Phase II Actionability Score	Observability/Detectability w/ Prod Investigation RE
IP Packet Cor	Sample	<a href="#">US1234567</a>	Lower...	SampleTech	HTC CORP (38); QST HOI	YES	7	28	252	18.00	1999-11-23	3	2.25	1084	0	225	-1.4	140	7	53.85	5	5	10	
Network Mar	Sample	<a href="#">US1234568</a>	Method...	SampleTech	ALCATEL LUCENT (1); HI	YES	1	6	2	0.42	2005-08-23	13	9.75	998	0	68	21.75	39	1.95	39.87	5	5	10	
Radio Access	Sample	<a href="#">US1234569</a>	Conducting...	SampleTech	ALCATEL LUCENT (2);	YES	2	12	9	1.48	2/16/1999	15	10	1113	0	79	19	22	1.1	43.58	5	4	9	
Optical	Sample	<a href="#">US1234570</a>	Method...	SampleTech	INTEL CORP (12); ROCKV	YES	5	28	52	9.65	2002-12-24	1	0.75	1201	0	155	0	76	3.8	42.20	5	4	9	
IP Packet Cor	Sample	<a href="#">US1234571</a>	Efficient...	SampleTech	LOGIC CORP (31); CISCO	YES	5	28	90	14.60	1998-08-04	14	10	873	0	164	0	40	2	54.60	5	4	9	
IP Packet Cor	Sample	<a href="#">US1234572</a>	Apparatus...	SampleTech	CISCO TECH INC (16); GE	NO	0	0	122	18.00	2000-02-15	9	6.75	1133	0	160	0	107	5.35	30.10	5	4	9	
Radio Access	Sample	<a href="#">US1234573</a>	Method...	SampleTech	INTELLECTUAL VENTU	YES	7	28	110	18.00	11/13/2001	16	10	995	0	152	0	37	1.85	57.85	4	4	8	
Radio Access	Sample	<a href="#">US1234574</a>	Method...	SampleTech	TELECOM SYSTEMS II	YES	4	24	113	18.00	1/9/2001	13	9.75	1159	0	170	0	34	1.7	53.45	4	4	8	
Radio Access	Sample	<a href="#">US1234575</a>	Method...	SampleTech	TRAPEZE NETWORKS	NO	0	0	153	18.00	2/23/1999	14	10	847	1.818	95	15	28	1.4	46.22	4	4	8	
Radio Access	Sample	<a href="#">US1234576</a>	Method...	SampleTech	LG ELECTRONICS INC	YES	3	18	92	15.64	5/23/2000	1	0.75	1484	0	116	9.75	39	1.95	46.09	5	3	8	
Radio Access	Sample	<a href="#">US1234577</a>	Establishing...	SampleTech	INNOVATIVE SONIC (	NO	0	0	2	0.72	10/26/2010	19	10	1964	0	36	29.75	50	2.5	42.97	5	3	8	
Radio Access	Sample	<a href="#">US1234578</a>	Point...	SampleTech	QUALCOMM INC (4);	YES	1	6	22	4.32	4/13/2004	3	2.25	1481	0	95	15	422	14	41.57	4	4	8	
Radio Access	Sample	<a href="#">US1234579</a>	Method...	SampleTech	ANDREW CORP (17);	YES	2	12	67	11.48	8/22/2000	4	3	497	3.918	121	8.5	43	2.15	41.04	5	3	8	
Radio Access	Sample	<a href="#">US1234580</a>	Method...	SampleTech	ALCATEL LUCENT (1);	YES	1	6	3	0.55	7/16/2002	13	9.75	574	3.456	93	15.5	12	0.6	35.85	5	3	8	
Radio Access	Sample	<a href="#">US1234581</a>	Fast...	SampleTech	AT&T MOBILITY II LL	NO	0	0	12	2.92	9/4/2007	16	10	1527	0	89	16.5	29	1.45	30.87	5	3	8	
IP Core Routi	Sample	<a href="#">US1234582</a>	Communication...	SampleTech	EMBARQ HOLDINGS	YES	4	24	116	18.00	2003-04-01	8	6	1412	0	132	5.75	66	3.3	57.05	5	3	8	
IP Packet Cor	Sample	<a href="#">US1234583</a>	Unified...	SampleTech	QWEST COMMUNICA	YES	3	18	74	13.09	2001-08-28	14	10	1485	0	198	0	56	2.8	43.89	4	4	8	

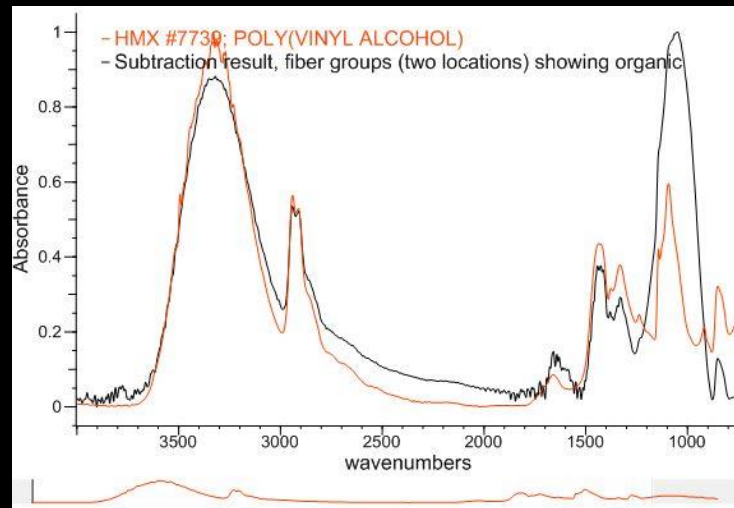
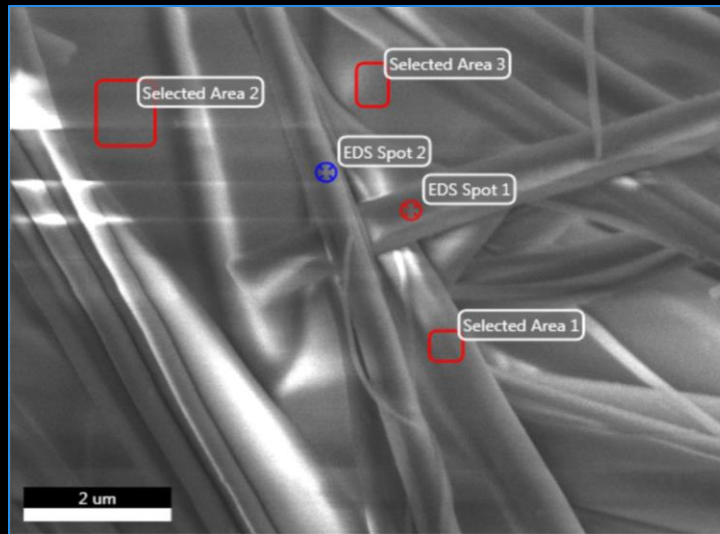
Sample Client Portfolio (>5K Patents) Analyzed,  
 Ranked By IPE Power Score,  
 SME Reviewed, and Subsequently Mapped to Licensing  
 Target's ("SampleTech's") Products

