



# InfiniBand Trade Association RoCE Integrators' List

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**October 2019**





# IBTA RoCE Integrators' List

## PlugFest 36      October 2019



Manufacturer	Description	Model	Type	Speed	FW	SW
Marvell	FastLinQ Single-Port QSFP28	QL45611HL	RNIC	100 GbE	8.50.9.0	OFED 4.17-1
Marvell	FastLinQ Dual-Port QSFP+	QL45412HL	RNIC	40 GbE	8.50.9.0	OFED 4.17-1
Marvell	FastLinQ Dual-Port SFP28	QL45212HL	RNIC	25 GbE	8.50.9.0	OFED 4.17-1
Marvell	FastLinQ Dual-Port SFP28	QL41212HL	RNIC	25 GbE	8.50.9.0	OFED 4.17-1
Marvell	FastLinQ Quad-Port SFP28	QL41234HL	RNIC	25 GbE	8.50.9.0	OFED 4.17-1
Mellanox	ConnectX@-5 EN Dual-Port QSFP28	MCX516A-CCA	RNIC	100 GbE	16.26.1040	MLNX OFED 4.7-1.0.0.1
Mellanox	ConnectX@-5 EN Dual-Port QSFP28	MCX516A-CDA	RNIC	100 GbE	16.26.1040	MLNX OFED 4.7-1.0.0.1
Mellanox	ConnectX@-4 EN Dual-Port QSFP28	MCX4121A-ACA	RNIC	25 GbE	14.26.1040	MLNX OFED 4.7-1.0.0.1
Mellanox	SwitchX@-2 InfiniBand to Ethernet gateway, 36 QSFP+ ports	MSX6036G-2SFS	Switch	40 GbE	9.4.5110	MLNX OS 3.6.6003
Mellanox	Spectrum 48 SFP28 ports, 8 QSFP28 ports, Supports 10 to 100GbE	MSN2410-CB2F	Switch	100 GbE	13.2000.1862	MLNX OS 3.8.1304

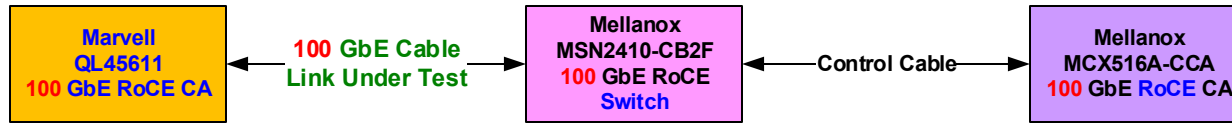
  

Software	Versions	Performance Software	
Operating System	<a href="#">OFED Systems: CentOS 7.6.1810</a> , <a href="#">MLNX Systems: CentOS 7.7-1908</a>	HPC-Performance Monitor	<a href="#">HPC-PM-2.0.80</a>
OFED	<a href="#">OFED 4.17-1</a>	Perftest (OFED)	<a href="#">4.4-0.9</a>
Mellanox OFED	<a href="#">MLNX OFED 4.7-1.0.0.1</a>	<b>Benchmarks Performed</b>	
Open MPI	<a href="#">Open MPI 3.1.4</a>	PingPong	Gather
Benchmark	<a href="#">Intel MPI Benchmarks</a>	PingPing	Gatherv
Test Plan	<a href="#">Software Forge RoCE Interoperability MOI</a>	Sendrcv	Scatter
Duration	1-3 minutes	Exchange	Scatterv
<b>Conditions for Passing Interoperability Testing</b>		Allreduce	Alltoall
Performance	Devices must perform at advertised rates and latencies	Reduce	Alltoallv
Link Status	Link rate and width show expected values - i.e. 100GbE (4x)	Reduce_scatter	Bcast
Errors	There must be no errors recorded during any test phases	Allgather	Barrier
MPI Test	The MPI Benchmark must run to completion	Allgatherv	

