Product Validation Report

Product Name : CDL2013A-1A1

Model Name : CDL2013A-1A1

Product Stage : PP

Product No. : 5A1C21270100600

Revision : 0

Prepared By : Jack Lu **Date** : 2023/07/20

Approved By : Roy Lin **Date** : 2023/07/20

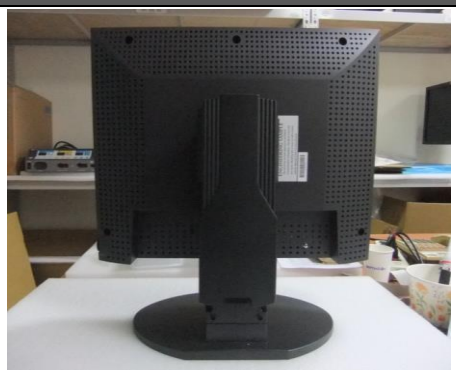
Index & Content			
Part	**Test Item**	**Descriptions**	**Result**
F/W	1. Characteristic Test	Check and verify calibration software functions are properly.	PASS
F/W	2. Power Consumption Test	Check and verify PCBA power management properly.	PASS
Reliability	3. Low Temperature Startup Test	To evaluate whether its startup is possible or not in a stable condition when the product is operated in a low temperature environment.	PASS
Reliability	4. Low Temperature Operation Test	Confirmed that electrical characteristics, display quality, and image quality have a certain level within the operating temperature range.	PASS
Reliability	5. High Temperature and High Humidity Operation Test	To evaluate whether the functions are maintained in a stable condition when the product is operated in a high temperature and high humidity environment	PASS

Product Visual Appearance

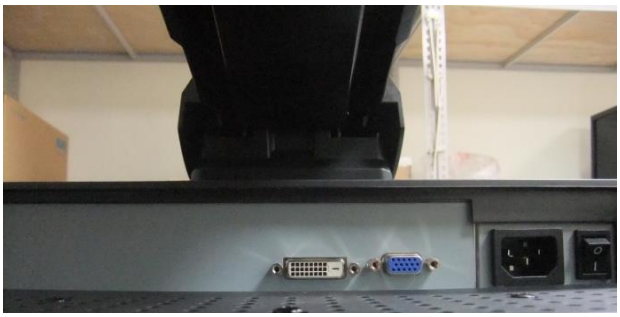
Product Front View



Product Rear View



Available Connections



1. Characteristic Test

Test Engineer	Jack Lu	Date	2023/7/12~2023/7/13	Stage	Result
				PP	PASS

Test Propose

All optical characteristic must be within engineering and product spec.

Evaluation Environment

Temperature	24±2°C
Relative Humidity	50%±10%(RH)

Evaluation Equipment

Processor	Intel ® Core™ i5-4440 CPU@3.10GHz		
Graphics Card	NVIDIA Quadro K2000D- Driver 392.00		
O.S	Windows 7 Professional 32 bit		
Test Equipment	Display Color Analyzer: KONICA CA-310	Measure Sensor : X-RiteiOne	N/A
Test Software	DIVA Calibration Tool V 0.2.6.9	DIVA Measure Tool	N/A

Firmware Version Description

Change Contents:	Data IC, Tcon-IC, P-Gamma IC and Reflector will be introduced new materials		
Description Of Change	Changed Items	Original	Current
	Version	C2	C4
	Data IC	NT39986H-XXXXXX	EK77XXXX
	T-CON IC	IN2812A-XX	MSTXXXXX
	P-Gamma IC	Himax	GMT
	Reflector	E6DY-XXX	DJX-XXXX
	Product Specification	3.2	3.3

Evaluation Unit Level

LCD Type	Innolux R213UCE L01
Power Adapter	DMP5012G
F/W Version	CDL2013A-1A1_230606R0V01
Main Board	2AAD558R138
Interface Option	VGA/DVI
Serial Number	RD210531002

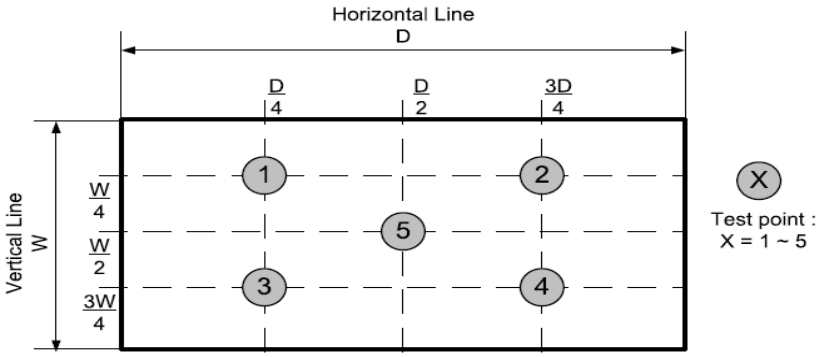
Test Standard

Characteristic Test Specification

Criteria

1. Brightness value must be greater than the minimum panel specification.
2. Contrast value must be greater than the min panel spec.
3. RGB value must be within≦±0.03.
4. Color adjustment. 7300K (only one point) color temperature adjustment :(x=0.302±0.003 y=0.317±0.003)
5. Follow Panel Spec / Engineering Product Spec

