WELCOME FROM MICHAEL MIRMAK, INTEL CORPORATION

On behalf of the IBIS Open Forum, I would like to welcome you to our second Asian IBIS Summit in Taipei. Our first Summit last year was highly successful and we pleased to be able to return to Taipei to see our IBIS friends again.

We are grateful to our generous co-sponsors for their assistance in making this event possible and hope that you will encourage them to continue their support. Our thanks also go to our presenters and to you, the attendees, for your interest.

The IBIS Summits are only a part of the regular activities of the IBIS Open Forum. You are invited to participate in all our efforts, including through e-mail discussions and by pursuing Open Forum membership.

We hope that you enjoy the Summit and find the presentations and discussions useful. We wish you luck and success.

- Michael Mirmak Chair, IBIS Open Forum

欢迎词

在这里我仅代表 IBIS 開放論壇歡迎您参加我們的第二届亞洲(台北)IBIS 峰會。我們去年的第一 届峰會非常成功,我們很高興能夠回到台北,再次看到我們的台北 IBIS 朋友。

非常感謝我們慷慨的赞助商所提供的支持,使得這一会议成為可能,並希望你們今后的繼續支持。 我們還要感謝我們的演讲人并你,我们的與會者,和你对 IBIS 的興趣。

IBIS 峰會只是一個 IBIS 開放論壇的經常性活動的一部分。我邀請您參與我們的一切活动,包括通過電子郵件討論,並且成为 IBIS 開放式論壇的成員。

希望您能享受这次會議并發現其中对您有用的演讲和討論。

祝大家好運和成功。

- 马梦宽 IBIS 開放論壇主席

WELCOME FROM SOGO HSU, FOXCONN TECHNOLOGY GROUP

Welcome to the second annual IBIS Summit (Taipei). On behalf of the Foxconn SRDTDC (Server Research and Development Technical Development Committee) and Cloud Engineering Service Pool/CESBG, thanks IBIS Open Forum and all the sponsors to make this meeting possible. Wish another successful IBIS Summit in Taipei.

The Greater China area has become the most densely populated area in the world. It also means opportunities for many emerging technologies. In the past few years, cloud computing is the most focused subject of the ICT(Information and Communication Technology) industry including servers, networking products and handheld devices. With the dense ICT supply chain clusters in this area, the second annual Asian IBIS Summit (Taipei) will help the connections between Taiwan industries and the global science and technology development. I believe that we will contribute more with our advanced technologies in the future.

With increased Signal and Power Integrity concerns in modern high-speed product designs, more and more engineers pay attentions to IBIS Open Forum and its standard specification developments. As a dominant ODM supplier in the server/storage area, Foxconn Technology Group will continue to pay close attention to well construction of IBIS standard and the latest technology developments to ensure our high reliability of the products. Looking forward to this summit, we can discuss, exchange with all the participants for advanced technologies and the latest developments in IBIS.

Wish all have a fruitful meeting!

Shou-Kuo Sogo Hsu, Ph. D. Foxconn Technology Group.

歡迎參加第二屆台北舉辦之亞洲IBIS開放論壇。在此, 謹代表鴻海科技集團伺服器研發技委會與雲 運算產品事業群, 很榮幸能夠對於IBIS協會組織以及各贊助單位, 對此次論壇能成功舉行敬致謝忱。

大中華區已然成為全球人口最稠密之區域,而這也意味著對於許多科技的新興機會。在過去幾年內, 雲端運算產業則是 ICT 產業最聚焦的主題,包括伺服器,網通產品到手持裝置等。而 ICT 產業在 大中華區綿密的供應鍊聚落,亞洲IBIS開放論壇持續第二年在台北舉辦,將有助於台灣產業與全球 科技發展藍圖銜接,使優秀的台灣科技從業人員對世界做出更多貢獻。

IBIS開放論壇和其規範的發展方向,隨著科技產品設計日益精密,受到全世界的工程師在信號和電源完整性的積極關心。做為伺服器/儲存器領域的主要 ODM 供應商,鴻海科技集團將持續關注IBIS 標準以及最新科技趨勢,以確保提供高可靠度之產品。也期待在今天之論壇中,與各位與會先進一 齊進行技術交流,研討IBIS技術之最新發展。

相信今天的開放論壇議程,會讓各位與會先進,有一趟豐收之旅程。

許壽國 博士 鴻海科技集團

AGENDA AND ORDER OF THE PRESENTATIONS

(The actual agenda might be modified)