# RDMA over Converged Ethernet (RoCE) Interop Testing

Marvell QL45611 to Mellanox MSN2410 Switch to Mellanox MCX516A-CCA

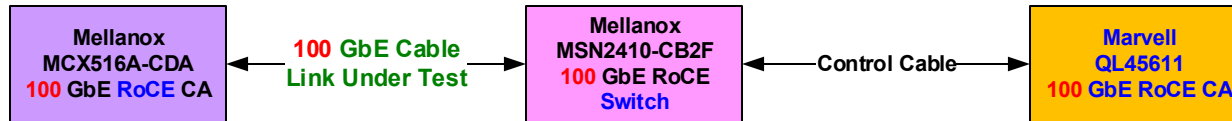
Interop 01



Interop 01

Mellanox MCX516A-CDA to Mellanox MSN2410 Switch to Marvell QL45611

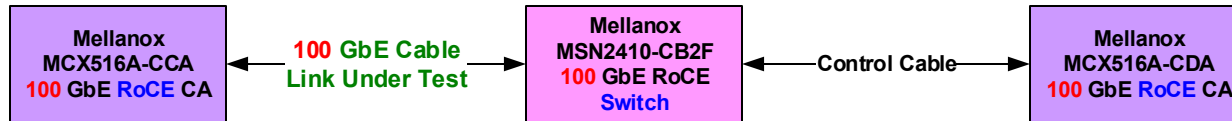
Interop 02



Interop 02

Mellanox MCX516A-CCA to Mellanox MSN2410 Switch to Mellanox MCX516A-CDA

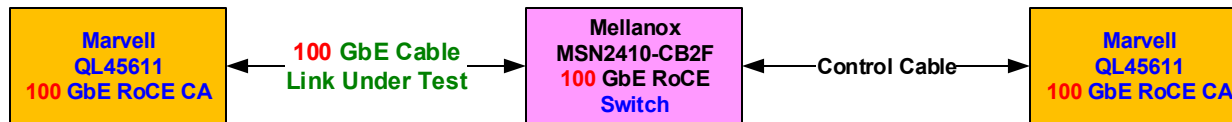
Interop 03



Interop 03

Marvell QL45611 to Mellanox MSN2410 Switch to Marvell QL45611

Interop 04



Interop 04

Marvell QL45611 to Mellanox MCX516A-CDA

Interop 05



Interop 05

Mellanox MCX516A-CDA to Mellanox MCX516A-CCA

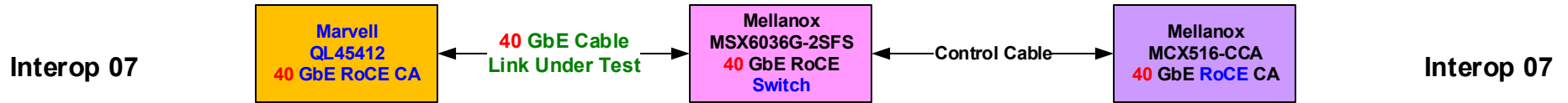
Interop 06



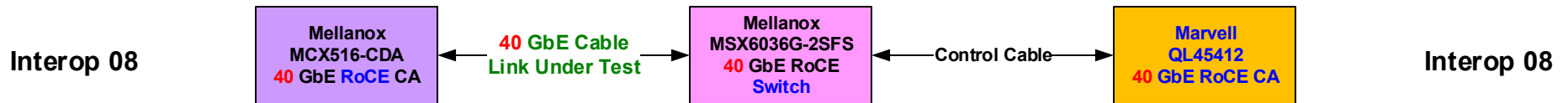
Interop 06

# RDMA over Converged Ethernet (RoCE) Interop Testing

## Marvell QL45412 to Mellanox MSX6036G Switch to Mellanox MCX516A-CCA



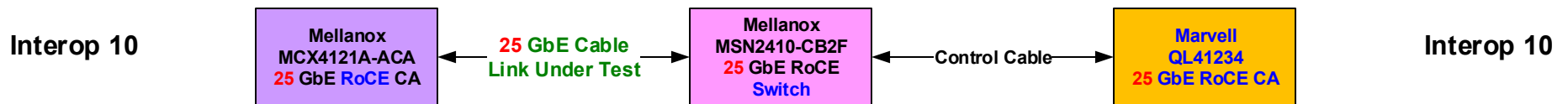
## Mellanox MCX516A-CDA to Mellanox MSX6036G Switch to Marvell QL45412



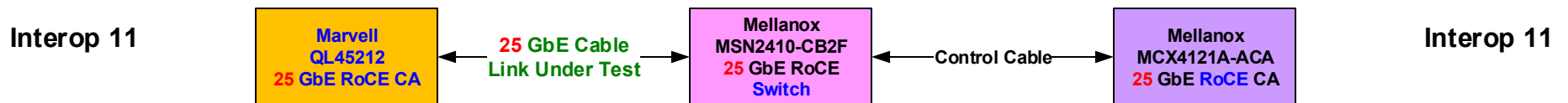
## Mellanox MCX516A-CCA to Marvell QL45412



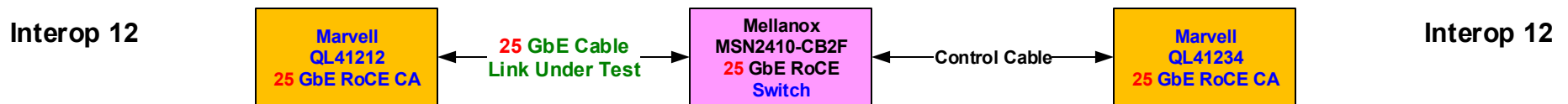
## Mellanox MCX4121A-ACA to Mellanox MSN2410 Switch to Marvell QL41234



## Marvell QL45212 to Mellanox MSN2410 Switch to Mellanox MCX4121A-ACA



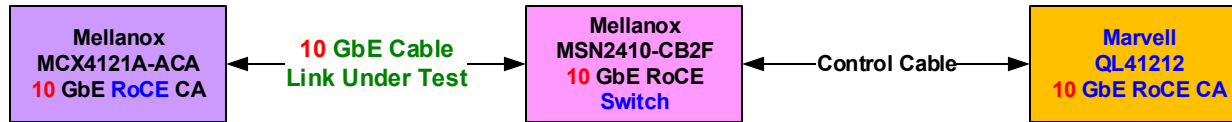
## Marvell QL41212 to Mellanox MSN2410 Switch to Marvell QL41234