Characteristic Test



Test Procedure	Result	Note
1. Burn in more than 30 minutes.	Pass	
2. Confirm adjust OSD settings : Back Light→100 , Contrast→ 90 , Gamma→ Neutral, Color Mode→ User.	Pass	
3. Open white pattern, the Color Analyzer CA-310 measure the screen five points.	Pass	
4. Record the x, y, and Y values of five points.	Pass	
5. Check that the characteristic meet the specifications.	Pass	

Test Condition

Measure Sensor	CA-310	**Measure Tool**	DisplayMate for Windows (DMW)	**Resolution**	1600x1200/60Hz(DVI)
Back Light	100	**Contrast**	90	**Brightness**	50
Gamma	Neutral	**Color Temperature**	User	**Measure Pattern**	Full White Pattern/Fukk Black Pattern

Test Spec

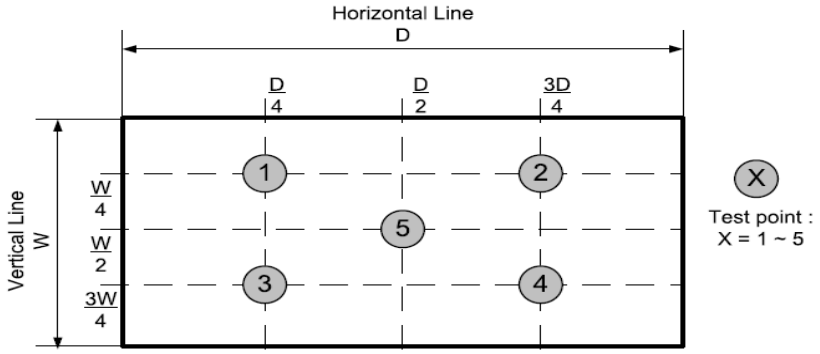
White Luminance (Center of screen)	400cd/m²(Min), 500cd/m²(Typ)
Contrast Ratio (Center of screen)	1440(Min), 1800(Typ)

Measurement Record

Condition	Position	Measure Data			Result	Note
		x	y	Y		
White Pattern Back Light =100 Contrast= 90 Color Temp= User	Up-Left Corner	0.3011	0.3186	494.50	Pass	Unit: cd/m²
	Up-Right Corner	0.3026	0.3198	507.10	Pass	Unit: cd/m²
	Center	0.3026	0.3201	518.50	Pass	Unit: cd/m²
	Down-Left Corner	0.3026	0.3201	510.60	Pass	Unit: cd/m²
	Down-Right Corner	0.3052	0.3237	538.40	Pass	Unit: cd/m²
Black Pattern	Center	0.2647	0.2593	0.24	Pass	Unit: cd/m²

Measurement Conclusion	Measure Data	Result	Note
Contrast Ratio	2160.41	Pass	Luminance of white pattern/Luminance of black pattern
White Luminance (Center Position)	518.50	Pass	Unit: cd/m²

Color/Chromaticity Coordinates Test



Test Procedure	Result	Note
1. Burn in more than 30 minutes.	Pass	
2. Confirm adjust OSD settings : Back Light→50 , Contrast→90, Gamma→ DICOM.	Pass	
3. Execute Red/Green/Blue/White pattern,and the CA-310 measure the screen five points.	Pass	
4. Record the x, y, and Y values of five points.	Pass	
5. Check that the x and y values match the panel spec range.	Pass	

Test Condition

Measure Sensor	CA-310	Measure Tool	DisplayMate for Windows(DMW)	Resolution	1600x1200/60Hz(DVI)
Back Light	50	Gamma	DICOM	Color Temperature	7300K
Measure Pattern	Red/Green/Blue/White screen				

Test Spec

Color/Chromaticity Coordinates	x , y	Spec(-0.03)	x	Spec(+0.03)	Spec(-0.03)	y	Spec(+0.03)
Red x , Red y	Rx , Ry	0.614	0.644	0.674	0.311	0.341	0.371
Green x , Green y	Gx , Gy	0.288	0.318	0.348	0.581	0.611	0.641
Blue x , Blue y	Bx ,By	0.125	0.155	0.185	0.016	0.047	0.077
White x , White y	Wx , Wy	0.278	0.308	0.338	0.299	0.329	0.359