(Sanitized Patent Portfolio Map)





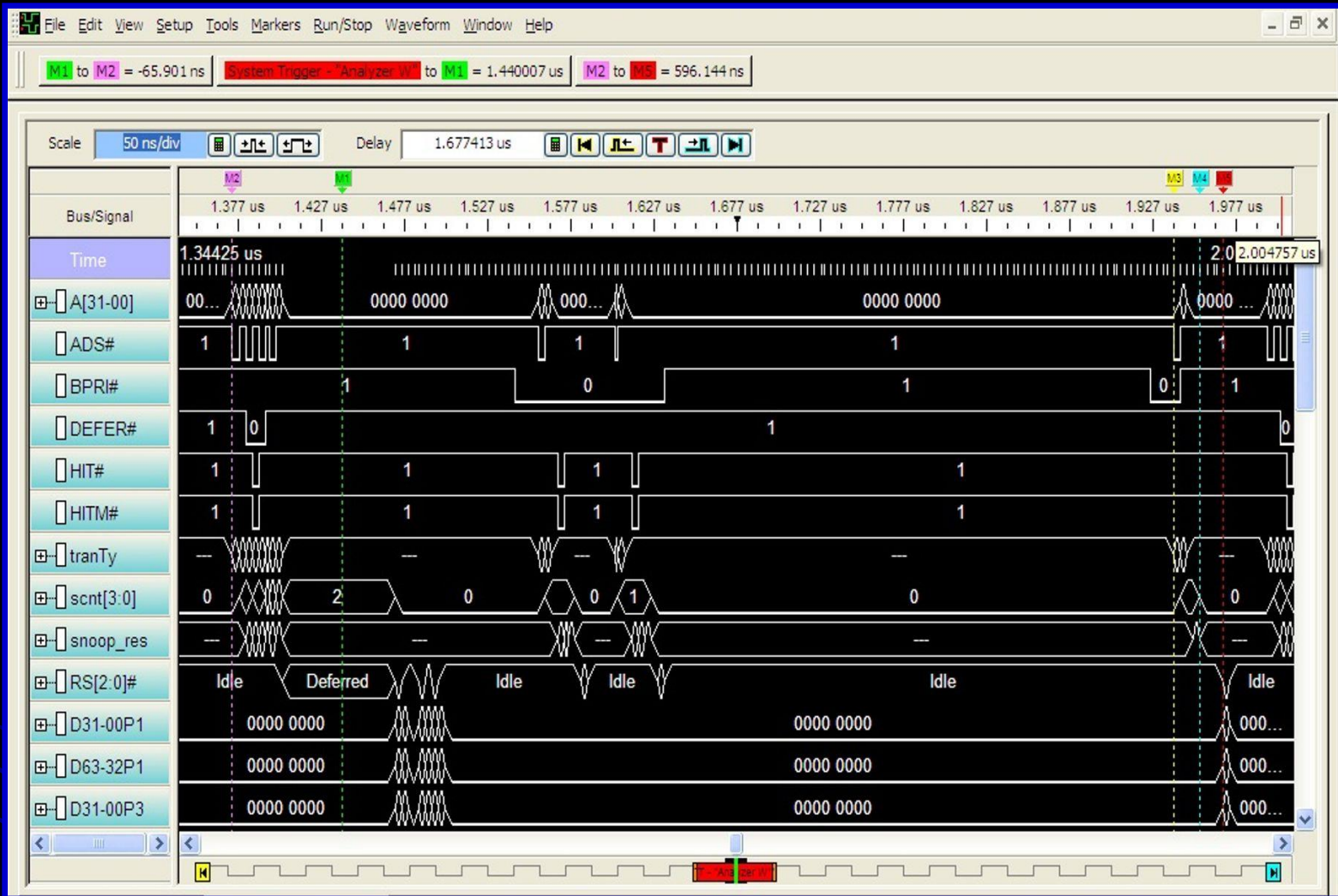
Commercial LED CT Scan Showing Phosphor Distribution  
(Recent Patent Infringement Product Investigations)



## EDS and FTIR Analyses of Commercial Blood Separation Device (Recent Patent Infringement Product Investigations)

EP XXXXXXXX B9 Claim #1 Limitation/Reference	Evidence	Informal Opinion / Comments
<p>3) sending each power control command during a plurality of power control groups</p>	<p><i>"Single TPC" is DPC_Mode=0 and "TPC triplet in soft" is DPC_mode=1 in [29]. [TS 25.331 Ver. 7.1.0 - 10.3.6.23] and</i></p> <p><i>- if DPC_MODE = 0 : the UE sends a unique TPC command in each slot and the TPC command generated is transmitted in the first available TPC field in the uplink DPCH;</i></p> <p><i>- if DPC_MODE = 1 : the UE repeats the same TPC command over 3 slots and the new TPC command is transmitted such that there is a new command at the beginning of the frame."</i></p> <p>[TS 25.214 Ver. 7.0 - 5.2.1.2.1]</p>	<p>The patent defines a "power control group" as a "slot" [0005]. Therefore, one could effectively reword this limitation, "sending each power control command during a plurality of slots". This wording particularly the use of "during" is somewhat vague, imprecise and subject to interpretation. The broadest interpretation suggests that the claim reads on the current WCDMA downlink (DL) power control spec in that the "TPC triplet in soft" translates to a DPC_Mode=1 which requires that the mobile station (UE) "repeats the same [DL Transmit Power Control] TPC command over 3 slots". These 3 slots constitute a "plurality of power control groups". Therefore, from a technical perspective, the embodiment disclosed in [0014] of the patent and described in this claim limitation appears to read on the WCDMA specification. Conversely, if this claim element is interpreted within the context of [0029, lines 25-28], then the current WCDMA specification does NOT appear to allow for breaking a single TPC command into parts "so that it takes n slots to send the entire power control command".</p>

## Preliminary Patent Claim Comparison to 3G WCDMA Specifications (Standards Essential Patent (SEP) Review)



Snoop Activity on  $\mu$ P Front Side Bus During Memory Read Request to PCI Express Device  
 (RE - Systems Analysis)

[Multi-Frame] Agilent Logic Analyzer - [...\Agilent\E8057A\_N4220B\_rls\_final\_04Nov07.ala] - [Packet Viewer W]