# RDMA over Converged Ethernet (RoCE) Interop Testing

## Mellanox MCX4121A-ACA to Mellanox MSN2410 Switch to Marvell QL41212

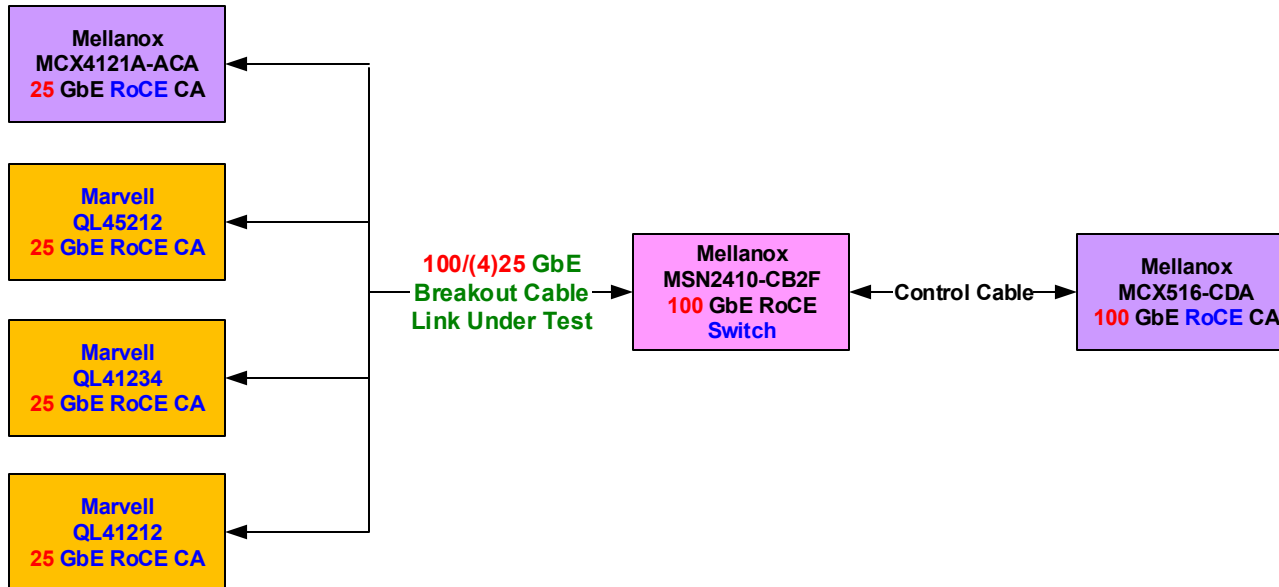
Interop 13



Interop 13

## Mixed 25 GbE RNICs to Mellanox MSN2410 Switch to Mellanox MCX516A-CDA

Interop 14



Interop 14



# IBTA RoCE Compliance October 2019



Manufacturer	Product Description	Model	FW	SW	Transport	DCB
Marvell	Low Profile Single-Port QSFP28 100GbE Ethernet PCIe Adapter	QL45611	8.50.09.00	OFED 4.17-1	✓	✓
	Low Profile Dual-Port QSFP+ 40GbE Ethernet PCIe Adapter	QL45412	8.50.09.00	OFED 4.17-1	✓	✓
	Low Profile Dual-Port SFP28 25GbE Ethernet PCIe Adapter	QL45212	8.50.09.00	OFED 4.17-1	✓	✓
	Low Profile Dual-Port SFP28 25GbE Ethernet PCIe Adapter	QL41212	8.50.09.00	OFED 4.17-1	✓	✓
	Low Profile Quad-Port SFP28 25GbE Ethernet PCIe Adapter	QL41234	8.50.09.00	OFED 4.17-1	✓	✓

Marvell RoCE RNICs		Model	QL45611	QL45412	QL45212	QL41212	QL41234
		Date	11/22/2019	11/22/2019	11/22/2019	11/22/2019	11/25/2019
		Firmware Version	8.50.09.00	8.50.09.00	8.50.09.00	8.50.09.00	8.50.09.00
		Overall Results	Pass	Pass	Pass	Pass	Pass
Test Class	Name	Number	Results	Results	Results	Results	Results
Transport Layer	RC RDMA Send Only after RDMA Read	C09_027_01	Pass	Pass	Pass	Pass	Pass
	RC RDMA Write Only after RDMA Read	C09_027_02	Pass	Pass	Pass	Pass	Pass
	RC RDMARead Only after RDMA Read	C09_027_03	Pass	Pass	Pass	Pass	Pass
	RC Atomic FetchAdd after RDMA Read	C09_027_04	Pass	Pass	Pass	Pass	Pass
	RC Atomic CompSwap after RDMA Read	C09_027_05	Pass	Pass	Pass	Pass	Pass
	RC Atomic CompSwap after Atomic CompSwap	C09_027_06	Pass	Pass	Pass	Pass	Pass
	RC Atomic FetchAdd after Atomic CompSwap	C09_027_07	Pass	Pass	Pass	Pass	Pass
	RC Atomic FetchAdd after Atomic FetchAdd	C09_027_08	Pass	Pass	Pass	Pass	Pass
	RC Atomic CompSwap after Atomic FetchAdd	C09_027_09	Pass	Pass	Pass	Pass	Pass
	RC RDMA Send Only after Atomic CompSwap	C09_027_10	Pass	Pass	Pass	Pass	Pass
	RC RDMA Write Only after Atomic CompSwap	C09_027_11	Pass	Pass	Pass	Pass	Pass
	RC RDMA Send Only after Atomic FetchAdd	C09_027_12	Pass	Pass	Pass	Pass	Pass
	RC RDMA Write Only after Atomic Fetch Add	C09_027_13	Pass	Pass	Pass	Pass	Pass
	Completion Rules - RC RDMA Send Case	C09_060_01	Pass	Pass	Pass	Pass	Pass
	Completion Rules - RC RDMA Send Case (inverted)	C09_060_01_01	Pass	Pass	Pass	Pass	Pass
	Completion Rules - RC RDMA Write Case	C09_060_03	Pass	Pass	Pass	Pass	Pass
	Completion Rules - RC RDMA Write Case (inverted)	C09_060_03_01	Pass	Pass	Pass	Pass	Pass
	Completion Rules - RC RDMA Read Case	C09_060_05	Pass	Pass	Pass	Pass	Pass
	Completion Rules - RC RDMA Read Case (inverted)	C09_060_05_01	Pass	Pass	Pass	Pass	Pass
	Completion Rules - Atomic FetchAdd Case	C09_060_07	Pass	Pass	Pass	Pass	Pass
	Completion Rules - Atomic FetchAdd Case (inverted)	C09_060_07_01	Pass	Pass	Pass	Pass	Pass
	Completion Rules - Atomic CompSwap Case	C09_060_09	Pass	Pass	Pass	Pass	Pass
	Completion Rules - Atomic CompSwap Case (inverted)	C09_060_09_01	Pass	Pass	Pass	Pass	Pass
Requester/Responder RNR NAK Behavior	C09_130_01	Pass	Pass	Pass	Pass	Pass	
Outstanding Request Timeout	C09_142_01	Pass	Pass	Pass	Pass	Pass	
DCB	IEEE 802.1Q	36.2.2#1	Pass	Pass	Pass	Pass	Pass