Measurement Record

Condition	Position		Measure Data			Result	Note
			x	y	Y		
Red x : 0.644±0.03 Red y : 0.341±0.03	Red	Up-Left Corner	0.6396	0.3484	56.64	Pass	
		Up-Right Corner	0.6391	0.3486	59.17	Pass	
		Center	0.6389	0.3486	61.09	Pass	
		Down-Left Corner	0.6394	0.3485	60.56	Pass	
		Down-Right Corner	0.6389	0.3489	63.53	Pass	
Condition	**Position**		**Measure Data**			**Result**	**Note**
			x	**y**	**Y**		
Green x: 0.318±0.03 Green y: 0.611±0.03	Green	Up-Left Corner	0.3172	0.6041	229.10	Pass	
		Up-Right Corner	0.3174	0.6037	234.30	Pass	
		Center	0.3174	0.6045	241.20	Pass	
		Down-Left Corner	0.3178	0.6040	237.50	Pass	
		Down-Right Corner	0.3187	0.6038	245.30	Pass	
Condition	**Position**		**Measure Data**			**Result**	**Note**
			x	**y**	**Y**		
Blue x: 0.155±0.03 Blue y: 0.047±0.03	Blue	Up-Left Corner	0.1529	0.0442	18.82	Pass	
		Up-Right Corner	0.1527	0.0443	18.98	Pass	
		Center	0.1528	0.0441	19.33	Pass	
		Down-Left Corner	0.1529	0.0443	19.56	Pass	
		Down-Right Corner	0.1528	0.0448	19.82	Pass	
Condition	**Position**		**Measure Data**			**Result**	**Note**
			x	**y**	**Y**		
White x: 0.308±0.03 White y: 0.329±0.03	White	Up-Left Corner	0.2998	0.3154	302.10	Pass	
		Up-Right Corner	0.3016	0.3170	308.30	Pass	
		Center	0.3011	0.3166	316.00	Pass	
		Down-Left Corner	0.3010	0.3164	318.80	Pass	
		Down-Right Corner	0.3037	0.3203	331.00	Pass	

Color Temperature Test

Test Procedure	Result	Note
1. Burn in more than 30 minutes.	Pass	
2. Confirm adjust OSD settings : Color Temp→ 7300K, Back Light→ 50 ,Contrast→ 90 , Gamma→ DICOM.	Pass	
3. Confirm open white pattern and the Color Analyzer CA-310 to measure the center position.	Pass	
4. Record x, y and Y values for different color temperatures.	Pass	
5. Check that the x and y values match the spec range.	Pass	

Test Condition

Measure Sensor	CA-310	Measure Tool	DisplayMate for Windows(DMW)	Resolution	1600x1200/60Hz(DVI)
Back Light	50	Contrast	90	Color Temperature	7300K

Test Spec

Color Temperature	x , y	Spec(-0.003)	x	Spec(+0.003)	Spec(-0.003)	y	Spec(+0.003)
7300K	x , y	0.299	0.302	0.305	0.314	0.317	0.320

Measurement Record

Gamma / Color Temp	Position	Measure Data			Result	Note
		x	y	Y		
Gamma 2.0 / 7300K	Center Position	0.300	0.316	318.80	Pass	
Gamma 2.2 / 7300K	Center Position	0.300	0.316	314.60	Pass	
DCOM / 7300K	Center Position	0.300	0.316	316.60	Pass	
User1	Center Position	0.300	0.316	314.70	Pass	
User2	Center Position	0.300	0.316	313.60	Pass	

Calibration Software Test

Test Procedure	Result	Note
1. Confirm burn in more than 30 min.	Pass	
2. Confirm execute DIVA Calibration Tool V 0.2.6.9 and placed the CA-310 the center of the monitor to check test result.	Pass	
3. Confirm placed the CA-310 the center of the monitor and execute DIVA measure Tool to measure luminance.	Pass	
4. Record the Y value of Gamma 2.0 / Gamma 2.2 .	Pass	
5. After test , check the Gamma curve and the luminance meet the spec range.	Pass	

Test Condition

Measure Sensor	CA-310	Measure Tool	DIVA Calibration Tool V 0.2.6.9	Resolution	1600x1200/60Hz(DVI)
Gamma	Gamma 2.0 / Gamma 2. 2 / User 1 / User 2				

Test Spec

Item	Gamma Curve	Luminance	Note
Gamma 2.0	± 0.1	≧ 220cd/m²	
Gamma 2.2	± 0.1	≧ 220cd/m²	

PHOTO OF TEST

DIVA Calibration Report (Software Version: 0.2.6.9) | Note

DIVA Calibration Report

Calibrate Date:	2023/07/12 13:40:54 - 2023/07/12 13:56:17		
Measuring Device:	CA310 ,		
Model Name:	CDL2013A-1A1	Serial Number:	RD210531002
Firmware Version:	230606R0V01	Software Version:	0.2.6.9

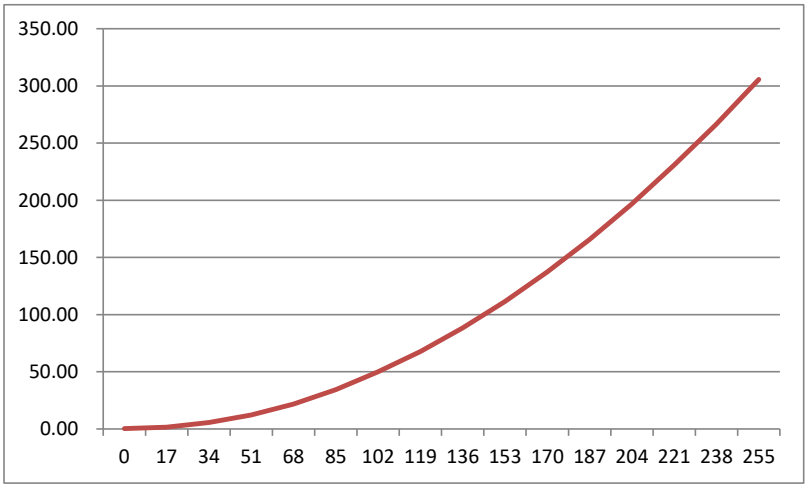
Summary

Calibration Item	Verification	Result:
Gamma 2.0 + 7300K	2.035950143	PASS
Gamma 2.2 + 7300K	2.239913181	PASS
DICOM + 7300K	6.508145813	PASS
JKC USER1 + 7300K	2.32564344	PASS
JKC USER2 + 7300K	2.009944819	PASS