File Edit View Setup Tools Markers Run/Stop Packet Viewer Window Help

M1 to M2 = 1.43593 us System Trigger - "Analyzer W" to M1 = -61.824 ns

	Direction	Transaction	Seq	PCI Express Packet	Address	Time
I →	Packet Decoder W	00 0000	f48	3DW Memory Read Request	fdef 0044	0 s
	Packet Decoder W		b3b	Ack		536 ns
	Packet Decoder W	00 0001	f49	3DW Memory Read Request	fdef 0044	746 ns
M2 →	Packet Decoder W		b3c	Ack		1.254 us
	Packet Decoder W			SKP Ordered Set		1.398 us
	Packet Decoder W	00 0000	f4a	3DW Memory Read Request	fdef 0040	1.440 us
	Packet Decoder W		b3d	Ack		1.900 us
	Packet Decoder W	00 0001	f4b	3DW Memory Read Request	fdef 0040	2.060 us
	Packet Decoder W		b3e	Ack		2.518 us
	Packet Decoder W	00 0000	f4c	3DW Memory Read Request	fdef 7edc	2.834 us
	Packet Decoder W		b3f	Ack		3.334 us
	Packet Decoder W	00 0001	f4d	3DW Memory Read Request	fdef 6060	3.684 us
	Packet Decoder W		b40	Ack		4.182 us
	Packet Decoder W	00 0000	f4e	3DW Memory Read Request	fdef 60dc	4.354 us
	Packet Decoder W		b41	Ack		4.852 us
	Packet Decoder W	00 0001	f4f	3DW Memory Read Request	fdef 6060	6.262 us
	Packet Decoder W		b42	Ack		6.768 us