# IBTA RoCE Compliance October 2019



Manufacturer	Product Description	Model	FW	SW	Transport	DCB
Mellanox	ConnectX®-4 Lx EN Dual-Port SFP28 25GbE Ethernet PCIe Adapter	MCX4121A-ACAT	14.26.1040	MLNX_OFED 4.7-1.0.0.1	✓	✓
	ConnectX®-5 EN Dual-Port QSFP28 100GbE Ethernet PCIe Adapter	MCX516A-CCAT	16.26.1040	MLNX_OFED 4.7-1.0.0.1	✓	✓
	ConnectX®-5 EN Dual-Port QSFP28 100GbE Ethernet PCIe Adapter	MCX516A-CDAT	16.26.1040	MLNX_OFED 4.7-1.0.0.1	✓	✓

Mellanox RoCE RNICs		Model	MCX4121A-ACAT	MCX516A-CCAT	MCX516A-CDAT	
		Date	11/5/2019	10/31/2019	11/1/2019	
		Firmware Version	14.26.1040	16.26.1040	16.26.1040	
		Overall Results	Pass	Pass	Pass	
Test Class	Name	Number	Results	Results	Results	
Transport Layer	RC RDMA Send Only after RDMA Read	C09_027_01	Pass	Pass	Pass	
	RC RDMA Write Only after RDMA Read	C09_027_02	Pass	Pass	Pass	
	RC RDMARead Only after RDMA Read	C09_027_03	Pass	Pass	Pass	
	RC Atomic FetchAdd after RDMA Read	C09_027_04	Pass	Pass	Pass	
	RC Atomic CompSwap after RDMA Read	C09_027_05	Pass	Pass	Pass	
	RC Atomic CompSwap after Atomic CompSwap	C09_027_06	Pass	Pass	Pass	
	RC Atomic FetchAdd after Atomic CompSwap	C09_027_07	Pass	Pass	Pass	
	RC Atomic FetchAdd after Atomic FetchAdd	C09_027_08	Pass	Pass	Pass	
	RC Atomic CompSwap after Atomic FetchAdd	C09_027_09	Pass	Pass	Pass	
	RC RDMA Send Only after Atomic CompSwap	C09_027_10	Pass	Pass	Pass	
	RC RDMA Write Only after Atomic CompSwap	C09_027_11	Pass	Pass	Pass	
	RC RDMA Send Only after Atomic FetchAdd	C09_027_12	Pass	Pass	Pass	
	RC RDMA Write Only after Atomic Fetch Add	C09_027_13	Pass	Pass	Pass	
	Completion Rules - RC RDMA Send Case	C09_060_01	Pass	Pass	Pass	
	Completion Rules - RC RDMA Send Case (inverted)	C09_060_01_01	Pass	Pass	Pass	
	Completion Rules - RC RDMA Write Case	C09_060_03	Pass	Pass	Pass	
	Completion Rules - RC RDMA Write Case (inverted)	C09_060_03_01	Pass	Pass	Pass	
	Completion Rules - RC RDMA Read Case	C09_060_05	Pass	Pass	Pass	
	Completion Rules - RC RDMA Read Case (inverted)	C09_060_05_01	Pass	Pass	Pass	
	Completion Rules - Atomic FetchAdd Case	C09_060_07	Pass	Pass	Pass	
	Completion Rules - Atomic FetchAdd Case (inverted)	C09_060_07_01	Pass	Pass	Pass	
	Completion Rules - Atomic CompSwap Case	C09_060_09	Pass	Pass	Pass	
	Completion Rules - Atomic CompSwap Case (inverted)	C09_060_09_01	Pass	Pass	Pass	
	Requester/Responder RNR NAK Behavior	C09_130_01	Pass	Pass	Pass	
	Outstanding Request Timeout	C09_142_01	Pass	Pass	Pass	
	DCB	IEEE 802.1Q	36.2.2#1	Pass	Pass	Pass



# IBTA PF36 RoCE Interoperability

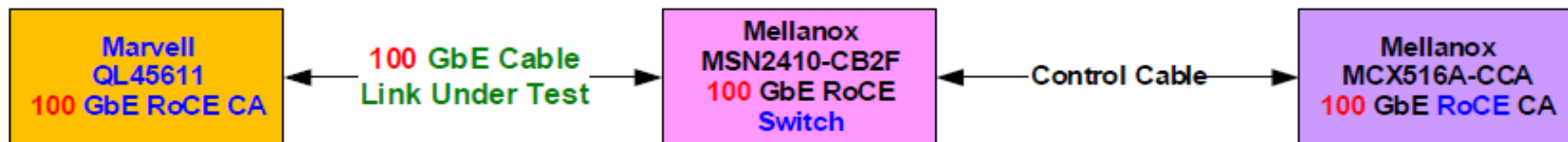
## 100 Gigabit Ethernet

### Scenario 01



Company	Length Meters	AWG	Equalization	Connector Type	Marvell RNIC	Cable Under Test	Mellanox Switch	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result	
BizLink	20	NA	Fiber - Active	QSFP28	QL45611	117G0-060989-R1	MSN2410-CB2F	MCX516A-CCA	100	Pass	Pass	Pass	Pass	
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-060997-R1			100	Pass	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-059874-R1			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AE4AF4F4L30TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AE4AF4F4L50TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AE4CF4F4L10HXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AIEAF7F7L30TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AIEAF7F7L50TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AIECF7F7L10HXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003			100	Pass	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050			100	Pass	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100			100	Pass	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28	MFA1A00-E030	100	Pass	Pass	Pass	Pass	Pass			
Mellanox	30	N/A	Fiber - Active	QSFP28	MFA1A00-E003	100	Pass	Pass	Pass	Pass	Pass			
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	100	Pass	Pass	Pass	Pass	Pass			