Gamma Measurement Result

Level	Gamma 2.0 / Color Temp: 7300			N/A			Note
	x	y	Y				
0	0.2674	0.2879	0.31				
17	0.2702	0.3105	1.56				
34	0.2765	0.3135	5.52				
51	0.2855	0.3155	12.17				
68	0.2939	0.3163	21.81				
85	0.3018	0.3156	34.39				
102	0.3049	0.3160	49.98				
119	0.3034	0.3159	67.77				
136	0.3040	0.3167	88.47				
153	0.3040	0.3161	111.42				
170	0.3039	0.3164	137.41				
187	0.3039	0.3161	165.73				
204	0.3038	0.3157	196.84				
221	0.3036	0.3158	230.82				
238	0.3033	0.3152	266.60				
255	0.3030	0.3150	305.64				
Measure Gamma	2.02						
Result	Pass						

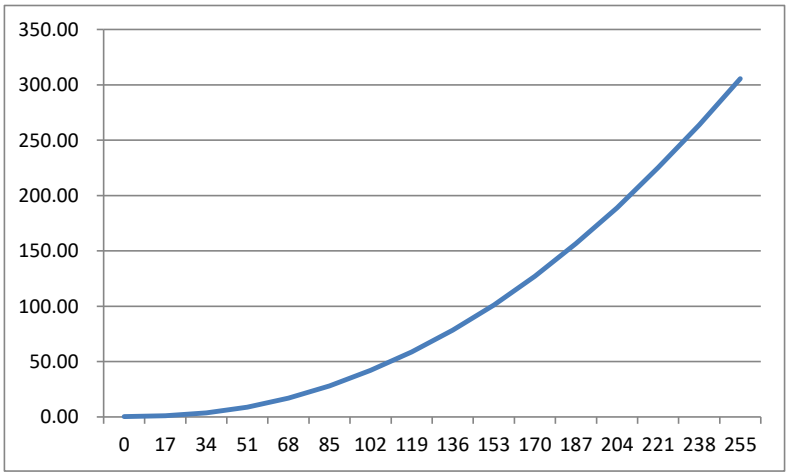
Gamma 2.0 Gamma Curve



Gamma Measurement Result

Level	Gamma 2.2 / Color Temp: 7300			N/A			Note
	x	y	Y				
0	0.2677	0.2879	0.31				
17	0.2706	0.3093	1.04				
34	0.2775	0.3138	3.77				
51	0.2856	0.3141	8.85				
68	0.2927	0.3153	16.90				
85	0.3014	0.3156	27.98				
102	0.3042	0.3164	41.99				
119	0.3034	0.3160	58.60				
136	0.3036	0.3159	78.35				
153	0.3035	0.3157	101.07				
170	0.3036	0.3161	127.17				
187	0.3040	0.3164	156.65				
204	0.3033	0.3153	188.96				
221	0.3035	0.3158	225.23				
238	0.3032	0.3153	263.93				
255	0.3028	0.3148	305.56				
Measure Gamma	2.22						
Result	Pass						

Gamma 2.2 Gamma Curve



DICOM Test

Test Procedure	Result	Note
1. Confirm burn in more than 30 min.	Pass	
2. Confirm adjust OSD settings: Gamma→ DICOM , Color Temperature→ 7300.	Pass	
3. Confirm use X-RiteiOne and execute Measure Tool to measure.	Pass	
4. Record the DICOM value and put it into the standard TUV analysis.	Pass	
5. Check that the DICOM matches the Spec range.	Pass	

Test Condition

Sensor	X-RiteiOne	**Measure Tool**	DIVA Measure Tool	**Resolution**	1600x1200/60Hz(DVI)
Gamma	DICOM	**Color Temperature**	7300	**Measure Pattern**	Gamma Measurement Pattern
Measure Pattern	Gamma Measurement Pattern				