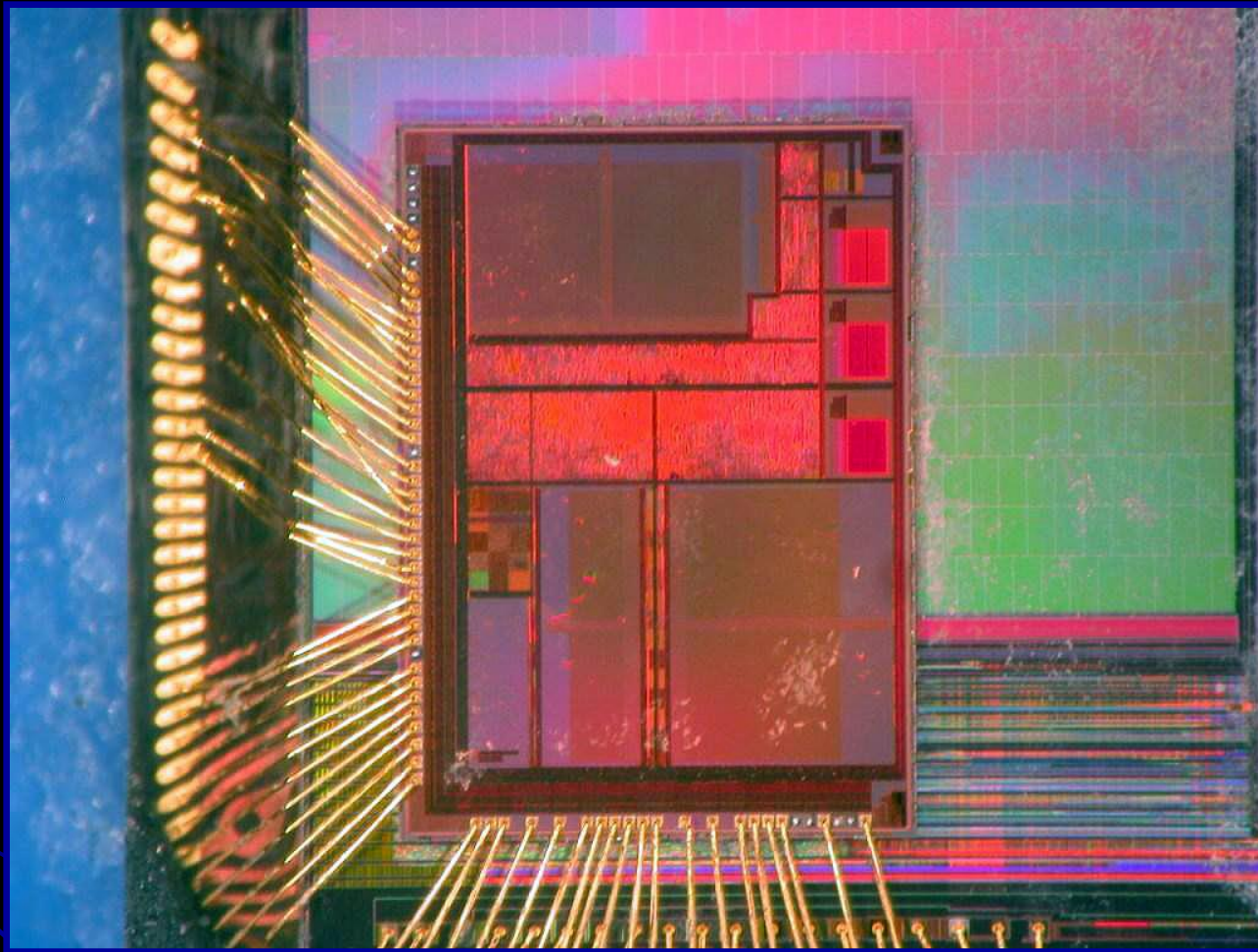
Details Header Payload Lanes

Overview Waveform-1 Listing-1 Listing W Packet Viewer W

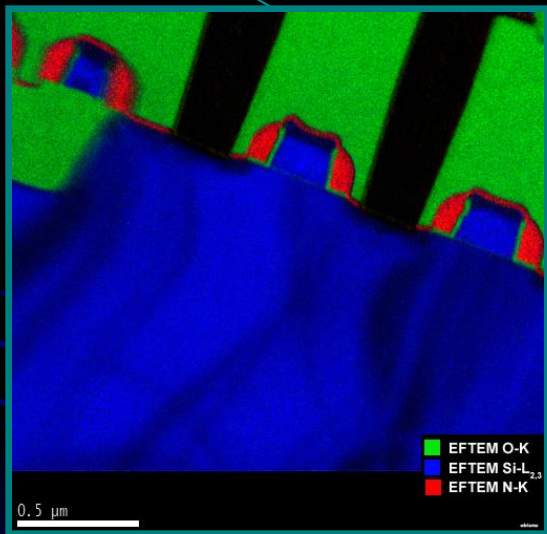
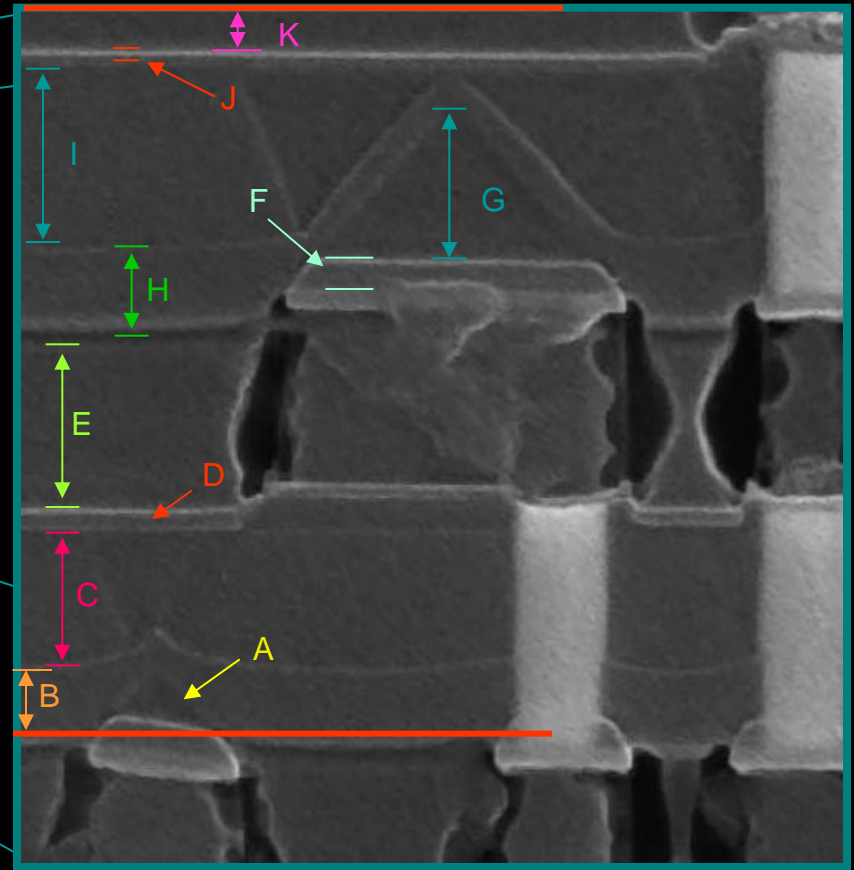
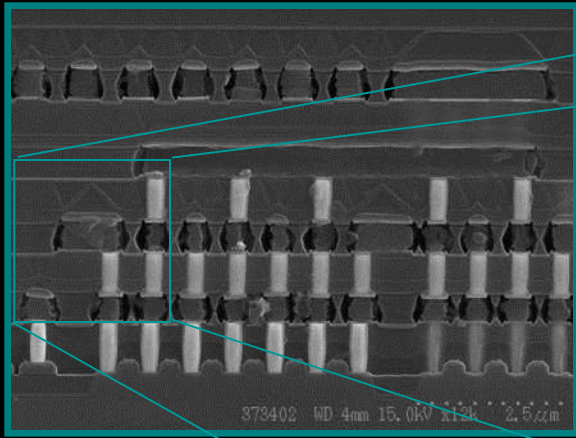
For Help, press F1 Status... Local

## Time Coherent Decoding of Core 2 Duo Memory Read Request Across the PCI Express Expansion Bus

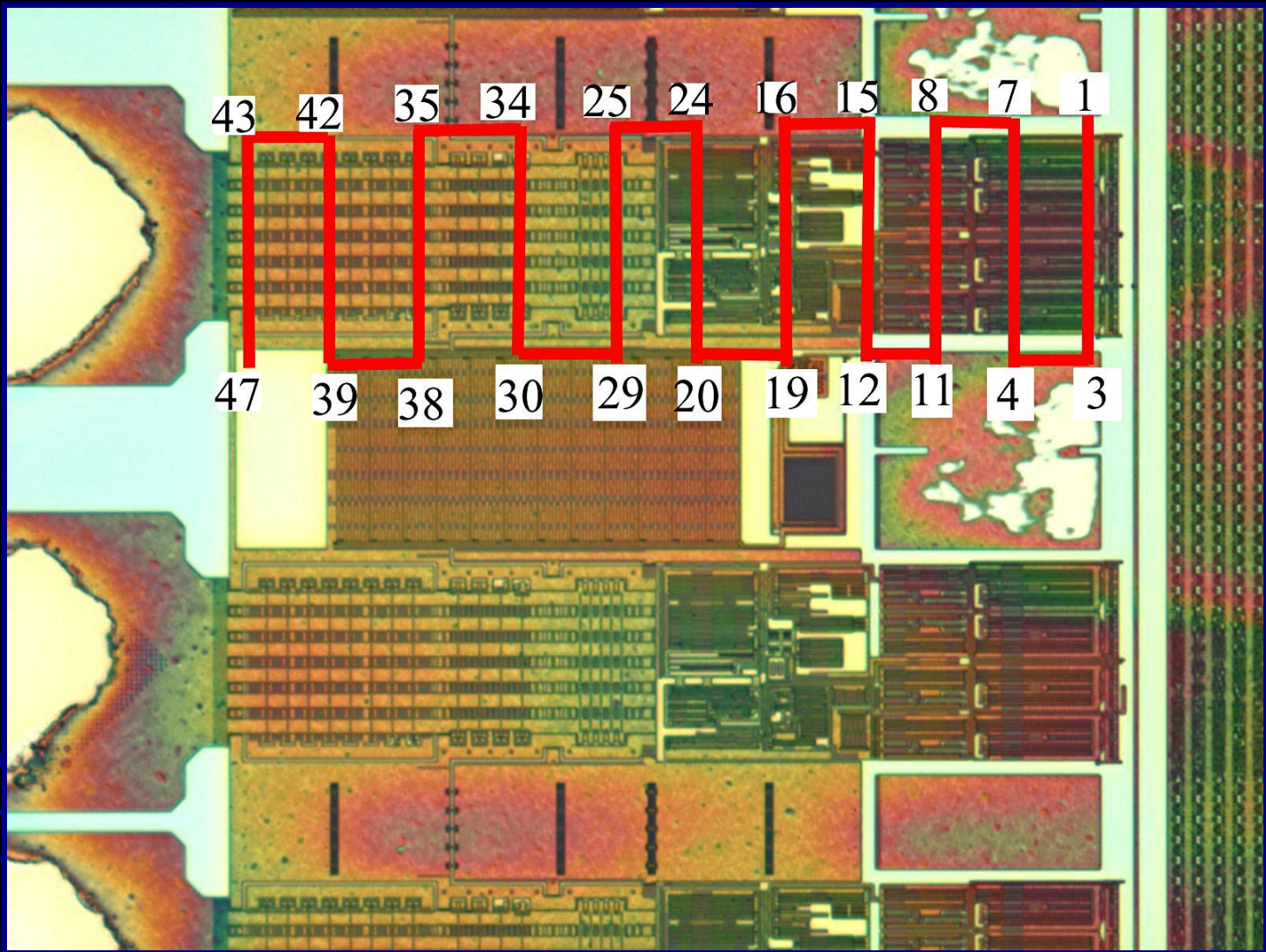
(RE - Systems Analysis)



