

Invalidity of U.S. Patent No. 8,086,800 in view of Combination References

As described in the following claim chart, various limitations of claim 12 of U.S. Patent No. 8,086,800 (“’800 patent”) are disclosed in the following prior art references as charted herein (collectively, the “Combination References”) and in Exhibits F-1 – F-19:

- U.S. Patent No. 5,434,872 (“Petersen”)
- WO 2004/034176 (“Radulescu II”)
- Micro-Architectural Mechanisms for Extending the Performance of Interconnection Networks, August 2001 (“Peh”)
- Networks on Chip (“Jantsch”)
- Trade-Offs in the Design of a Router with Both Guaranteed and Best-Effort Services for Networks on Chip (“Rijpkema”)
- Communications Services for Networks on Chip (“Radulescu I”)
- Wrapper-Based Bus Implementation Techniques for Performance Improvement and Cost Reduction (“Anjo”)
- U.S Patent No. 6,393,500 (“Thekkath”)
- Flit-Reservation Flow Control, August 2001 (“Peh II”)
- U.S. Patent No. 6,397,287 (“Brown”)
- U.S. Patent No. 6,615,308 (“Fanning”)
- U.S. Patent No. 6,490,630 (“Poon”)
- Buffer Implementation for Proteo Network-on-Chip 2003 (“Saastamoinen”)
- SoCIN: A Parametric and Scalable Network-on-Chip (“Zeferino”)
- Quality-of-Service and Error Control Techniques for Network-on-Chip Architectures (“Vellanki”)

- QNoC: QoS architecture and design process for network on chip (“Bolotin”)
- Interfacing Cores with On-chip Packet-Switched Networks (“Bhojwani”)
- Concepts and Implementation of the Philips Network-on-Chip (“Dielissen”)
- An Efficient On-Chip Network Interface Offering Guaranteed Services, Shared-Memory Abstraction, and Flexible Network Configuration (“Radulescu III”)
- U.S. Patent No. 7,012,893 (“Bahadiroglu”)
- U.S. Patent No. 6,769,030 (“Bournas”)
- U.S. Patent No. 7,355,971 (“Jason”)

To the extent that primary references and combinations identified in Defendants’ Invalidity Contentions are alleged or found not to anticipate or render obvious one or more claims of the ’800 patent, those claims are rendered obvious by the identified references or combinations in further combination with one or more additional references as described in this chart. For example, to the extent that any primary reference or combination identified in Defendants’ Invalidity Contentions is alleged or found to lack sufficient disclosure to anticipate or render obvious an element or limitation recited in the asserted claims of the ’800 patent, further disclosure supporting the obviousness of that element or limitation is identified in this chart.

Motivations to combine any or all of these references are discussed in Defendants’ Invalidity Contentions.

To the extent that the following contentions reflect constructions of claim limitations consistent with or suggested by NST, no inference is intended or should be drawn that Defendants agree with NST’s claim constructions, and Defendants expressly reserve the right to contest such claim constructions.

Citations to particular documents or passages are merely exemplary of where each limitation is found. Defendants reserve the right to rely on other documents or passages providing comparable evidence of how the Combination References disclose or render obvious the elements and limitations of the asserted claims of the ’800 patent.

Defendants reserve the right to amend or supplement this claim chart at a later date pursuant to the Docket Control Order issued by the Court on June 16, 2023 (Dkt. No. 59).

A. Claim 12

'800 Patent Claim Limitation	Combination References
[12.pre] An integrated circuit comprising:	To the extent the preamble is limiting, the Combination References disclose this part of the preamble based on at least the following citations: <u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u> - Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> - Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u> - Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Peh II</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> - Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Poon</u> - Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> - Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> - Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> - Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> - Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> - Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> - Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation.
[12.a] a plurality of processing modules including a first processing module having a first processing memory and a second processing module having a second processing memory;	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> - Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation. <u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u> - Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> - Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Thekkath</u> - Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> - Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> - Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Poon</u> - Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> - Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> - Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Vellanki</u> • Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> • Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> • Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u> • Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> • Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation. <u>Bahadiroglu</u> • Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation. <u>Bournas</u> • Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> • Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.

'800 Patent Claim Limitation	Combination References
[12.b] a plurality of interconnect modules including a first interconnect module and a second interconnect module, wherein the first processing module is connected to the first interconnect module and the second processing module is connected to the second interconnect module; and	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> - Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation. <u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u> - Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> - Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u> - Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Thekkath</u> • Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> • Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> • Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Poon</u> • Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> • Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> • Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> • Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> • Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Bhojwani</u> - Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u> - Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> - Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation. <u>Bahadiroglu</u> - Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation. <u>Bournas</u> - Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> - Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.
[12.c] a network for connecting the first interconnect module to the second interconnect module in order to provide a communication connection	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation.

'800 Patent Claim Limitation	Combination References
between the first processing module and the second processing module, wherein the first interconnect module is connected between the first processing module and the network, and wherein the second interconnect module is connected between the second processing module and the network;	<u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u> - Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> - Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u> - Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Thekkath</u> - Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> - Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Brown</u> • Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Poon</u> • Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> • Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> • Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> • Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> • Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> • Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> - Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation. <u>Bahadiroglu</u> - Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation. <u>Bournas</u> - Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> - Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.
[12.d] wherein the first interconnect module includes a first memory for buffering first data from the first processing module, the first interconnect module further including a first determination unit, wherein the first determination unit is configured to determine a first optimal amount of data to be buffered by the first memory, and the second	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> - Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation. <u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation.