Test Spec

Item	Diff[%]	Luminance	Note
DICOM	Diff < ±10%	≧ 220cd/m²	

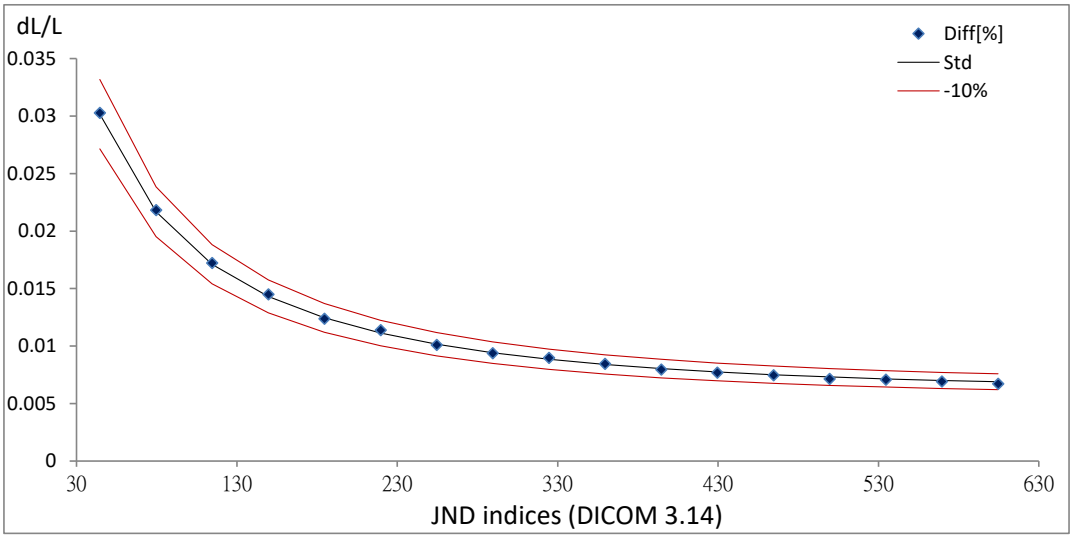
DICOM Measurement Data

Item	Level	L (cd/m²)	dL/L	Std(dL/L)	diff[%]	JND"	Note
DICOM / 7300K	0	0.1678	0.03133	0.03272	-4.23778	37.19641	
	15	0.6046	0.02295	0.02273	0.93945	73.29520	
	30	1.4595	0.01795	0.01761	1.89723	109.39398	
	45	2.8583	0.01549	0.01456	6.34552	145.49277	
	60	5.0766	0.01229	0.01257	-2.21236	181.59155	
	75	7.9717	0.01191	0.01118	6.49399	217.69034	
	90	12.3375	0.01062	0.01017	4.32793	253.78912	
	105	18.1856	0.00931	0.00942	-1.10870	289.88791	
	120	25.5336	0.00875	0.00883	-0.94638	325.98669	
	135	35.1094	0.00852	0.00837	1.78364	362.08548	
	150	47.8741	0.00802	0.00801	0.17713	398.18426	
	165	64.0825	0.00774	0.00771	0.32464	434.28305	
	180	84.8838	0.00737	0.00747	-1.38072	470.38184	
	195	110.9228	0.00722	0.00727	-0.76614	506.48062	
	210	144.155	0.00709	0.00711	-0.24456	542.57941	
	225	186.4933	0.00686	0.00698	-1.74919	578.67819	
	240	239.1659	0.00666	0.00687	-2.77357	614.77698	
	255	304.7117					
	Result	Pass					

DICOM Measurement Data

Item	Level	L (cd/m²)	dL/L	Std(dL/L)	diff[%]	JND"	Note
DICOM / 7300K	0	0.1678	0.03133	0.03272	-4.23778	37.19641	
	15	0.6046	0.02295	0.02273	0.93945	73.29520	
	30	1.4595	0.01795	0.01761	1.89723	109.39398	
	45	2.8583	0.01549	0.01456	6.34552	145.49277	
	60	5.0766	0.01229	0.01257	-2.21236	181.59155	
	75	7.9717	0.01191	0.01118	6.49399	217.69034	
	90	12.3375	0.01062	0.01017	4.32793	253.78912	
	105	18.1856	0.00931	0.00942	-1.10870	289.88791	
	120	25.5336	0.00875	0.00883	-0.94638	325.98669	
	135	35.1094	0.00852	0.00837	1.78364	362.08548	
	150	47.8741	0.00802	0.00801	0.17713	398.18426	
	165	64.0825	0.00774	0.00771	0.32464	434.28305	
	180	84.8838	0.00737	0.00747	-1.38072	470.38184	
	195	110.9228	0.00722	0.00727	-0.76614	506.48062	
	210	144.155	0.00709	0.00711	-0.24456	542.57941	
	225	186.4933	0.00686	0.00698	-1.74919	578.67819	
	240	239.1659	0.00666	0.00687	-2.77357	614.77698	
	255	304.7117					
	Result	Pass					

Gamma DICOM Curve



2. Power Consumption Test

Test Engineer	Jack Lu	Date	2023/7/19	Stage	Result
				PP	PASS

Test Propose

Check and verify PCBA power management properly.

Evaluation Environment

Temperature	24±2°C
Relative Humidity	50%±10%(RH)

Evaluation Equipment

Processor	Intel ® Core™ i5-4440 CPU@3.10GHz		
Graphics Card	NVIDIA Quadro K2000D- Driver 392.0(		
O.S	Windows 7 Professional 32 bit		
Evaluation Equipment	Measurement Test Fixture A662022	6700 SERIES PROGRAMMABLE AC POWER SOURCE	Chroma Digital Power Meter 66205

Firmware Version Description

Change Contents	Data IC, Tcon-IC, P-Gamma IC and Reflector will be introduced new materials		
Description Of Change	Changed Items	Original	Current
	Version	C2	C4
	Data IC	NT39986H-XXXXXX	EK77XXXX
	T-CON IC	IN2812A-XX	MSTXXXXX
	P-Gamma IC	Himax	GMT
	Reflector	E6DY-XXX	DJX-XXXX
	Product Specification	3.2	3.3

Evaluation Unit Level

LCD Type	Innolux R213UCE L01
Power Adapter	DMP5012G
F/W Version	CDL2013A-1A1_230606R0V01
Main Board	2AAD558R138
Interface Option	VGA/DVI
Serial Number	RD210531002

Criteria

1. Power consumption AC(W) must satisfy the value of the specification.
2. Satisfy the value of the specification at the power save.
* Test in the stable state that operated for two hours or more.