Flash Controller Die  
(Component /Materials Analyses)



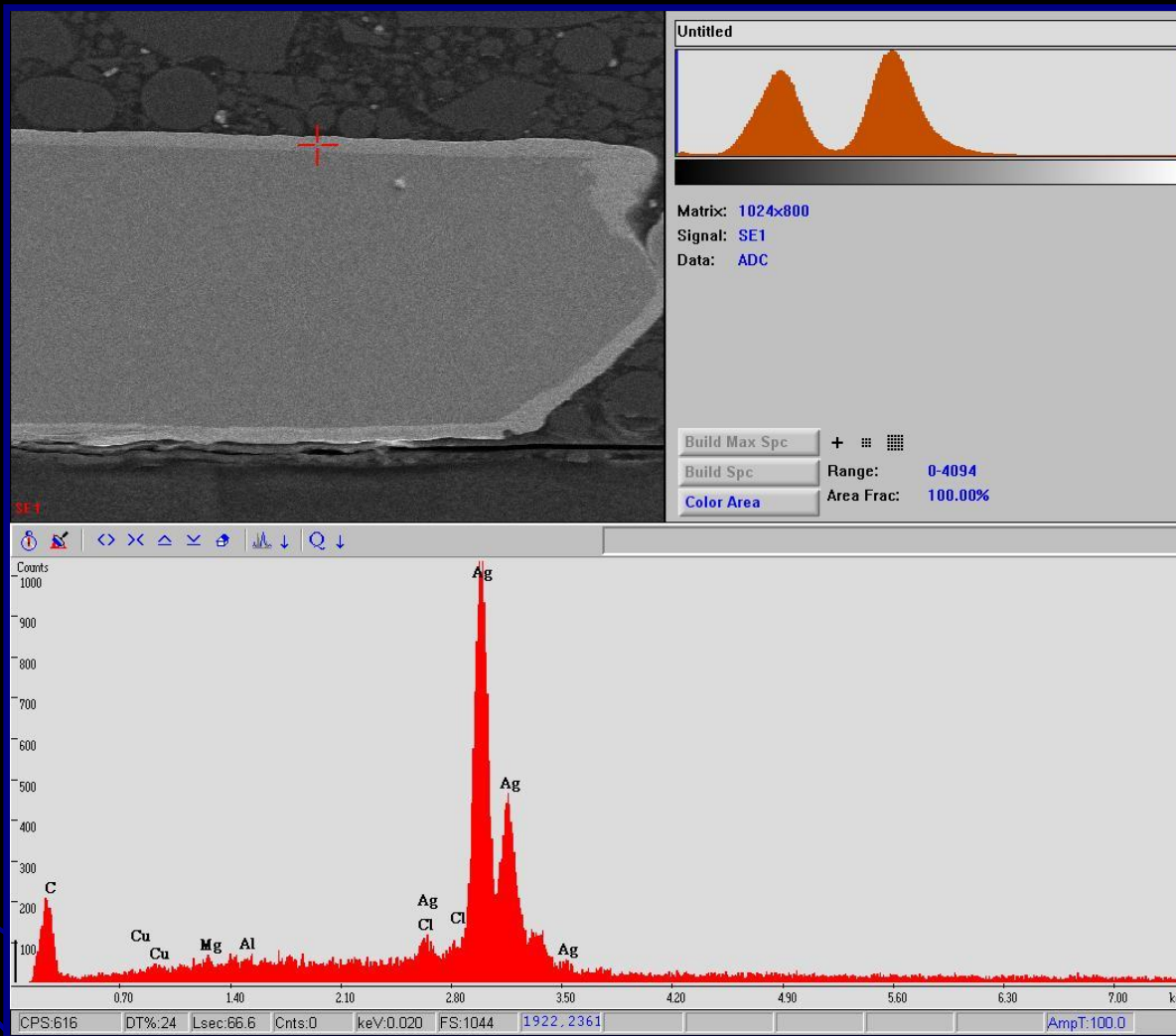
MultiMedia Card 128MB Flash  
*(Process Technology / Materials Analyses)*



