

NUC970 USB Eye Diagram Measurement Report

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Revision history

version	date	page	description
A	Dec 09, 2015	-	Initial Issued

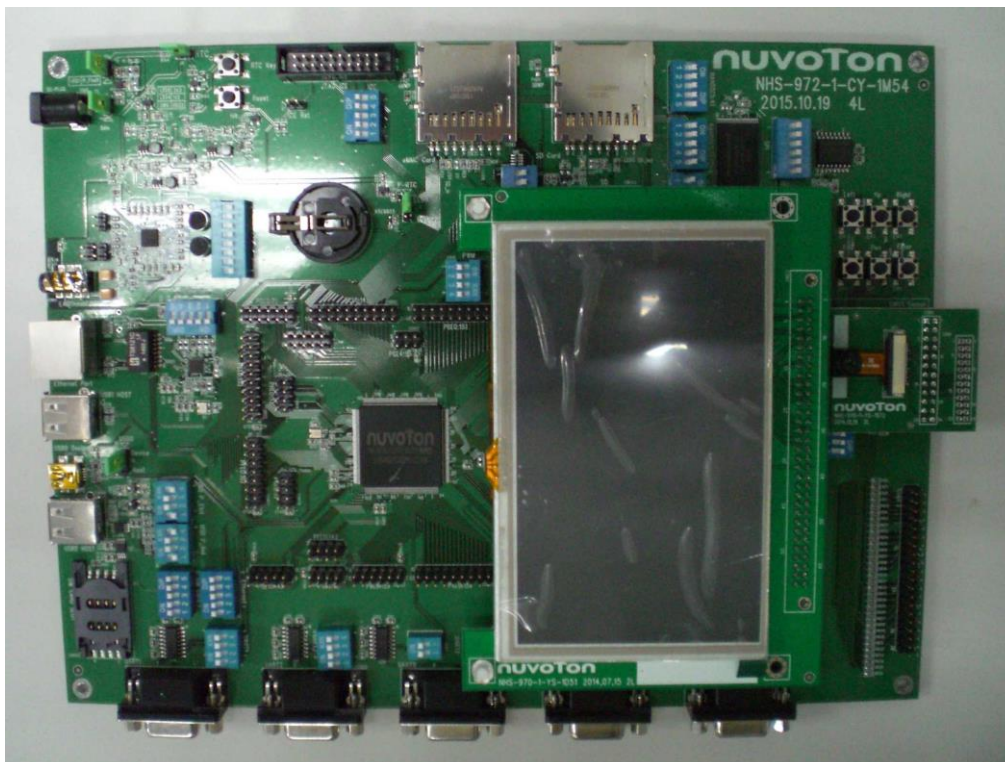
Description

Product No.	HAD008
Function	<p>The NUC970 series targeted for general purpose 32-bit microcontroller embeds an outstanding CPU core ARM926EJ-S, a RISC processor designed by Advanced RISC Machines Ltd., runs up to 300 MHz, with 16 KB I-cache, 16 KB D-cache and MMU, 32KB embedded SRAM and 12 KB IBR (Internal Boot ROM) for booting from NOR FLASH, USB, NAND and SPI FLASH.</p> <p>The report shown on USB PORT0 & PORT1 USB signals quality measurement by test machine.</p>