Power Consumption Test

Test Procedure	Result	Note
1. Insert the main test machine AC power into the CFW-105, and adjust the CFW-105 to the tested voltage value.	Pass	
2. The Full Brightness/Power Saving/DC Off environment is measured separately under different voltage conditions.	Pass	
3. Record the consumption and current of Full Brightness/Power Saving/Off in each voltage environment.	Pass	
4. After test, power consumption AC(W) must satisfy the value of the specification.	Pass	

Test Condition

Back Light	100	Brightness	100	Gamma	Neutral
Resolution	1600x1200/60Hz(DVI)	Color Temerature	User	Test Pattern	Full White Pattern

Test Spec

Power Consumption (Max)

Full Brightness	41W (Max)
Power Saving	1W
Off	1W

Power State	Sync On		DC Off		Power Saving		Result	Note
AC Voltage	W	mA	W	mA	W	mA		
100V/60Hz	33.11	621.33	0.45	20.88	0.48	21.39	Pass	
110V/60Hz	32.98	575.47	0.45	21.46	0.48	21.89	Pass	
220V/50Hz	32.53	310.03	0.49	28.80	0.52	28.89	Pass	
240V/50Hz	32.49	290.42	0.50	31.12	0.53	31.21	Pass	

Remark:

3. Low Temperature Startup Test

Test Engineer	Jack Lu	Date	2023/7/19	Stage	Result
				PP	PASS

Test Propose

To evaluate whether its startup is possible or not in a stable condition when the product is operated in a low temperature environment.

Evaluation Environment

Temperature	-10ºC

Evaluation Equipment

Processor	Intel® Core™ i3-3220 CPU @ 3.30GHz		
Graphic Card	NVIDIA Quadro K2000 - Driver 392.37		
O.S.	Windows 7 Professional 32bit		
Evaluation Equipment	EXTECH AC POWER SOURCE CFW-105	TERCHY MHE-1728LJDA	N/A

Firmware Version Description

Change Contents	Data IC, Tcon-IC, P-Gamma IC and Reflector will be introduced new materials		
Description Of Change	Changed Items	Original	Current
	Version	C2	C4
	Data IC	NT39986H-XXXXXX	EK77XXXX
	T-CON IC	IN2812A-XX	MSTXXXXX
	P-Gamma IC	Himax	GMT
	Reflector	E6DY-XXX	DJX-XXXX
	Product Specification	3.2	3.3

Evaluation Unit Level

LCD Type	Innolux R213UCE L01
Power Adapter	DMP5012G
F/W Version	CDL2013A-1A1_230606R0V01
Main Board	2AAD558R138
Interface Option	VGA/DVI
Serial Number	RD210531002

Test Standard

Low Temperature Startup Test Specification

Criteria

It shall normally start up and operate.

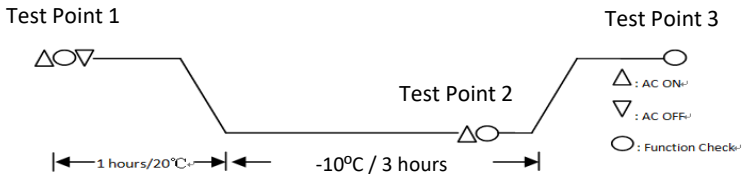
Low Temperature Startup Test

Test Procedure	Result	Note
1. Place the test display in the constant chamber and set temperature inside the chamber to the specified temperature.	Pass	
2. Confirm make sure the display backlight is set to the minimum brightness and the test pattern is set to full white pattern.	Pass	
3. Hold the test device in the constant temperature chamber until its temperature reaches the specified temperature.	Pass	
4. Confirm after leaving it the lowest acceptable temperature, -10°C for 3 hours or more as it is, and immediately start it.	Pass	
5. After test , check the function and the screen should operate normally.	Pass	

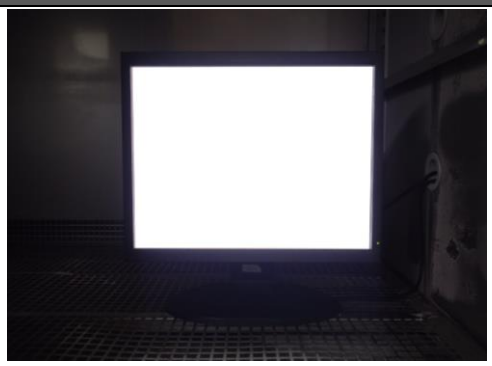
Test Condition

Applied Voltage	85V/50Hz	Temperature	-10ºC	Resolution	1600x1200/60Hz(DVI)
Back Light	100	Test Pattern	Full White Pattern	Test Duration	3 hours or more
Condition Description	Not in operation , After leaving it the lowest acceptable temperature, -10°C for 3 hours or more as it is, immediately start it.				