	IBIS SUMMIT MEETING AGENDA
8:15	REFRESHMENTS & SIGN IN - Vendor Tables Open at 8:30
9:00	<pre>Welcome - Sogo Hsu (Foxconn Technology Group, ROC) - Michael Mirmak (Chair IBIS Open Forum, Intel Corporation, USA)</pre>
9:20	IBIS Status and Future Direction
9:35	IBIS Parsers
10:05	BREAK (Refreshments and Vendor Tables)
10:25	Power Aware Features of IBISv5.0 - Accuracy and Challenges 18 Vipul Pursottam Patel, Prabhat Ranjan, and Richa Ahuja (STMicroelectronics, India)
10:55	Modeling the On-die De-cap of IBIS 5.0 PDN-aware Buffers 26 Lance Wang* and Randy Wolff** (*IO Methodology, and **Micron Technology, USA)
11:25	<pre>Power-aware I/O Modeling for High-speed Parallel Bus</pre>
12:00	FREE BUFFET LUNCH (Hosted by Sponsors) - Vendor Tables

AGENDA AND ORDER OF THE PRESENTATIONS (Continued)

13:30 Board-only Power Delivery Prediction for Voltage Regulator 46 and Mother Board Designs Jianggi He# and Y.L. Li## (Intel Corporation, #USA, ##ROC) Supporting External Circuit as Spice or S-parameters in 61 14:15 Conjunction with I-V/V-T Tables Kent Drumstad*#, Adge Hawes*##, Taranjit Kukal**###, Feras Al-Hawari**#, Ambrish Varma**#, and Terry Jernberg**# (*IBM, #USA, ##United Kingdom, **Cadence Design Systems, ###India, #USA) 15:00 BREAK (Refreshments and Vendor Tables) 15:20 Bob Ross (Teraspeed Consulting Group, USA) 16:00 Concluding Items 16:30 END OF IBIS SUMMIT MEETING _____



























	New Flags in ib	oischk5
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and the	e -caution and/or -numbered f	lags are optional.
• –an inte • –nu No	ni for <file_name>.ami (alg rface control file) mbered for numbered Er ces and Caution messages</file_name>	orithmic model rror, Warning,
Page 4	© 2011 Teraspeed Consulting Grou	IP LLC CONSULTIN GROU



			1155 un	Ique	e message s	trings)	
1	Number	Symbol in Code	Message string	Parameters	Comment	Category	Clasificatio
	100	MDL_ERR_0	Unable to Allocate Memory: %s %d	filename, line	The code failed to allocate memory in <filename> at</filename>	Internal Error	E
2				number	linenumber>		
3	101	MDL_ERR_1	Unable to get IBIS structure		Program data structures are corrupt	Internal Error	E
4	102	MDL_ERR_2	Orphan Model keyword.		Model keyword found but not within a Model declaration	Error with IBIS file Line number	E
5	103	MDL_ERR_3	Illegal Digital Port <%s> (not allowed in SPICE Ports section)	portname	Improper use of Digital port <portname></portname>	Error with IBIS file Line number	E
6	104	MDL_ERR_4	D_switch not allowed with (D_drive,D_receive,or D_enable) in		Improper use of D_switch	Error with IBIS file Line number	E
7	105	MDL_ERR_5	%s not allowed with D_switch in Ports/A2D/D2A Section			Error with IBIS file Line number	E
8	106	MDL_ERR_6	Reserved Digital Port <%s> used as	portname	Improper use of Reserved Digital port <portname></portname>	Error with IBIS file Line number	E
9	107	MDL_ERR_7	Orphan data line keyword.		A Model related data line was found where none was expected	Error with IBIS file Line number	E
LO	108	MDL_ERR_8	TTgnd Typical value should be > 0		Improper TTgnd typical value	Error with IBIS file Line number	E
11	109	MDL_ERR_9	TTgnd Min value should be >0		Improper TTgnd minimum value	Error with IBIS file Line number	E
12	110	MDL_ERR_10	TTgnd Max value should be >0		Improper TTgnd maximum value	Error with IBIS file Line number	E
13	111	MDL_ERR_11	TTgnd typ value is not in between		Improper range for TTgnd	Warning	w
14	112	MDL_ERR_12	TTpower Typical value should be >0		Improper TTpower typical value	Error with IBIS file Line number	E
15	113	MDL_ERR_13	TTpower Min value should be >0		Improper TTpower minimum value	Error with IBIS file Line number	E
16	114	MDL_ERR_14	TTpower Max value should be > 0		Improper TTPower maximum value	Error with IBIS file Line number	E
17	115	MDL_ERR_15	TTpower typ value is not in between		Improper range for TTPower	Warning	w
10	116	MDL_ERR_16	[Model Spec] should be specified immediately after all the		Improper positioning of [Model Spec]	Error with IBIS file Line number	
	117	MDI EPP 17	Receiver Thresholds) should not be	modeltype	Pacaiver thresholds are not allowed for a	Warning with IBIS file Line number	w
19	***		specified for model type %s	monentype	smodeltype> which is not an Input or 1/0 model type	with this me the number	
20	118	MDL_ERR_18	[Add Submodel] should be specified		Improper positioning of [Ad Submodel]	Error with IBIS file Line number	E
21	119	MDL_ERR_19	%s Already Defined For Model '%s'	sub parameter/keywo rd. modelname	A model <sub-parameter keyword="" or=""> was already defined for <modelname></modelname></sub-parameter>	Error with IBIS file Line number	E
22	120	MDL_ERR_20	[Receiver Thresholds] should be specified immediately after all the subparameters of a model and before the other keywords of a		Improper positioning of [Receiver Thresholds] keyword	Error with IBIS file Line number	E
23	121	MDL_ERR_21	Expecting Keyword. Invalid Line		An invalid line was found where a keyword was expected	Error with IBIS file Line number	E