1. PART NO. : NUC972DF62Y PRODUCT NO. : HAD008 VERSION : B

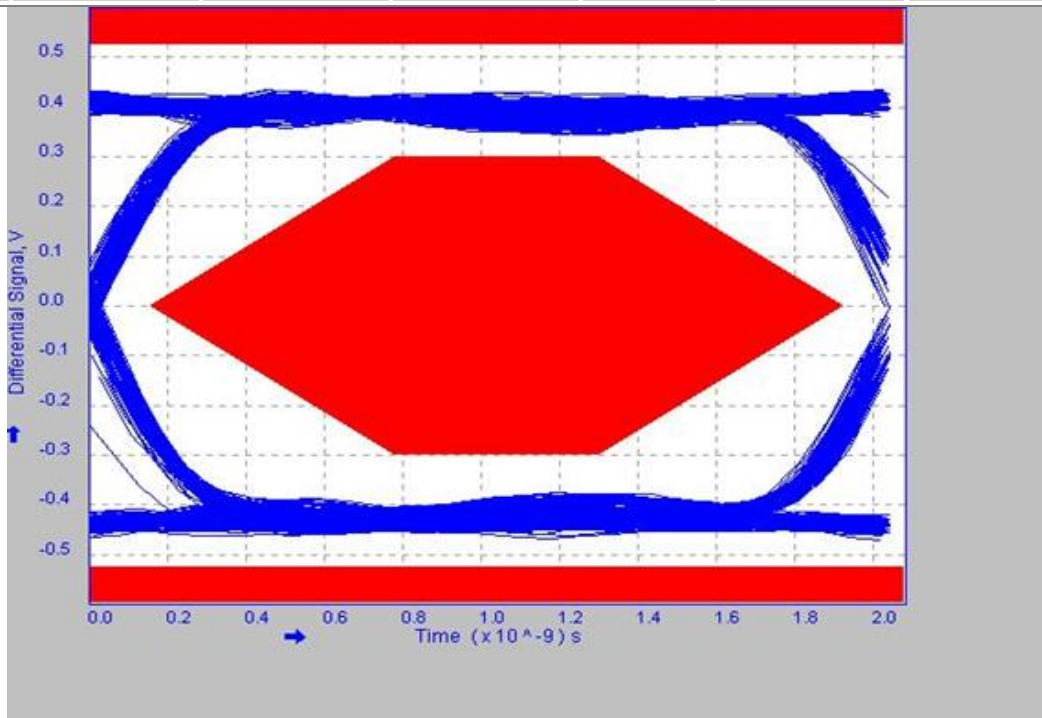
2. LOT NO. E528M001 DATE: 2015/12/09 PIN NO & TYPE: 216 LQFP

PCB: NHS-972-1-CY-1M54



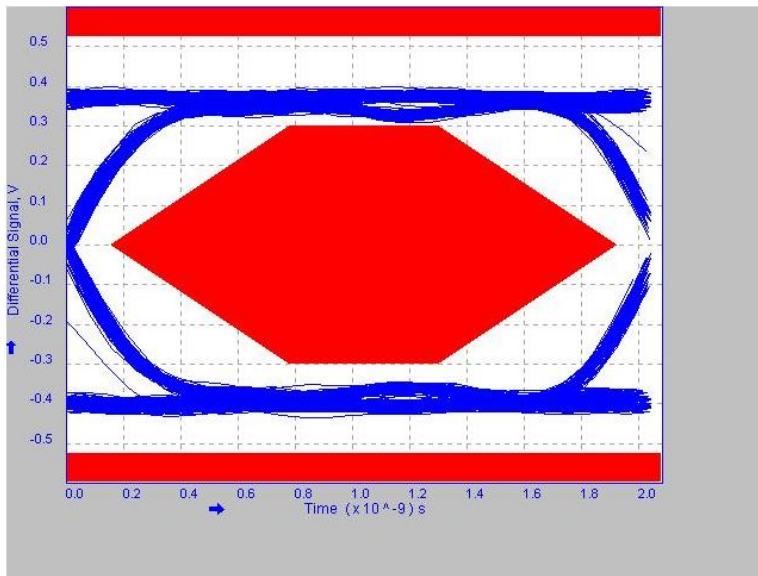
USB0_Device_High-Speed

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Monotonic Property	-	-	-	-	-	-	0	Pass
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	473.5733Mbps	486.8619Mbps	479.9852Mbps	0.0000bps	1.932325Mbps	479.7642Mbps	509	Pass
EOP Width	-	-	16.63676ns	-	-	-	1	Pass
EOP Width (Bits)	-	-	7.985397	-	-	-	1	Pass
Falling Edge Rate	1.527405kV/us	1.801511kV/us	1.674693kV/us	274.1062 V/us	51.03959 V/us	1.675463kV/us	107	Pass
Rising Edge Rate	1.494070kV/us	1.790493kV/us	1.616519kV/us	296.4227 V/us	50.25376 V/us	1.617293kV/us	108	Pass