Test Environment Curve



Function Check		Test Point 1	Test Point 2	Test Point 3	Note
OSD Control Function	OSD Light Bar Adjust	Pass	Pass	Pass	
	Back Light	Pass	Pass	Pass	
	Contrast	Pass	Pass	Pass	
	Color Mode	Pass	Pass	Pass	
	Gamma	Pass	Pass	Pass	
	OSD Displyay	Pass	Pass	Pass	
	Key Lock	Pass	Pass	Pass	
	Reset	Pass	Pass	Pass	
	OSD Information Check	Pass	Pass	Pass	
LED Indication Check	Check LED Indicator status show Green and power on.	Pass	Pass	Pass	
	Check LED Indicator status show Orange and power saving mode	Pass	Pass	Pass	
	Check LED Indicator status show Off and power off	Pass	Pass	Pass	
Power Management	Check Power AC On/Off 10 times and Operation Normal	Pass	Pass	Pass	
	Check Power DC On/Off 10 times and Operation Normal	Pass	Pass	Pass	
	Check Power saving On/Off 10 times and Operation Normal	Pass	Pass	Pass	
Screen State Check	Check Not abnormal screen	Pass	Pass	Pass	
	Check Not black screen	Pass	Pass	Pass	
	Check Not flicker screen	Pass	Pass	Pass	
	Check Not screen noise	Pass	Pass	Pass	

PHOTO OF TEST		
Before Test	**Before Test (1)**	**Note**
		
Test Condition	**After Test**	**Note**
		
Function Check		**Note**
		

4. Low Temperature Operation Test

Test Engineer	Jack Lu	Date	2023/7/19	Stage	Result
				PP	PASS

Test Propose

Confirmed that electrical characteristics, display quality, and image quality have a certain level within the operating temperature range.

Evaluation Unit Level

Temperature	0ºC

Evaluation Equipment

Processor	Intel® Core™ i3-3220 CPU @ 3.30GHz		
Graphics Card	NVIDIA Quadro K2000 - Driver 392.37		
O.S.	Windows 7 Professional 32bit		
Evaluation Equipment	EXTECH AC POWER SOURCE CFW-105	TERCHY MHE-1728LJDA	N/A

Firmware Version Description

Change Contents	Data IC, Tcon-IC, P-Gamma IC and Reflector will be introduced new materials		
Description Of Change	Changed Items	Original	Current
	Version	C2	C4
	Data IC	NT39986H-XXXXXX	EK77XXXX
	T-CON IC	IN2812A-XX	MSTXXXXX
	P-Gamma IC	Himax	GMT
	Reflector	E6DY-XXX	DJX-XXXX
	Product Specification	3.2	3.3

Evaluation Unit Level

LCD Type	Innolux R213UCE L01
Power Adapter	DMP5012G
F/W Version	CDL2013A-1A1_230606R0V01
Main Board	2AAD558R138
Interface Option	VGA/DVI
Serial Number	RD210531002

Test Standard

Low Temperature Operation Test Specification

Criteria

1. The screen width, position, brightness, and other items shall be checked.
2. The screen quality including video characteristics, noise, and screen functions shall not deteriorate.
3. The specification shall be satisfied.

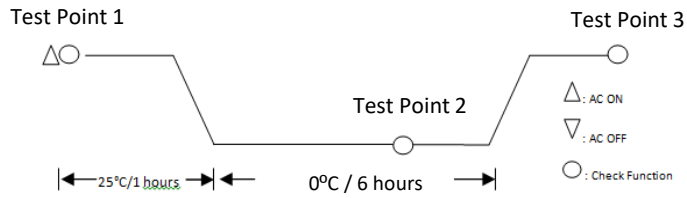
Low Temperature Operation Test

Test Procedure	Result	Note
1. Confirm that the test machine has normal functions and no scratches before test.	Pass	
2. Confirm turn on the display power , and set it according to the test conditions and put it in 0°C for 6 hours.	Pass	
3. During this test , Measure the brightness value of all white screen and all black screen.	Pass	
4. After the test, check if the display function and picture normal.	Pass	

Test Condition

Applied Voltage	100V/50Hz	**Temperature**	0ºC	**Test Pattern**	Full White Screen
Sample Condition	Operation Normal	**Resolution**	1600x1200/60Hz(DVI)	**Back Light**	50
Color Temperature	7300K	**Gamma**	DICOM	**Test Duration**	6 hours
Condition Description	The test temperature shall be the lower limit -5ºC of the operating temperature range, and the measurement shall be at least 30 minutes after reaching the set temperature.				

Environment Curve



Function Check			Test Point 1	Test Point 2	Test Point 3	Note
Electronic	OSD Control Function	OSD Light Bar Adjust	Pass	Pass	Pass	
		Back Light	Pass	Pass	Pass	
		Contrast	Pass	Pass	Pass	
		Brightness	Pass	Pass	Pass	
		Color Mode	Pass	Pass	Pass	
		OSD Display	Pass	Pass	Pass	
		Reset	Pass	Pass	Pass	
		OSD Information Check	Pass	Pass	Pass	
Led Indication Check	Check LED Indicator status show Green and power on.		Pass	Pass	Pass	
	Check LED Indicator status show Orange and power saving mode		Pass	Pass	Pass	
	Check LED Indicator status show off and power off		Pass	Pass	Pass	
Image Quality Check	Check SMPTE TEST PATTERN		Pass	Pass	Pass	
	Check ColorBar TEST PATTERN		Pass	Pass	Pass	
	Check Grayscale TEST PATTERN		Pass	Pass	Pass	
	Check Raster TEST PATTERN		Pass	Pass	Pass	
Power Management	Check Power AC On/Off 10 times and Operation Normal		Pass	Pass	Pass	
	Check Power DC On/Off 10 times and Operation Normal		Pass	Pass	Pass	
	Check Power saving On/Off 10 times and Operation Normal		Pass	Pass	Pass	