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Mos	at Varient 🦉 Getting Started 🗻 Latent Headlines						
),H	IIS: IBISCHK Parser Issue Reports (
		IBISCHK Parser Issue Re	ports (BU	Gs)			
ID#	Title	Requester	Date Submitted	Severity	Priority	Status	Date Closed
130	Program Closure with Case Sensitive Errors in Ramp Subparameters	Lance Wang, IO Methodology, Randy Wolff, Micron Technology, Bob Ross, Teraspeed Consulting Group	October 14, 2011	(SEVERE)	(HIGH)	(CLOSED)	(October 28, 2011)
129	Identical [Composite Current] points erroneously required	Lance Wang	7/21/2011	MODERATE	MEDIUM	CLOSED	October 7,2011
128	Repetition of Reserved Parameters and Model Specific Sections Not Checked	Bob Ross, Teraspeed Consulting Group	March 29, 2011	ANNOYING	MEDIUM	OPEN	
127	IBIS-AMI Fatal Error with Root Parameter Spurious Text	Bob Ross, Teraspeed Consulting Group	March 13, 2011	SEVERE	HIGH)	OPEN	
126	Illegal Text After IBIS-AMI Parameters Not Reported	Walter Katz, SiSoft and Bob Ross, Teraspeed Consulting Group	March 9, 2011	MODERATE	HIGH	OPEN]
125	Missing Basic Checks on ani Files	Walter Katz, SiSoft and Bob Ross, Teraspeed Consulting Group	January 6, 2011	MODERATE	HIGH	OPEN]
124	Erroneous Whitespace Requirement in ani Files	Curtis Clark, Ansys, Inc.	January 4, 2011	MODERATE	MEDIUM	OPEN	
123	Wrong Cautions for [Ramp] dV	PRABHAT RANJAN, STMicroelectronics Pvt Ltd	December 14, 2010	MODERATE	MEDIUM	CLOSED	March 17, 2011
122	[Model Spec] Verf and Reef Values Ignored in Timing Load Check	Sergey Nikonchuk, Andrey Babiatsev - Freescale Semicondictor Inc.	October 9, 2010	MODERATE	MEDIUM	CLOSED	October 7, 2011
121	Broken Missing [Component] Test	Atal Agarwal, Adept Software Avenues	September 1, 2010	SEVERE	MEDIUM	CLOSED	November 5, 2010
120	Unusued [Model Selector] Cantion	Bob Ross, Teraspeed Consulting Group	July 27, 2010	ENHANCEMENT	LOW	NOT A BUG	<u></u>
119	Waveform Test Missing Results with Version 4.2.1 and Beyond	Bob Ross, Teraspeed Consulting Group	July 5, 2010	SEVERE	MEDIUM	CLOSED	November 5, 2010
118	Vmeas Check with Version 4.2.1 and Beyond Fahre	Bob Ross, Teraspeed Consulting Group	July 5, 2010	SEVERE	MEDIUM	CLOSED	November 5, 2010
117	Debug Error with Missing Pin Numbers and Other Conditions	Bob Ross, Teraspeed Consulting Group and Arpad Muranyi, Mentor Graphics	June 3, 2010	SEVERE	MEDIUM	CLOSED	February 13, 2011
116	[ISSO_PU] and [ISSO_PD] Mismatch Checks	Sergey Nikonchuk, Andrey Babintsev - Freescale Semicondictor Inc.	April 22, 2010	SEVERE	MEDIUM	CLOSED	March 17, 2011















































































































































































































































