'800 Patent Claim Limitation	Combination References
interconnect module includes a second memory for buffering second data from the second processing module, the second interconnect module further including a second determination unit, wherein the second determination unit is configured to determine a second optimal amount of data to be buffered by the second memory,	<u>Jantsch</u> - Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> - Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u> - Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Thekkath</u> - Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> - Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> - Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Fanning</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-11 for this limitation. <u>Poon</u> - Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> - Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> - Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> - Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> - Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> - Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u> - Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u>

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	- Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation. <u>Bahadiroglu</u> - Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation. <u>Bournas</u> - Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> - Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.
[12.e] the first interconnect module transferring the first data to the second processing module when the first data buffered in the first memory reaches the first optimal amount, and the second interconnect module transferring the second data to the first processing module when the second data buffered in the second memory reaches the second optimal amount	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> - Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation. <u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> - Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u> - Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Thekkath</u> - Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> - Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> - Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Fanning</u> - Defendants incorporate by reference the citations found in Exhibit F-11 for this limitation. <u>Poon</u>

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	- Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> - Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> - Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> - Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> - Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> - Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u> - Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> - Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Bahadiroglu</u> - Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation. <u>Bournas</u> - Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> - Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.
[12.f] wherein at least one of the first determination unit and the second determination unit is further configured to determine an optimal moment for sending the data in said first wrapper or said second wrapper according to communication properties of the communication between the master and the slave,	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> - Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation. <u>Radulescu II</u> - Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> - Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u> - Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation. <u>Radulescu I</u> - Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> - Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Thekkath</u> - Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> - Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> - Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Fanning</u> - Defendants incorporate by reference the citations found in Exhibit F-11 for this limitation. <u>Poon</u> - Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Saastamoinen</u> • Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation. <u>Zeferino</u> • Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> • Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> • Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> • Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u> • Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> • Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation. <u>Bahadiroglu</u> • Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Bournas</u> • Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> • Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.
[12.g] wherein the communication properties include ordering of data transport, flow control including when a remote buffer is reserved for a connection, then a data producer will be allowed to send data only when it is guaranteed that space is available for the produced data at the remote buffer, throughput where a lower bound on throughput is guaranteed, latency where an upper bound for latency is guaranteed, lossiness including dropping of data, transmission termination, transaction completion, data correctness, priority, and data delivery.	The Combination References disclose this limitation based on at least the following citations: <u>Petersen</u> • Defendants incorporate by reference the citations found in Exhibit F-1 for this limitation. <u>Radulescu II</u> • Defendants incorporate by reference the citations found in Exhibit F-2 for this limitation. <u>Peh</u> • Defendants incorporate by reference the citations found in Exhibit F-3 for this limitation. <u>Jantsch</u> • Defendants incorporate by reference the citations found in Exhibit F-4 for this limitation. <u>Rijpkema</u> • Defendants incorporate by reference the citations found in Exhibit F-5 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Radulescu I</u> • Defendants incorporate by reference the citations found in Exhibit F-6 for this limitation. <u>Anjo</u> • Defendants incorporate by reference the citations found in Exhibit F-7 for this limitation. <u>Thekkath</u> • Defendants incorporate by reference the citations found in Exhibit F-8 for this limitation. <u>Peh II</u> • Defendants incorporate by reference the citations found in Exhibit F-9 for this limitation. <u>Brown</u> • Defendants incorporate by reference the citations found in Exhibit F-10 for this limitation. <u>Fanning</u> • Defendants incorporate by reference the citations found in Exhibit F-11 for this limitation. <u>Poon</u> • Defendants incorporate by reference the citations found in Exhibit F-12 for this limitation. <u>Saastamoinen</u> • Defendants incorporate by reference the citations found in Exhibit F-13 for this limitation.

'800 Patent Claim Limitation	Combination References
	<u>Zeferino</u> • Defendants incorporate by reference the citations found in Exhibit F-14 for this limitation. <u>Vellanki</u> • Defendants incorporate by reference the citations found in Exhibit F-15 for this limitation. <u>Bolotin</u> • Defendants incorporate by reference the citations found in Exhibit F-16 for this limitation. <u>Bhojwani</u> • Defendants incorporate by reference the citations found in Exhibit F-17 for this limitation. <u>Dielissen</u> • Defendants incorporate by reference the citations found in Exhibit F-18 for this limitation. <u>Radulescu III</u> • Defendants incorporate by reference the citations found in Exhibit F-19 for this limitation. <u>Bahadiroglu</u> • Defendants incorporate by reference the citations found in Exhibit F-20 for this limitation. <u>Bournas</u>

'800 Patent Claim Limitation	Combination References
	- Defendants incorporate by reference the citations found in Exhibit F-21 for this limitation. <u>Jason</u> - Defendants incorporate by reference the citations found in Exhibit F-22 for this limitation.