### Marvell QL45611 to Mellanox MSN2410 Switch to Mellanox MCX516A-CCA







# IBTA PF36 RoCE Interoperability

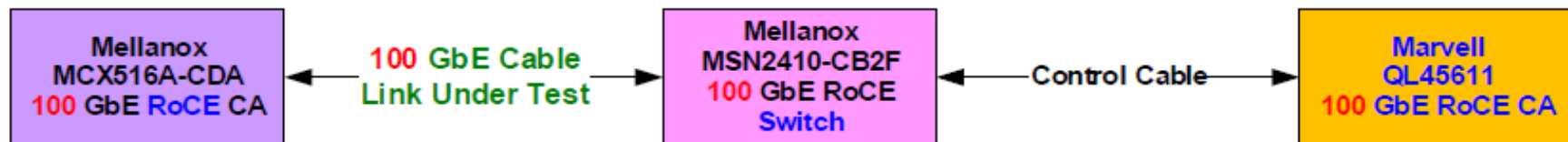
## 100 Gigabit Ethernet

### Scenario 02



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Mellanox Switch	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result	
BizLink	20	NA	Fiber - Active	QSFP28	MCX516A-CDA	117G0-060989-R1	MSN2410-CB2F	QL45611	100	Pass	Pass	Pass	Pass	
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-060997-R1			100	Pass	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-059874-R1			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AE4AF4F4L30TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AE4AF4F4L50TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AE4CF4F4L10HXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AIEAF7F7L30TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AIEAF7F7L50TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AIECF7F7L10HXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003			100	Pass	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2	26	Copper - Unequalized	QSFP56		MCP1650-H002E26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050			100	Pass	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100			100	Pass	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28		MFA1A00-E030			100	Pass	Pass	Pass	Pass	Pass
Mellanox	30	N/A	Fiber - Active	QSFP28	MFA1A00-E003	100	Pass	Pass	Pass	Pass	Pass			
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	100	Pass	Pass	Pass	Pass	Pass			

Mellanox MCX516A-CDA to Mellanox MSN2410 Switch to Marvell QL45611





# IBTA PF36 RoCE Interoperability

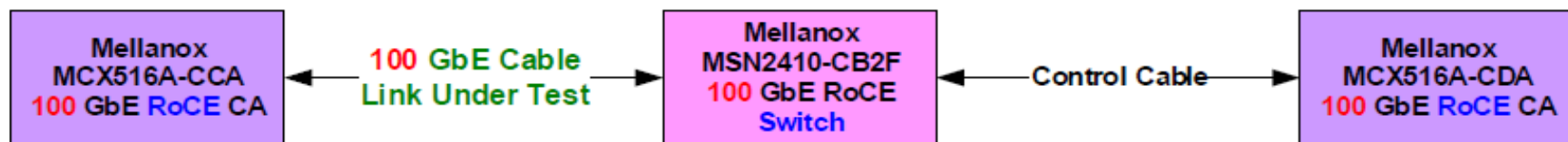
## 100 Gigabit Ethernet

### Scenario 03



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Mellanox Switch	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result	
BizLink	20	NA	Fiber - Active	QSFP28	MCX516A-CCA	117G0-060989-R1	MSN2410-CB2F	MCX516A-CDA	100	Pass	Pass	Pass	Pass	
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-060997-R1			100	Pass	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-059874-R1			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AE4AF4F4L30TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AE4AF4F4L50TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AE4CF4F4L10HXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AIEAF7F7L30TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AIEAF7F7L50TXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AIECF7F7L10HXX			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003			100	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003			100	Pass	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	2	26	Copper - Unequalized	QSFP56		MCP1650-H002E26			100	Pass	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050			100	Pass	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100			100	Pass	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28		MFA1A00-E030			100	Pass	Pass	Pass	Pass	Pass
Mellanox	30	N/A	Fiber - Active	QSFP28	MFA1A00-E003	100	Pass	Pass	Pass	Pass	Pass			
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	100	Pass	Pass	Pass	Pass	Pass			

Mellanox MCX516A-CCA to Mellanox MSN2410 Switch to Mellanox MCX516A-CDA





# IBTA PF36 RoCE Interoperability

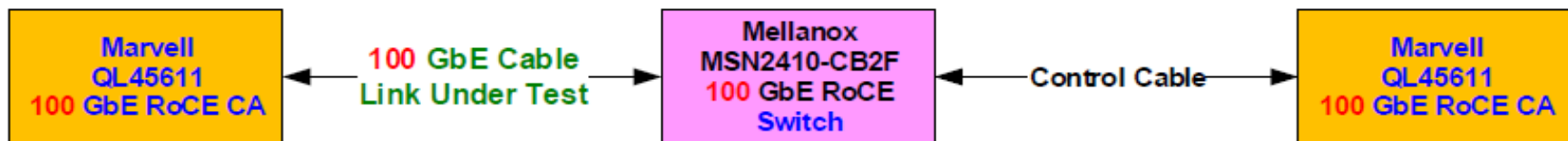
## 100 Gigabit Ethernet

### Scenario 04



Company	Length Meters	AWG	Equalization	Connector Type	Marvell RNIC	Cable Under Test	Mellanox Switch	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	20	NA	Fiber - Active	QSFP28	QL45611	117G0-060989-R1	MSN2410-CB2F	QL45611	100	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-060997-R1			100	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-059874-R1			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AE4AF4F4L30TXX			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AE4AF4F4L50TXX			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AE4CF4F4L10HXX			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AIEAF7F7L30TXX			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AIEAF7F7L50TXX			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AIECF7F7L10HXX			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003			100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003			100	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30			100	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30			100	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30			100	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30			100	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26			100	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26			100	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050			100	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100			100	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28	MFA1A00-E030	100	Pass	Pass	Pass	Pass			
Mellanox	30	N/A	Fiber - Active	QSFP28	MFA1A00-E003	100	Pass	Pass	Pass	Pass			
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	100	Pass	Pass	Pass	Pass			