PHOTO OF TEST		
Before Test	Before Test (1)	Note
		
Test Condition	After Test	Note
		

5. High Temperature and High Humidity Operation Test

Test Engineer	Jack Lu	Date	2023/7/19~~2023/7/20	Stage	Result
				PP	PASS

Test Propose

To evaluate whether the functions are maintained in a stable condition when the product is operated in a high temperature and high humidity environment

Evaluation Environment

Temperature	45ºC
Relative Humidity	80%(RH)

Evaluation Equipment

Processor	Intel® Core™ i3-3220 CPU @ 3.30GHz		
Graphic Card	NVIDIA Quadro K2000 - Driver 392.37		
O.S.	Windows 7 Professional 32bit		
Evaluation Equipment	EXTECH AC POWER SOURCE CFW-105	TERCHY MHE-1728LJDA	N/A

Firmware Version Description

Change Contents	Data IC, Tcon-IC, P-Gamma IC and Reflector will be introduced new materials		
Description Of Change	Changed Items	Original	Current
	Version	C2	C4
	Data IC	NT39986H-XXXXXX	EK77XXXX
	T-CON IC	IN2812A-XX	MSTXXXXX
	P-Gamma IC	Himax	GMT
	Reflector	E6DY-XXX	DJX-XXXX
	Product Specification	3.2	3.3

Evaluation Unit Level

LCD Type	Innolux R213UCE L01
Power Adapter	DMP5012G
F/W Version	CDL2013A-1A1_230606R0V01
Main Board	2AAD558R138
Interface Option	VGA/DVI
Serial Number	RD210531002

Test Standard

High Temperature and High Humidity Operation Test Specification

Criteria

There should be no abnormalities affecting the product's specified functions and performance.
Follow Engineering Specification & Product Specification

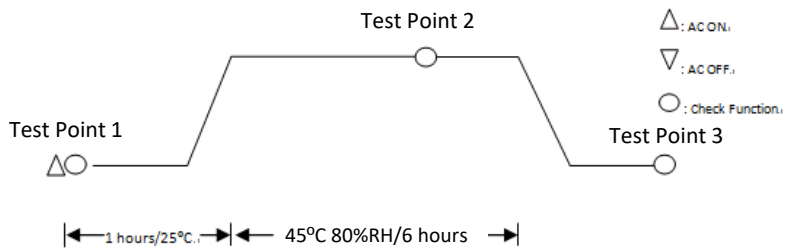
High Temperature and High Humidity Operation Test

Test Procedure	Result	Note
1. Confirm the high temperature operation function In a high temperature and high humidity environment.	Pass	
2. Place the test display in the temperature chamber and set temperature inside the chamber to the specified temperature.	Pass	
3. Confirm make sure the display normal and the test pattern is set to the full white screen.	Pass	
4. Hold the test device in the constant temperature chamber until its temperature reaches the specified temperature.	Pass	
5. Confirm that the screen before the test and after the test and function check should operate normally.	Pass	

Test Condition

Applied Voltage	100V/50Hz	Back Light	100	Resolution	1600x1200/60Hz(DVI)
Temperature	45ºC/80%RH	Test Pattern	Full White Screen	Test Duration	6 hours

Test Environment Curve



Function Check			Test Point 1	Test Point 2	Test Point 3	Note
Electronic	OSD Control Function	OSD Light Bar Adjust	Pass	Pass	Pass	
		Back Light	Pass	Pass	Pass	
		Contrast	Pass	Pass	Pass	
		Brightness	Pass	Pass	Pass	
		Color Mode	Pass	Pass	Pass	
		OSD Display	Pass	Pass	Pass	
		Reset	Pass	Pass	Pass	
		OSD Information Check	Pass	Pass	Pass	
Image Quality	Check SMPTE TEST PATTERN		Pass	Pass	Pass	
	Check ColorBar TEST PATTERN		Pass	Pass	Pass	
	Check GrayScale TEST PATTERN		Pass	Pass	Pass	
	Check Raster TEST PATTERN		Pass	Pass	Pass	
LED Indication Check	Check LED Indicator status show Green and power on.		Pass	Pass	Pass	
	Check LED Indicator status show Orange and power saving mode		Pass	Pass	Pass	
	Check LED Indicator status show Off and power off		Pass	Pass	Pass	
Power Management	Check Power AC On/Off 10 times and Operation Normal		Pass	Pass	Pass	
	Check Power DC On/Off 10 times and Operation Normal		Pass	Pass	Pass	
	Check Power saving On/Off 10 times and Operation Normal		Pass	Pass	Pass	

PHOTO OF TEST		
Before Test	**Before Test (1)**	**Note**
		
Test Condition	**After Test**	**Note**
		