深圳市宇锡科技有限公司

SHENZHEN YOUSEE TECHNOLOG CO., LTD

DISPLAY SPECIFICATION

Product NO: (产品型号) **YXB00QBC74 .A**

Customer : (客 户) _____

APPROVED BY CUSTOMER 客户签署栏	
Approved by 审核	Remark 备注

APPROVED BY YOUSEE 宇锡签署栏			
Prepared by 制作	Checked by 检查		Approved by 审核
	电 子	结 构	

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Reversion History

Reversion. No	Date	Contents	Remark

Contents

Contents 3
1 Scope 4
2 Features 4
2.1 Product Applications 4
2.2 Product Features 4
2.3 Model Name: EB00QBC73.A 4
3 Mechanical Specifications 4
4 Maximum Rating 5
5 Electrical Specifications 5
5.1 Electrical Characteristics 5
5.2 TP IC Recommended Operating Conditions 6
5.3 I/O Connection 7
5.4 Graphic memory writing direction 9
5.5 Recommended Operating Sequence 10
6 Electro-Optical Specification 11
7 Reliability 16
7.1 Environmental Test 16
7.2 Electrical Test 17
7.3 Mechanical Test 17
8 Outline Dimension Drawing 19
9 Packing Specification 20
10 Attachment 21
10.1 Cover Glass spec 22
11 The Control of Hazardous substances 22

1 Scope

This Specification defines AMOLED manufactured by Shenzhen Yousee Technology Co., Ltd., from here on refer as Yousee. In the case of any unspecified item, it may require both Yousee and the party designs this module into its product to work out a solution.

2 Features

2.1 Product Applications

Pad

2.2 Product Features

1) Display color：16.7M (RGB x 8bits)
2) Display format：11.00 ” 1728x2368 (864(RGB) x2368x2Cascade)
3) Pixel arrangement：Real RGB arrangement
4) Interface：MIPI
5) Driver IC: RM69380 TP IC: EKTH7513

3 Mechanical Specifications

Item	Specification	unit
Cover Lens outline	241.40*175.90	mm
LTPS Glass outline	168.60x231.64	mm
Encapsulation Glass outline	168.60x230.31	mm
Number of dots	1728(W) x RGB x2368(H)	dots
Active area	164.70x225.69	mm

Diagonal size	11.00	inch
Pixel pitch	31.77 x 95.31	μm
Glass thickness （LTPS/Encap. glass/Cover Lens）	0.3/ 0.3 / 0.55	mm
Weight	150g +/-10%	g
翘曲度	显示面朝上，向上凸起0.3 mm max，向下凹 0.15mm max	mm

4 Maximum Rating

Parameter	Symbol	Spec			Unit	Note
		Min.	Typ.	Max.		
Analog/boost power voltage	VCI	2.60	3.30	3.60	V	-
I/O voltage	VDDIO	1.65	1.80	1.98	V	-
Operating temperature	Top	-20	-	70	℃	-
Storage temperature	Tstg	-40	-	80	℃	-

5 Electrical Specifications

5.1 Electrical Characteristics

5.1.1 Power Characteristic：

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Display Digital Power supply	VDDIO	1.65	1.80	1.98	V	Ref
Display Analog Power supply	VCI	2.60	3.30	3.60	V	Ref
Display Analog Power supply	Vbat	2.90	4.20	4.80	V	Ref

1) Normal Mode

Power Supply: IOVCC=1.8V VCI=3.3V

Frame Frequency: F_{frame} =60HZ @ 25degC, Brightness 350 nits, Command Mode,

Display Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
100% Pixel On 350nits	IVCI	-	20	30	mA	Ref
	IVDDIO	-	150	200	mA	Ref
	IVbat	-	1800	2300	mA	Ref
50% Pixel On 350nits	IVCI	-	20	30	mA	Ref
	IVDDIO	-	185	200	mA	Ref
	IVbat	-	900	1150	mA	Ref

2) AOD Mode

Power Supply: IOVCC=1.8V VCI=3.3V

Frame Frequency: F_{frame} =30HZ @ 25degC, Brightness 100 nits, Command Mode,

Display Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
1/15 Pixel On	IVCI	-	2	3	mA	Ref
	IVDDIO	-	55	65	mA	Ref
	IVbat	-	85	95	mA	Ref

5.1.2 Driver IC

RM69380 (refer to the datasheet).