### Marvell QL45611 to Mellanox MSN2410 Switch to Marvell QL45611





# IBTA PF36 RoCE Interoperability

## 100 Gigabit Ethernet

### Scenario 05



Company	Length Meters	AWG	Equalization	Connector Type	Marvell RNIC	Cable Under Test	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	20	NA	Fiber - Active	QSFP28	QL45611	117G0-060989-R1	MCX516A-CDA	100	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-060997-R1		100	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-059874-R1		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AE4AF4F4L30TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AE4AF4F4L50TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AE4CF4F4L10HXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AIEAF7F7L30TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AIEAF7F7L50TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AIECF7F7L10HXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003		100	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30		100	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30		100	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30		100	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30		100	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26		100	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26		100	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050		100	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100		100	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28		MFA1A00-E030		100	Pass	Pass	Pass	Pass
Mellanox	30	N/A	Fiber - Active	QSFP28		MFA1A00-E003		100	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	100	Pass	Pass	Pass	Pass		

### Marvell QL45611 to Mellanox MCX516A-CDA





# IBTA PF36 RoCE Interoperability

## 100 Gigabit Ethernet

### Scenario 06



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	20	NA	Fiber - Active	QSFP28	MCX516A-CDA	117G0-060989-R1	MCX516A-CCA	100	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-060997-R1		100	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP28		117G0-059874-R1		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AE4AF4F4L30TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AE4AF4F4L50TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AE4CF4F4L10HXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	30	NA	Fiber - Active	QSFP28		AIEAF7F7L30TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	50	NA	Fiber - Active	QSFP28		AIEAF7F7L50TXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	100	NA	Fiber - Active	QSFP28		AIECF7F7L10HXX		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003		100	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003		100	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30		100	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30		100	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30		100	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E02E30		100	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26		100	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26		100	Pass	Pass	Pass	Pass
Mellanox	2	26	Copper - Unequalized	QSFP56		MCP1650-H002E26		100	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050		100	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100		100	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28		MFA1A00-E030		100	Pass	Pass	Pass	Pass
Mellanox	30	N/A	Fiber - Active	QSFP28	MFA1A00-E003	100	Pass	Pass	Pass	Pass		
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	100	Pass	Pass	Pass	Pass		

### Mellanox MCX516A-CDA to Mellanox MCX516A-CCA





# IBTA PF36 RoCE Interoperability

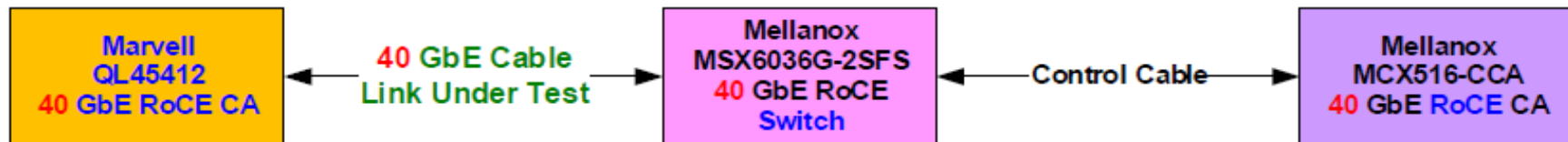
## 40 Gigabit Ethernet

### Scenario 07



Company	Length Meters	AWG	Equalization	Connector Type	Marvell RNIC	Cable Under Test	Mellanox Switch	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	3	30	Copper - Unequalized	QSFP+	QL45412	117G0-060995-R1	MSX6036G-2SFS	MCX516-CCA	40	Pass	Pass	Pass	Pass
BizLink	5	26	Copper - Unequalized	QSFP+		117G0-060993-R1			40	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP+		117G0-061616-R1			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003			40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003			40	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30			40	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30			40	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30			40	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30			40	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26			40	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26			40	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050			40	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100			40	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28		MFA1A00-E030			40	Pass	Pass	Pass	Pass
Mellanox	30	N/A	Fiber - Active	QSFP28		MFA1A00-E003			40	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	QSFP28		VQ2830LP100			40	Pass	Pass	Pass	Pass

### Marvell QL45412 to Mellanox MSX6036G Switch to Mellanox MCX516A-CCA





# IBTA PF36 RoCE Interoperability

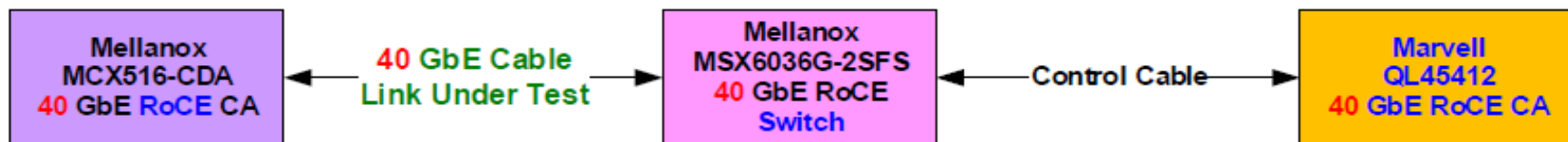
## 40 Gigabit Ethernet

### Scenario 08



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Mellanox Switch	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result	
BizLink	3	30	Copper - Unequalized	QSFP+	MCX516-CDA	117G0-060995-R1	MSX6036G-2SFS	QL45412	40	Pass	Pass	Pass	Pass	
BizLink	5	26	Copper - Unequalized	QSFP+		117G0-060993-R1			40	Pass	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP+		117G0-061616-R1			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003			40	Pass	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003			40	Pass	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30			40	Pass	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30			40	Pass	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30			40	Pass	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30			40	Pass	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28		MCP1600-E02AE26			40	Pass	Pass	Pass	Pass	Pass
Mellanox	4	26	Copper - Unequalized	QSFP28		MCP1600-E004E26			40	Pass	Pass	Pass	Pass	Pass
Mellanox	50	N/A	Fiber - Active	QSFP28		MFA1A00-E050			40	Pass	Pass	Pass	Pass	Pass
Mellanox	100	N/A	Fiber - Active	QSFP28		MFA1A00-E100			40	Pass	Pass	Pass	Pass	Pass
Mellanox	3	N/A	Fiber - Active	QSFP28		MFA1A00-E030			40	Pass	Pass	Pass	Pass	Pass
Mellanox	30	N/A	Fiber - Active	QSFP28		MFA1A00-E003			40	Pass	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	QSFP28		VQ2830LP100			40	Pass	Pass	Pass	Pass	Pass