$\mu$ P 6-Level Metal Deprocessed to Metal 1

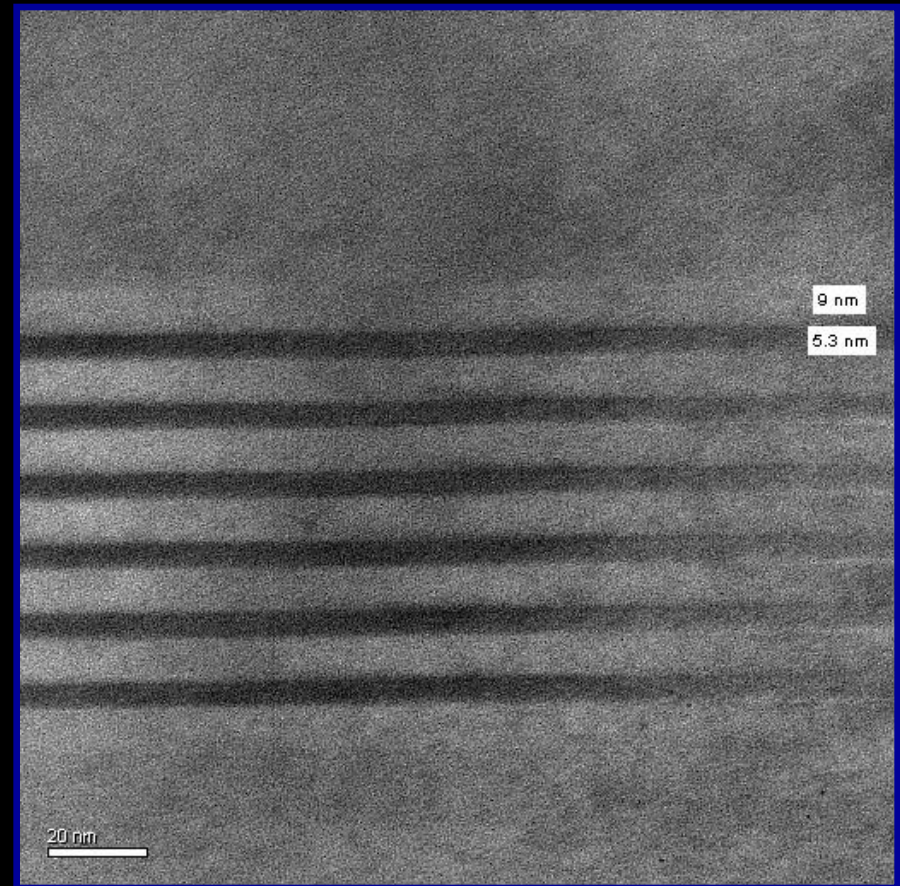
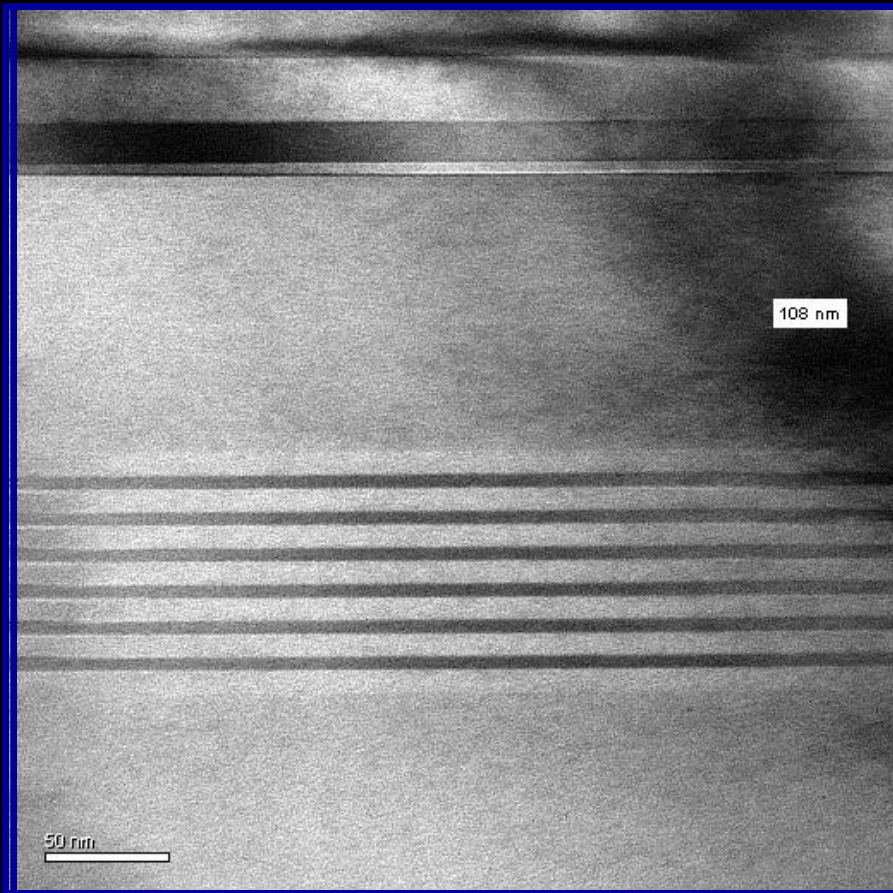
(Component /Materials Analyses)





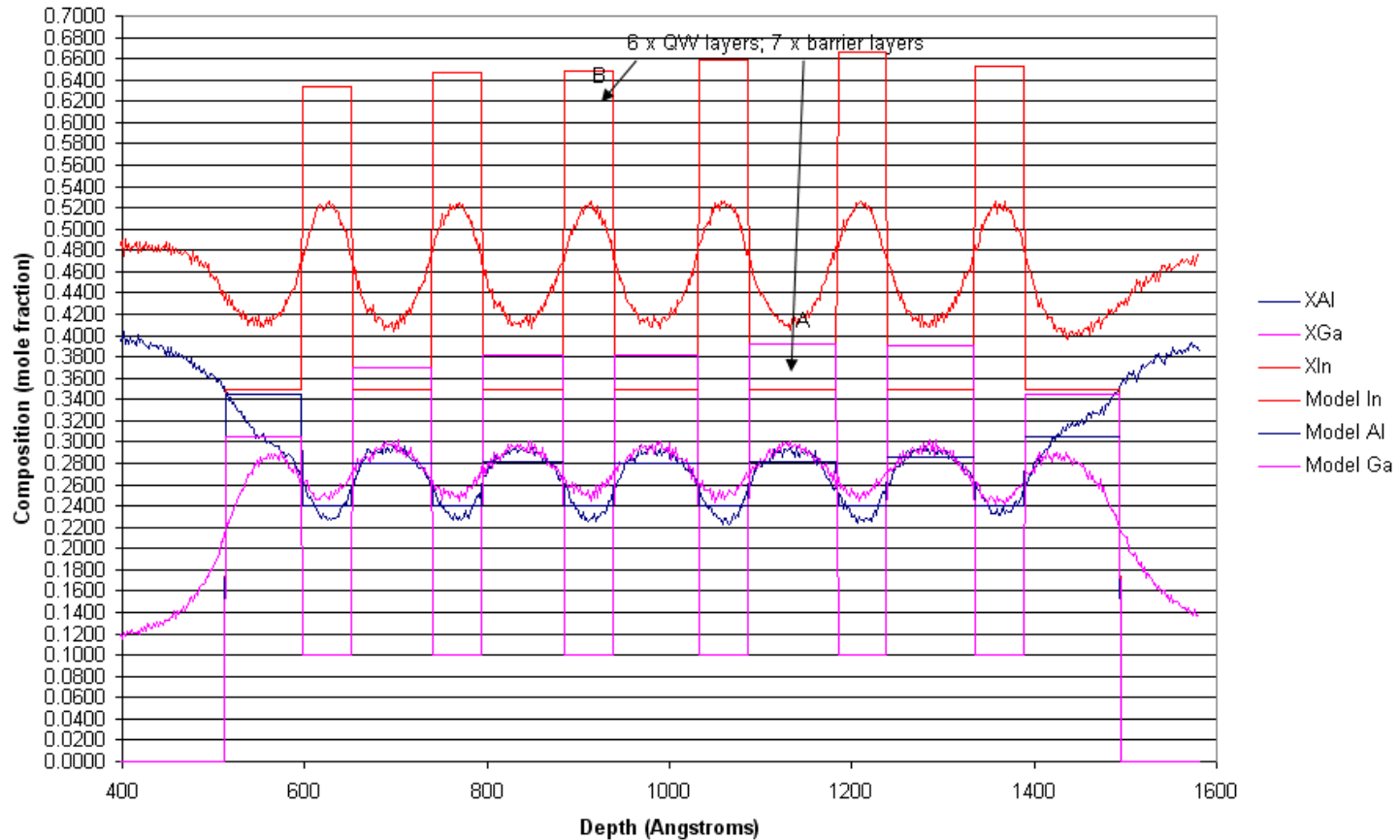
# Energy Dispersive X-ray (EDS) Analysis of Smart Card RFID Antenna