5.1.3 Single IC Reference MIPI setting：

Mode	Active	BPD	SPW	FPD	Total	Unit	Remark
Vertical	2368	8	4	18	2398	H-sync	-
Horizontal	864	38	12	32	946	P-clk	-
Bit Rate	816					MHz	-
MIPI Lane number	4					Lane	
Vertical total time	16.67					ms	
Horizontal Total time	6.95					us	

Note: V total=V active +VBPD+ VSPW +VFPD，H total=H active +HBPD+ HBPD +HFPD
HSPW (horizontal sync pulse width)，HBPD (horizontal back porch)
HFPD (horizontal front porch)，VSPW (vertical sync pulse width)
VBPD (vertical back porch)，VFPD (vertical front porch)，fps (frame per second)
Bit Rate= Vtotal*Htotal*fps*24bit/4lane

5.2 Touch IC

5.2.1 Power Characteristic

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Touch Analog Power supply	TP_AVDD	2.8	3.3	3.6	V	Ref
Operating temperature	Top	-40	-	+85	℃	-

5.2.2 Touch specification

No	Item	Conditions		Remark
1	Touch D-IC	EKTH7513		
2	Sensing Method	Mutual + Self Capacitance		
3	Accuracy	center 1.0/Border 1.5	mm	
4	Precision	center 1.0/Border 1.5	mm	
5	Linearity	center 1.0/Border 1.5	mm	
6	Jitter	<0.5	mm	
7	Response Time	<30	ms	
8	Finger Separation	<12	mm	
9	Sensitivity	ϕ4	mm	
10	Report Rate	>100Hz@1Finger >80Hz@Muti-Finger		
11	Signal-to-Noise Raito	>30:1		
12	No Ghost input	Support		
13	Function Reset	Support		
14	Active Pen	Support at least MPP		

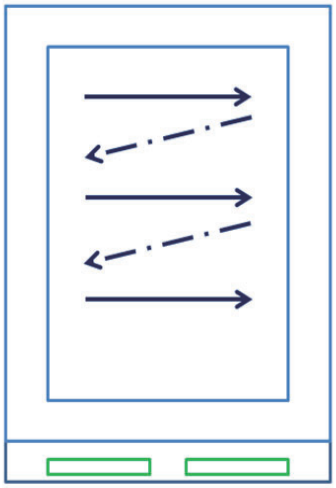
5.3 I/O Connection

Num.	**Name**	**I/O**	**Define**
1	Vbat	Power	Analog Power for Power IC
2	Vbat	Power	Analog Power for Power IC
3	Vbat	Power	Analog Power for Power IC
4	Vbat	Power	Analog Power for Power IC
5	Vbat	Power	Analog Power for Power IC