Mellanox MCX516A-CDA to Mellanox MSX6036G Switch to Marvell QL45412





# IBTA PF36 RoCE Interoperability

## 40 Gigabit Ethernet

### Scenario 09



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	3	30	Copper - Unequalized	QSFP+	MCX516-CCA	117G0-060995-R1	QL45412	40	Pass	Pass	Pass	Pass
BizLink	5	26	Copper - Unequalized	QSFP+		117G0-060993-R1		40	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	QSFP+		117G0-061616-R1		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP28		RIEF4TF4T10001		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP28		RIEF4TF4T20001		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2.5	30	Copper - Unequalized	QSFP28		RIEF4TF4T25001		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP28		RIEF4TF4T30003		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	5.5	26	Copper - Unequalized	QSFP28		RE4F4TF4T55003		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	6	26	Copper - Unequalized	QSFP28		RE4F7TF7T60003		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	QSFP56		RIHF7TF7T10001		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1.5	30	Copper - Unequalized	QSFP56		RIHF7TF7T15001		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	QSFP56		RIHF7TF7T20001		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	26	Copper - Unequalized	QSFP56		RIHF7TF7T20003		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3	26	Copper - Unequalized	QSFP56		RIHF7TF7T30003		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	3.5	26	Copper - Unequalized	QSFP56		RIHF7TF7T35003		40	Pass	Pass	Pass	Pass
CONNPRO,Ind.	4	26	Copper - Unequalized	QSFP56		RIHF7TF7T40003		40	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	QSFP28		MCP1600-E00AE30		40	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	QSFP28		MCP1600-E001E30		40	Pass	Pass	Pass	Pass
Mellanox	1.5	30	Copper - Unequalized	QSFP28		MCP1600-E01AE30		40	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	QSFP28		MCP1600-E002E30		40	Pass	Pass	Pass	Pass
Mellanox	2.5	26	Copper - Unequalized	QSFP28	MCP1600-E02AE26	40	Pass	Pass	Pass	Pass		
Mellanox	4	26	Copper - Unequalized	QSFP28	MCP1600-E004E26	40	Pass	Pass	Pass	Pass		
Mellanox	50	N/A	Fiber - Active	QSFP28	MFA1A00-E050	40	Pass	Pass	Pass	Pass		
Mellanox	100	N/A	Fiber - Active	QSFP28	MFA1A00-E100	40	Pass	Pass	Pass	Pass		
Mellanox	3	N/A	Fiber - Active	QSFP28	MFA1A00-E030	40	Pass	Pass	Pass	Pass		
Mellanox	30	N/A	Fiber - Active	QSFP28	MFA1A00-E003	40	Pass	Pass	Pass	Pass		
Volex	1	30	Copper - Unequalized	QSFP28	VQ2830LP100	40	Pass	Pass	Pass	Pass		

### Mellanox MCX516A-CCA to Marvell QL45412







# IBTA PF36 RoCE Interoperability

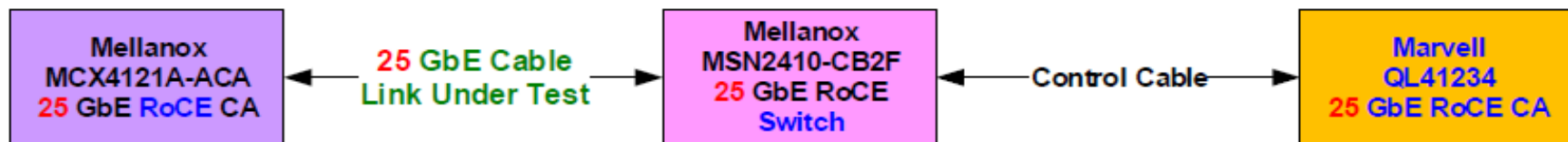
## 25 Gigabit Ethernet

### Scenario 10



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Mellanox Switch	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	20	NA	Fiber - Active	SFP28	MCX4121A-ACA	117G0-060988-R1	MSN2410-CB2F	QL41234	25	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP28		117G0-060999-R1			25	Pass	Pass	Pass	Pass
BizLink	5	26	Copper - Unequalized	SFP28		117G0-060992-R1			25	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP28		117G0-061139-R1			25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	20	NA	Fiber - Active	SFP28		AE4AF6F6L20TXX			25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	SFP28		RE4F6TF6T200XX			25	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	SFP28		MCP2M00-A00AE30N			25	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	SFP28		MCP2M00-A001E30N			25	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	SFP28		MCP2M00-A002E30N			25	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	SFP28		VS2830LP100			25	Pass	Pass	Pass	Pass

Mellanox MCX4121A-ACA to Mellanox MSN2410 Switch to Marvell QL41234





# IBTA PF36 RoCE Interoperability

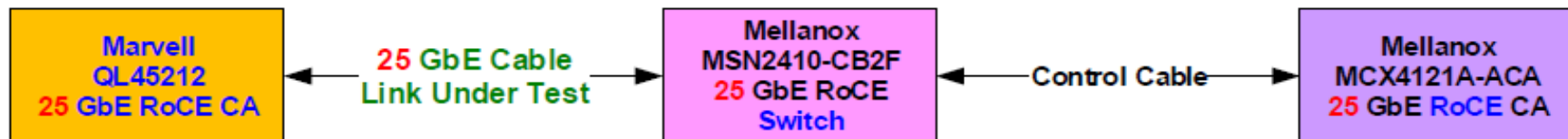
## 25 Gigabit Ethernet

### Scenario 11



Company	Length Meters	AWG	Equalization	Connector Type	Marvell RNIC	Cable Under Test	Mellanox Switch	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	20	NA	Fiber - Active	SFP28	QL45212	117G0-060988-R1	MSN2410-CB2F	MCX4121A-ACA	25	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP28		117G0-060999-R1			25	Pass	Pass	Pass	Pass
BizLink	5	26	Copper - Unequalized	SFP28		117G0-060992-R1			25	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP28		117G0-061139-R1			25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	20	NA	Fiber - Active	SFP28		AE4AF6F6L20TXX			25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	SFP28		RE4F6TF6T200XX			25	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	SFP28		MCP2M00-A00AE30N			25	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	SFP28		MCP2M00-A001E30N			25	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	SFP28		MCP2M00-A002E30N			25	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	SFP28		VS2830LP100			25	Pass	Pass	Pass	Pass