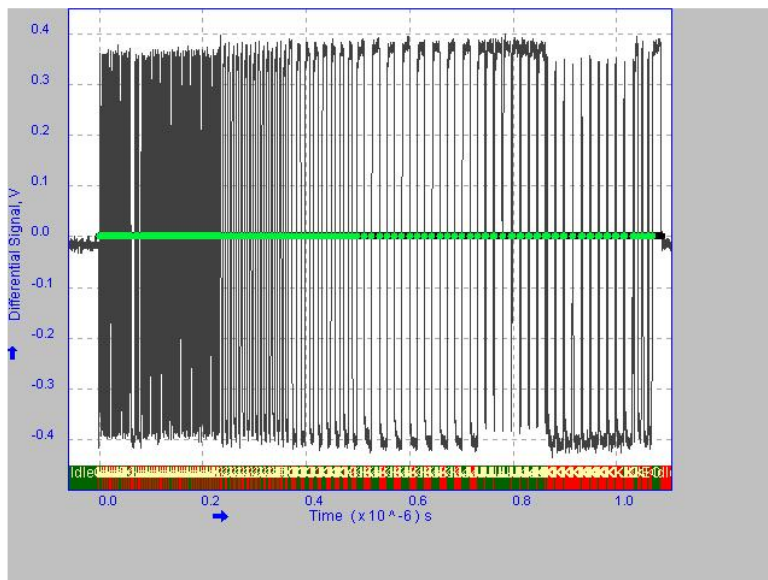


USB0_HOST_High-Speed

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Monotonic Property	-	-	-	-	-	-	0	Pass
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	474.7520Mbps	485.2296Mbps	480.0101Mbps	0.0000bps	1.688278Mbps	480.1192Mbps	509	Pass
EOP Width	-	-	16.62414ns	-	-	-	1	Pass
EOP Width (Bits)	-	-	7.979756	-	-	-	1	Pass
Falling Edge Rate	1.279322kV/us	1.572968kV/us	1.372689kV/us	293.6460 V/us	45.16560 V/us	1.373424kV/us	107	Pass
Rising Edge Rate	1.206763kV/us	1.463945kV/us	1.325101kV/us	257.1821 V/us	51.27950 V/us	1.326084kV/us	108	Pass



Eye Diagram

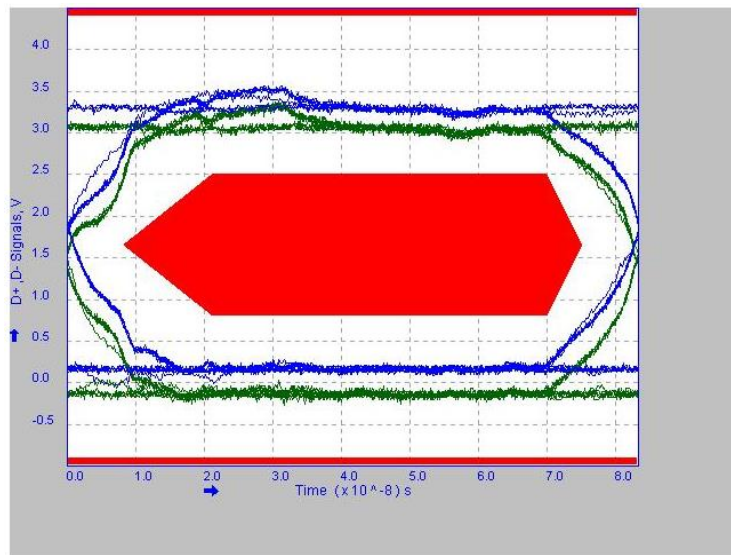


Waveform Plot

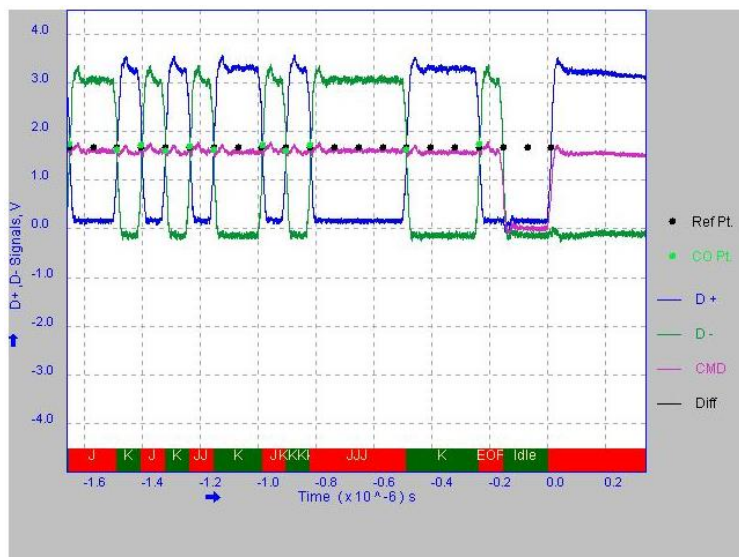
USB0_Device_Full-Speed

Results based on USB-IF / Waiver Limits :