6	Vbat	Power	Analog Power for Power IC
7	Vbat	Power	Analog Power for Power IC
8	Vbat	Power	Analog Power for Power IC
9	Vbat	Power	Analog Power for Power IC
10	Vbat	Power	Analog Power for Power IC
11	GND	Power	The power ground
12	GND	Power	The power ground
13	GND	Power	The power ground
14	GND	Power	The power ground
15	GND	Power	The power ground
16	VDDI	Power	Digital power for Driver IC
17	VDDI	Power	Digital power for Driver IC
18	GND	Power	The power ground
19	VCI	Power	Analog power for Driver IC
20	GND	Power	The power ground
21	MTP_PWR_L	Power	Analog power for Driver IC MTP
22	RESX	I	Display RESET. Active low.
23	PCD_L	O	Panel Crack Detection
24	TE_L	O	Feed Back From Driver IC for synchronism
25	GND	Power	The power ground
26	MIPI_D0P_L	I/O	L-port MIPI DSI data0+ for Master IC
27	MIPI_D0N_L	I/O	L-port MIPI DSI data0- for Master IC
28	GND	Power	The power ground
29	MIPI_D1P_L	I/O	L-port MIPI DSI data1+ for Master IC
30	MIPI_D1N_L	I/O	L-port MIPI DSI data1- for Master IC
31	GND	Power	The power ground
32	MIPI_CLKP_L	I/O	L-port MIPI DSI Clock+ for Master IC
33	MIPI_CLKN_L	I/O	L-port MIPI DSI Clock- for Master IC
34	GND	Power	The power ground
35	MIPI_D2P_L	I/O	L-port MIPI DSI data2+ for Master IC
36	MIPI_D2N_L	I/O	L-port MIPI DSI data2- for Master IC
37	GND	Power	The power ground
38	MIPI_D3P_L	I/O	L-port MIPI DSI data3+ for Master IC
39	MIPI_D3N_L	I/O	L-port MIPI DSI data3- for Master IC
40	GND	Power	The power ground
41	MIPI_D0P_R	I/O	R-port MIPI DSI data0+ for Slave IC
42	MIPI_D0N_R	I/O	R-port MIPI DSI data0- for Slave IC
43	GND	Power	The power ground
44	MIPI_D1P_R	I/O	R-port MIPI DSI data1+ for Slave IC
45	MIPI_D1N_R	I/O	R-port MIPI DSI data1- for Slave IC

46	GND	Power	The power ground
47	MIPI_CLKP_R	I/O	R-port MIPI DSI Clock+ for Slave IC
48	MIPI_CLKN_R	I/O	R-port MIPI DSI Clock- for Slave IC
49	GND	Power	The power ground
50	MIPI_D2P_R	I/O	R-port MIPI DSI data2+ for Slave IC
51	MIPI_D2N_R	I/O	R-port MIPI DSI data2- for Slave IC
52	GND	Power	The power ground
53	MIPI_D3P_R	I/O	R-port MIPI DSI data3+ for Slave IC
54	MIPI_D3N_R	I/O	R-port MIPI DSI data3- for Slave IC
55	GND	Power	The power ground
56	TP_AVDD	P	Analog Power for TSP
57	TP_INT	I/O	State change interrupt for TSP
58	TP_SCL	I	Serial interface Clock for TSP
59	TP_RST	I	Active low, RESET the Touch IC
60	TP_SDA	I/O	Serial interface Data for TSP
61	GND	Power	The power ground