### Marvell QL45212 to Mellanox MSN2410 Switch to Mellanox MCX4121A-ACA





# IBTA PF36 RoCE Interoperability

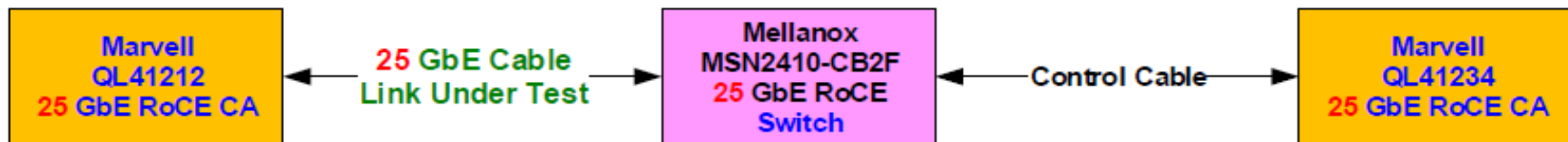
## 25 Gigabit Ethernet

### Scenario 12



Company	Length Meters	AWG	Equalization	Connector Type	Marvell RNIC	Cable Under Test	Mellanox Switch	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	20	NA	Fiber - Active	SFP28	QL41212	117G0-060988-R1	MSN2410-CB2F	QL41234	25	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP28		117G0-060999-R1			25	Pass	Pass	Pass	Pass
BizLink	5	26	Copper - Unequalized	SFP28		117G0-060992-R1			25	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP28		117G0-061139-R1			25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	20	NA	Fiber - Active	SFP28		AE4AF6F6L20TXX			25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	2	30	Copper - Unequalized	SFP28		RE4F6TF6T200XX			25	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	SFP28		MCP2M00-A00AE30N			25	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	SFP28		MCP2M00-A001E30N			25	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	SFP28		MCP2M00-A002E30N			25	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	SFP28		VS2830LP100			25	Pass	Pass	Pass	Pass

**Marvell QL41212 to Mellanox MSN2410 Switch to Marvell QL41234**





# IBTA PF36 RoCE Interoperability

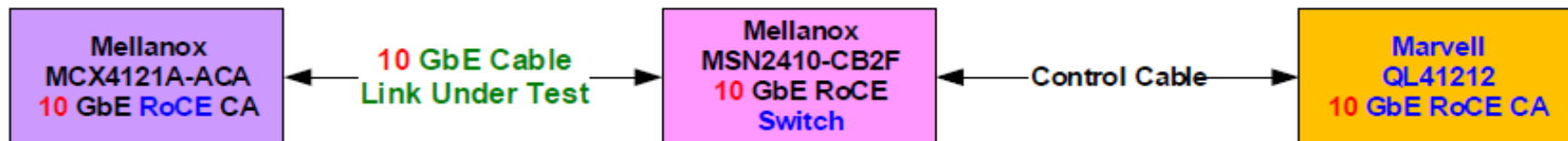
## 10 Gigabit Ethernet

### Scenario 13



Company	Length Meters	AWG	Equalization	Connector Type	Mellanox RNIC	Cable Under Test	Mellanox Switch	Marvell RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
BizLink	3	30	Copper - Unequalized	SFP+	MCX4121A	117G0-060991-R1	MSN2410	QL41212	10	Pass	Pass	Pass	Pass
BizLink	5	26	Copper - Unequalized	SFP+		117G0-060998-R1			10	Pass	Pass	Pass	Pass
BizLink	3	30	Copper - Unequalized	SFP+		117G0-061137-R1			10	Pass	Pass	Pass	Pass
Mellanox	0.5	30	Copper - Unequalized	SFP28		MCP2M00-A00AE30N			10	Pass	Pass	Pass	Pass
Mellanox	1	30	Copper - Unequalized	SFP28		MCP2M00-A001E30N			10	Pass	Pass	Pass	Pass
Mellanox	2	30	Copper - Unequalized	SFP28		MCP2M00-A002E30N			10	Pass	Pass	Pass	Pass
Volex	1	30	Copper - Unequalized	SFP28		VS2830LP100			10	Pass	Pass	Pass	Pass

**Mellanox MCX4121A-ACA to Mellanox MSN2410 Switch to Marvell QL41212**





# IBTA PF36 RoCE Interoperability

## 25 Gigabit Ethernet

### Scenario 14



Company	Length Meters	AWG	Equalization	Connector Type	Mixed RNIC	Cable Under Test	Mellanox Switch	Mellanox RNIC	Link Speed	Device Link	SFI_Perf Testing	Open MPI + IMB Testing	Overall Result
CONNPRO,Ind.	10	NA	Fiber - Active	Hybrid SFP/QSFP	Mixed RNIC Marvell & Mellanox	AE4AF7F6L10TXX	MSN2410	MCX516A	25	Pass	Pass	Pass	Pass
CONNPRO,Ind.	1	30	Copper - Unequalized	Hybrid SFP/QSFP		RE4F4TF64100XX			25	Pass	Pass	Pass	Pass

### Mixed 25 GbE RNICs to Mellanox MSN2410 Switch to Mellanox MCX516A-CDA