	Symmetrical T-Coils				Asymmetrical T-Coils			
Load	Standard C	R _c -C	$R_{P}C$	$R_{\alpha}-R_{\alpha}C$	R_{c} - C	R _n C	$R_{\alpha}-R_{\alpha}C$	Gen RR.C
Fig.	1(a)	1(b)	1(c)	1(d)	2(a)	2(b)	2(c)	2(d)
R_1	I(u)	1(0)	2.5 Ω	2.5 Ω	2(u)	2(0)	2(0)	1.907 Ω
R_{2}			25Ω	2.5 Ω		5 556 Ω	5 435 Ω	3 100 Ω
R _R		250 Q	2000 Q	222.2.0		0.000	01100	51100
	5 nH	5 nH	5.025 nH	5.025 nH	4 nH	5.409 nH	4.257 nH	3.888 nH
L_2	5 nH	5 nH	5.025 nH	5.025 nH	6 nH	5.702 nH	6.612 nH	6.127 nH
Gain	1	1	0.95	0.95	1	1	0.98	0.943
$C_{R}(30^{\circ})$	0.333 pF	0.653 pF	0.362 pF	0.698 pF	0.480 pF	0.364 pF	0.504 pF	0.489 pF
L_3	(-1.667 nH)	(-0.867 nH)	(-1.609 nH)	(-0.767 nH)	(-1.200 nH)	(-1.867 nH)	(-1.330 nH)	(-1.154 nH)
BW	2.167 GHz	1.548 GHz	2.136 GHz	1.536 GHz	1.806 GHz	2.075 GHz	1.780 GHz	1.841 GHz
BWER	2.723	1.945	2.684	1.930	2.269	2.607	2.237	2.314
GBWER	2.723	1.945	2.550	1.834	2.269	2.607	2.193	2.182
$C_B (45^{\circ})$	0.500 pF	0.980 pF	0.552 pF	1.074 pF	0.720 pF	0.556 pF	0.772 pF	0.750 pF
L_3	(-1.250 nH)	(-0.050 nH)	(-1.133 nH)	0.173 nH	(-0.600 nH)	(-1.387 nH)	(-0.659 nH)	(-0.504 nH)
BW	2.251 GHz	1.608 GHz	2.198 GHz	1.575 GHz	1.876 GHz	2.135 GHz	1.829 GHz	1.893 GHz
BWER	2.828	2.020	2.763	1.980	2.357	2.683	2.298	2.378
GBWER	2.828	2.020	2.625	1.881	2.357	2.683	2.253	2.243



Parameterized SPICE Automatic T-coil Design Subcircuit								
	*ASTORETRICAL T-COIL WITH PARAMETERS							
	** ENTER							
	·param x = 30							
	.param 65 = 10 \$ set 'max(le-10, 10)' \$ Series Resistor							
	.param RP = 500 \$ set 'max(le-10, 500)' \$ Parallel Resistor							
	.param CB = 0.653p							
	.param RI = 2 \$ SEC max(IE=IV, 2). \$ SELECT RI WICH RFV ** CARTMARED							
	.Param GP = '1/RP' \$ Parallel Conductance							
	.param R2 = 'max(le-10,(R*R*GP-R1*(l+(RS+R)*GP))/(l+(R1+RS-R)*GP))'							
	param LT = ((R-R1)*(R-R1)*C/(1+(R1+R5-R)*GP))							
	.param L1 = '(K1-K)'(K1+K5-K)'C/(1+(K1+K5-K)'GP+SQRT(1+(K1+K5-K)'GP))'							
	.param L3 = 'R*R*CB-L1*L2/(L1+L2)'							
	÷							
	ADDRETIKAL T-CUL CIRCUIT (GFOURD = 0)							
	*							
	XCOIL1 in outc outr TCOIL_ASM							
	RLOAD 0 outr R='R'							
	ж • • • • • • • • • • • • • • • • • • •							
	* SUBCKT: TCOIL_CONSTANT RESISTANCE T-COIL (RL)							
	SUBCKT TCOIL_ASM in outc outr							
	L2 2 d L='L2'							
	R1 in 1 R='R1'							
	R2 outr 2 R='R2'							
	L3 d 3 L='L3' \$ Negative L3 ok							
	RS 3 outc R='RS'							
	C outc 0 C='C'							
	LENDS							
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