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	11.80001Mbps	12.21185Mbps	12.00528Mbps	0.0000bps	188.3818kbps	12.00265Mbps	12	Pass
Crossover Voltage	1.598416 V	1.737814 V	1.674909 V	139.3980mV	55.99144mV	1.675759 V	11	Pass
EOP Width	-	-	166.5426ns	-	-	-	1	Pass
Consecutive Jitter	-814.6328ps	634.3683ps	-152.1786ps	1.449001ns	723.4511ps	698.8465ps	9	Pass
Paired JK Jitter	-35.59942ps	28.97683ps	-3.311294ps	64.57625ps	45.66230ps	32.45747ps	2	Pass
Paired KJ Jitter	-65.06033ps	56.61606ps	0.0000s	121.6764ps	51.64744ps	44.72800ps	4	Pass



Eye Diagram

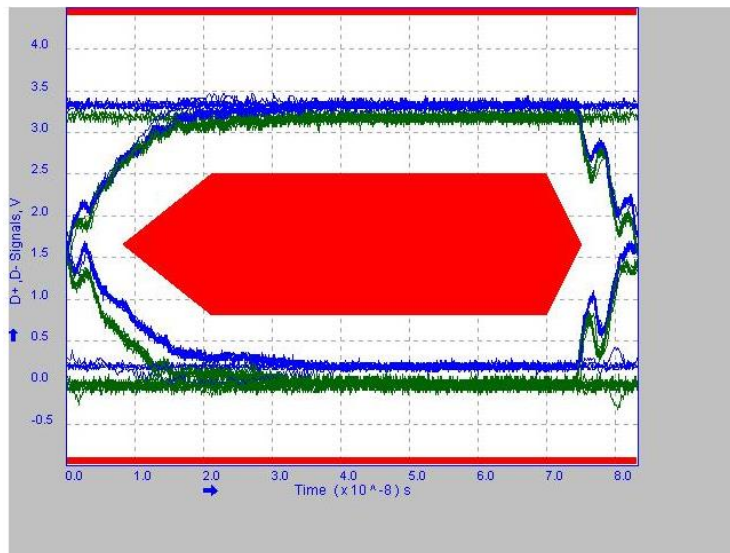


Waveform Plot

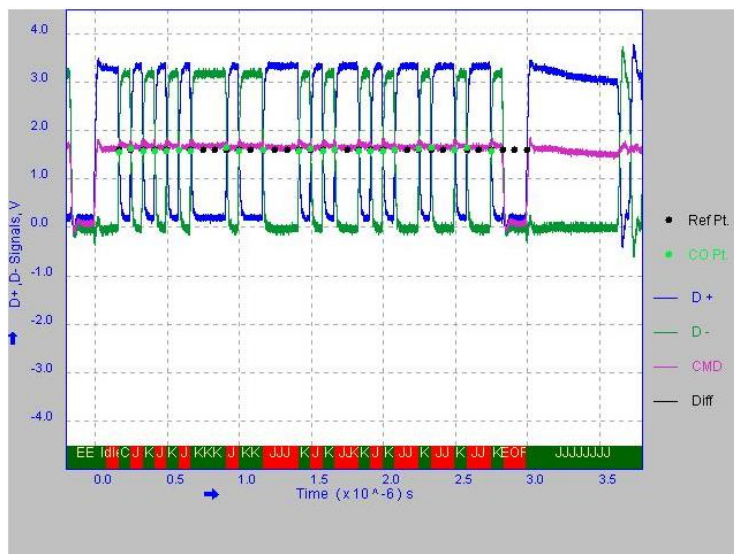
USB0_HOST_Full-Speed

Results based on USB-IF / Waiver Limits :

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	11.91468Mbps	12.09206Mbps	12.00017Mbps	0.0000bps	66.05919kbps	12.00269Mbps	28	Pass
Crossover Voltage	1.565312 V	1.659276 V	1.600455 V	93.96423mV	28.58876mV	1.600699 V	23	Pass
EOP Width	-	-	164.9532ns	-	-	-	1	Pass
Consecutive Jitter	-387.4235ps	290.2721ps	-44.55450ps	677.6955ps	267.7707ps	265.0885ps	21	Pass
Paired JK Jitter	-82.30545ps	75.94669ps	12.38372ps	158.2521ps	65.89375ps	62.86966ps	8	Pass
Paired KJ Jitter	-136.0398ps	155.4271ps	0.0000s	291.4669ps	85.77768ps	81.37585ps	10	Pass