## (Component /Materials Analyses)



Strained-Layer InAlGaAs MQW Laser Active Layer TEM Photos  
(QW Thickness  $\cong$  50 Ång.)  
(Component /Materials Analyses)

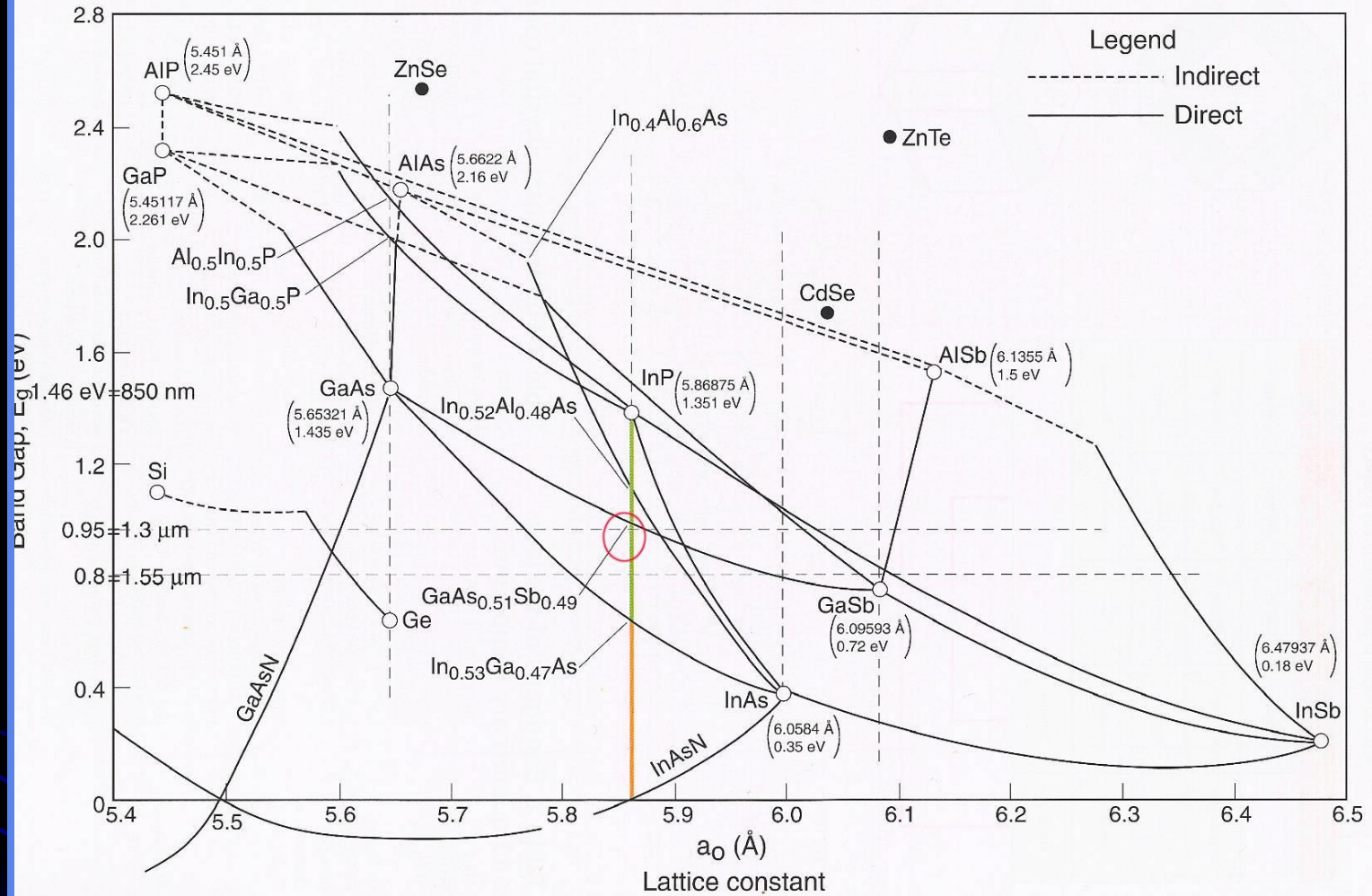
G9477ZZ07 (800eV Cs) Sample DBF0111015



Strained-Layer InAlGaAs MQW Laser Active Layer Low Angle, High Resolution SIMS Profile and Model-Derived Well and Barrier Compositions (QW Thickness  $\approx 50$  Å.)  
(Component /Materials Analyses)