Eye Diagram

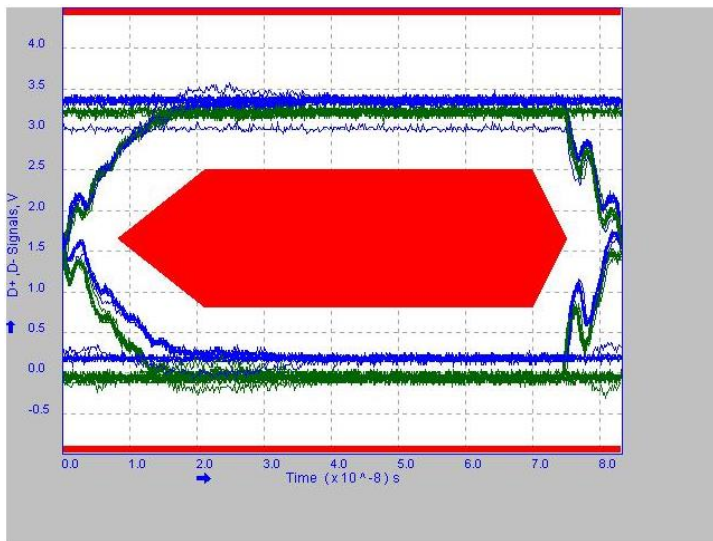


Waveform Plot

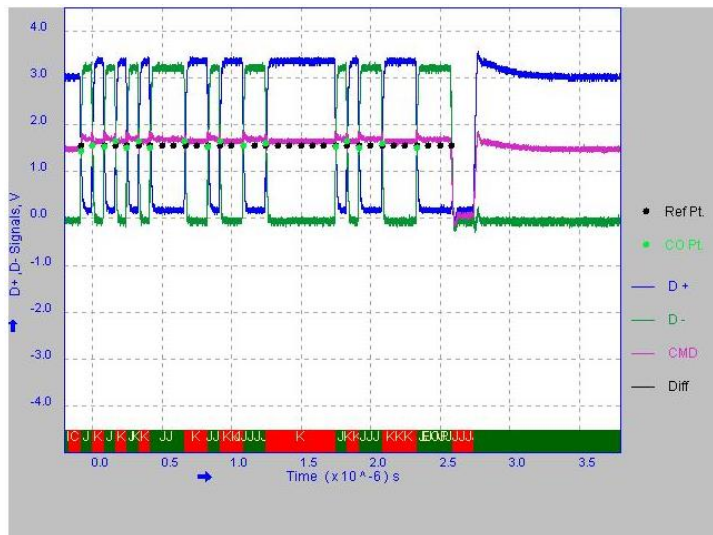
USB1_HOST_Full-Speed

Results based on USB-IF / Waiver Limits :

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	11.90184Mbps	12.11464Mbps	12.00160Mbps	0.0000bps	80.27182kbps	12.00518Mbps	25	Pass
Crossover Voltage	1.431200 V	1.656575 V	1.566709 V	225.3755mV	68.19035mV	1.568105 V	17	Pass
EOP Width	-	-	164.9507ns	-	-	-	1	Pass
Consecutive Jitter	-525.6531ps	468.6946ps	-61.38435ps	994.3477ps	357.7410ps	351.0196ps	15	Pass
Paired JK Jitter	-241.3028ps	117.6961ps	-23.00946ps	358.9989ps	140.7967ps	128.0172ps	5	Pass
Paired KJ Jitter	-111.6198ps	206.3084ps	0.0000s	317.9282ps	115.8835ps	107.2872ps	7	Pass



Eye Diagram



Waveform Plot

USB1_HOST_High-Speed

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Monotonic Property	-	-	-	-	-	-	0	Pass
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	472.4082Mbps	485.4168Mbps	480.0058Mbps	0.0000bps	2.071584Mbps	480.0359Mbps	543	Pass
EOP Width	-	-	16.72666ns	-	-	-	1	Pass
EOP Width (Bits)	-	-	8.028894	-	-	-	1	Pass
Falling Edge Rate	1.536814kV/us	1.812089kV/us	1.663014kV/us	275.2741 V/us	57.10595 V/us	1.663986kV/us	115	Pass
Rising Edge Rate	1.537910kV/us	1.763029kV/us	1.635082kV/us	225.1190 V/us	45.24398 V/us	1.635702kV/us	116	Pass