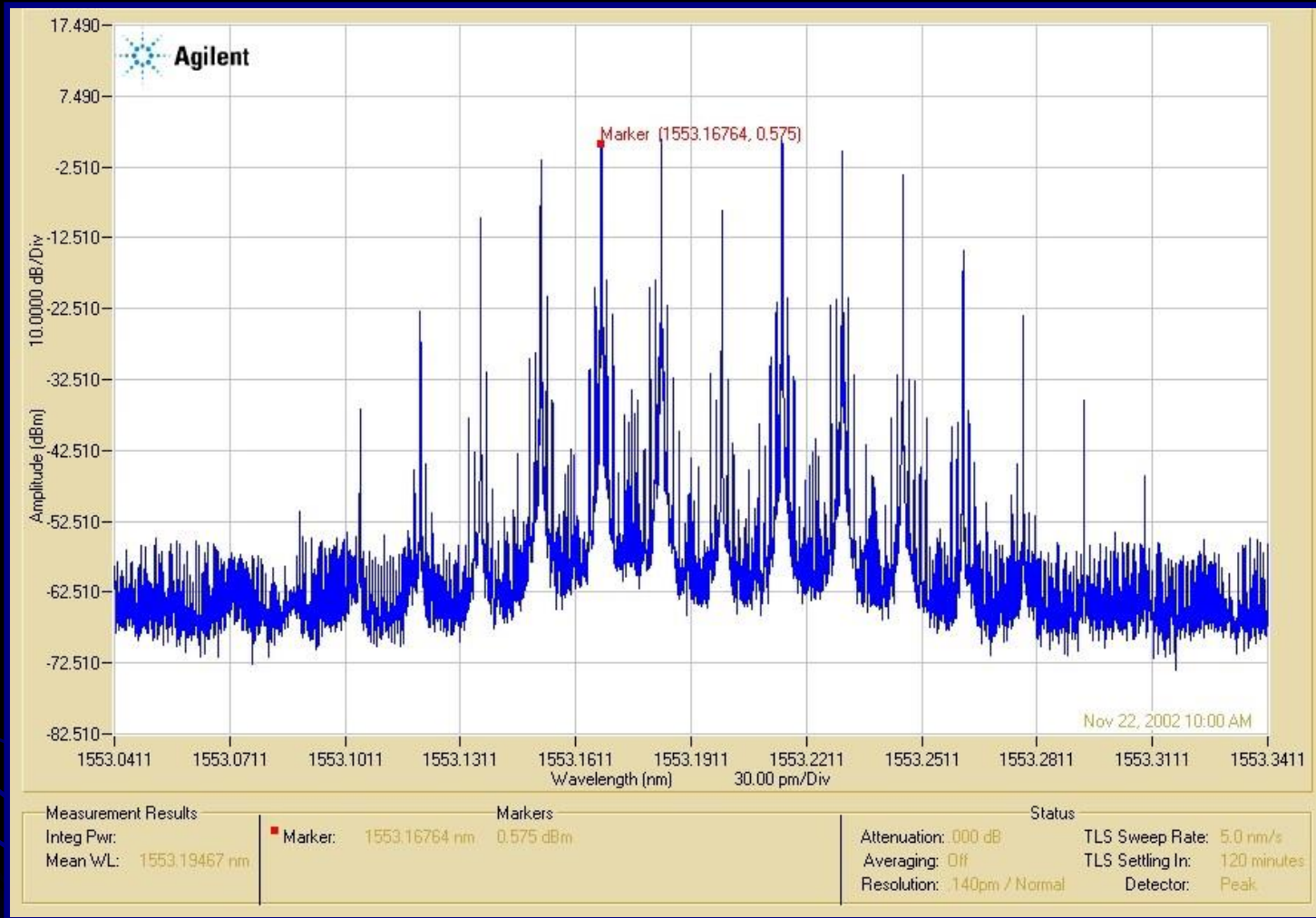
<b>Model Input Parameters</b>										
	<b>Input</b>		Barrier thickness (Å)	90	90	90	90	90	90	90
XAl in QW	0.24		QW thickness (Å)		53	53	53	53	53	53
XGa in QW	0.1									
XIn in Barrier	0.35		QW XIn		QW1	QW2	QW3	QW4	QW5	QW6
			QW XAl		0.634	0.647	0.648	0.659	0.666	0.652
			QW XGa		0.240	0.240	0.240	0.240	0.240	0.240
					0.100	0.100	0.100	0.100	0.100	0.100
					0.974	0.987	0.988	0.999	1.006	0.992
Mass-Balanced Avg. In Mole Fraction in QW =	0.655		Barrier XIn	Barrier 1	Barrier 2	Barrier3	Barrier4	Barrier5	Barrier6	Barrier7
Mass-Balanced Avg. Al Mole Fraction in QW =	0.240		Barrier XAl	0.350	0.350	0.350	0.350	0.350	0.350	0.350
Mass-Balanced Avg. Ga Mole Fraction in QW =	0.100		Barrier XGa	0.345	0.280	0.282	0.280	0.281	0.286	0.305
Calculated Direct Bandgap (eV) =	0.9557			0.305	0.371	0.381	0.382	0.392	0.390	0.345
Estimated QW Layer Strain $\approx$ 2% Compressive				1.000	1.001	1.013	1.012	1.023	1.026	1.000

## Strained-Layer MQW Laser Active Layer Composition Model (Component /Materials Analyses)



## Band Gap vs Lattice Constant "Phase" Diagram Showing Laser Composition Range

(Component / Materials Analyses)



## Stimulated Brillouin Scattering Suppression (SBSS) Characterization in Optical Transmitters (System Functionality Analyses)

# Our Core SME Team (Principal Technologists):

- Kurt H., BS/MS Ceramic Engineering
  - Expertise: Semiconductor Devices, LEDS/OLEDs, Sensors/MEMS, Photonics, Displays, Aeronautics/Automotive
  - Professional/Industrial: GM, AT&T/Lucent, Philips Research Labs (Eindhoven), United Technologies, Rockwell/Conexant/Science Center
- Gerry H., BS Mech. Engineering/MS Computer Science
  - Expertise: Enterprise Network Design and Architecture, Wireless Cellular and Satellite Communications, Operating Systems
  - Professional/Industrial: AT&T Wireless, Motorola, Telergy, Qualcomm
- Rob A., BS BA, MS Computer Science
  - Expertise: Unified Communications, Convergence and System Architecture, Optical Networks, GPON/EPON, Cloud Computing
  - Professional/Industrial: AT&T (GM, DHL, Baker Hughes, Cisco, Avaya/Nortel, HP/EDS) NECC Telecom
- Bruce J., BS Eng-Physics, MS/Ph.D Mech. Engineering
  - Expertise: GPS, Geolocation, Location-based Services, Batteries/Energy Storage, Automotive
  - Professional/Industrial: SatCon Technology, Sturman Industries, LGChem Power, NAVSYS

# Our Core SME Team (Principal Technologists):

- Josh C., BS/Ph.D Biochemistry
  - Expertise: Biomedical Devices, Biochemical Analyses, Assay Development
  - Professional/Industrial: Georgia Tech, Mitchell Cancer Institute-USA
- Kent S., BS EE
  - Expertise: DRAM/SRAM /NVRAM Memory Architecture and Circuit Design
  - Professional/Industrial: Honeywell, InMOS, Ramtron, United Memories, Tessera
- Carlos P., B.A. Computer Science, M.S. Studies of the Future
  - Expertise: IT / Software Architect: Data and System Security/Encryption, Relational Databases, Internet, e-Commerce, Cloud; Video/Audio Codecs and Compression, Professional/Industrial: Protegrity, Pax8, TAEUS, DMCare, DSoft Technology, QVtech, MCI, Booz Allen, Telos, Loral
- Jordan S., BS EE, MS Computer Science
  - Expertise: Software Engineering, Embedded Systems, Gaming, Internet, Telecom
  - Professional/Industrial:, Lockheed Martin, Bally Technologies, Intel



# Our Core SME Team (Principal Technologists):

- James D., BS International Bus, MS EE
  - Expertise: Microelectronics/MEMS Packaging, Circuit Extraction
  - Professional/Industrial: Atmel, Aspen Technologies, Samtec Microelectronics
- Brad H., BS Physics
  - Expertise: High-Speed Digital Devices, Testing, Characterization, Data Storage, PCIe/SAS Drives
  - Professional/Industrial: United Technologies, Vitesse, Atmel, Maxim, PMC-Sierra, Newisys
- Brian F., BS and MS EE
  - Expertise: Advanced Wireless 4G Telecommunications and Standards, Smart Antennas, MIMO, OFDM, RF/Microwave Circuit Design
  - Professional/Industrial: Intel (Zircom / Omnipoint Technologies), MicroUnity Systems, Hewlett-Packard