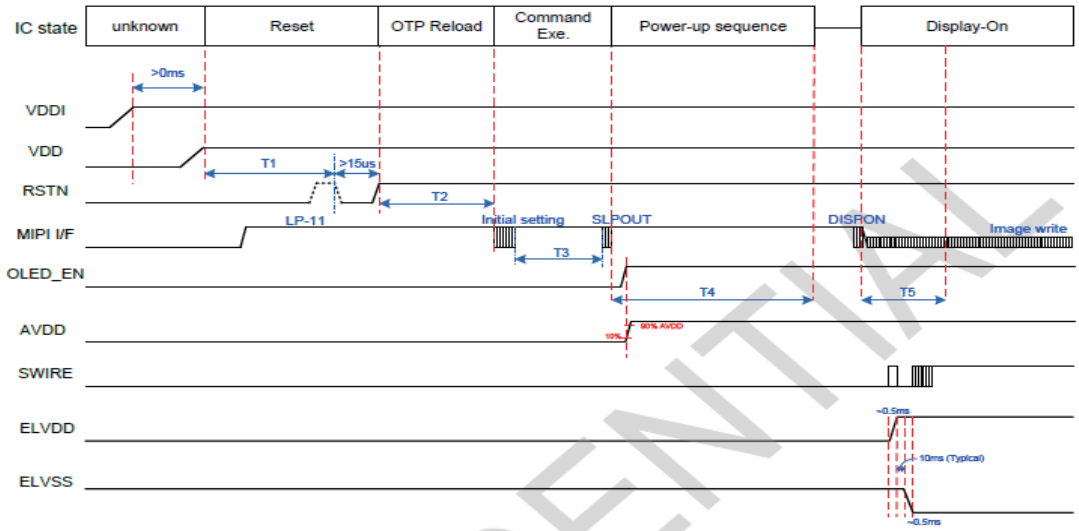
5.4 Graphic memory writing direction



5.5 Recommended Operating Sequence

5.5.1 Power on sequence

❖ **Power On Sequence**



❖ **Timing Specification of Power On Sequence**

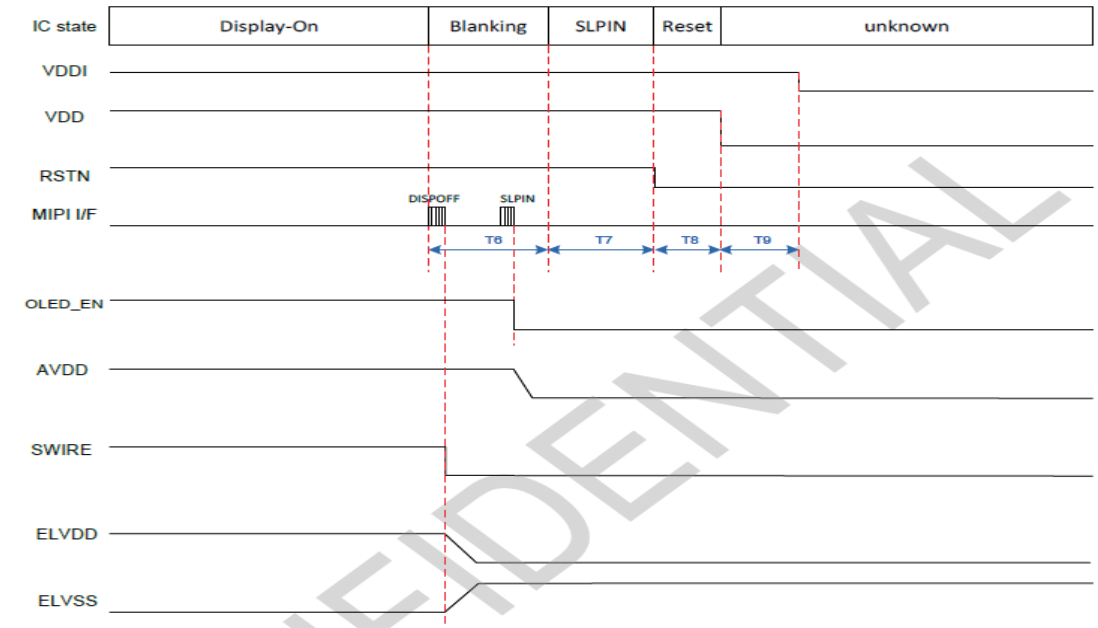
Symbol	Value			Unit	Remark
	Min.	Typ.	Max.		
T1	10	-	-	ms	Effective hardware reset period
T2	10	-	-	ms	OTP reload time
T3	0	-	-	ms	Initial code input finish to SLPOUT command input
T4	-	96	-	ms	Normal power-up sequence
T5	2	-	-	VS	Display-On Blanking region

Notes: VS means the time period of a complete display frame and are approximately 16ms if internal display timing is used.

5.5.2 Power off sequence

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❖ **Power Off Sequence**



Symbol	Value			Unit	Remark
	Min.	Typ.	Max.		
T6	2	-	-	VS	Display-Off blanking region
T7	1	-	-	VS	Blanking region
T8	1	-	-	ms	Effective hardware reset period
T9	2	-	-	ms	Power off period

Notes: VS means the time period of a complete display frame and are approximately 16ms if internal display timing is used.

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5.5.3 Timing requirements for RESETB

When RESETB of the reset pin equals to Low, it will be in the condition of reset.

When it is in the condition of reset, it will make the device recover the initial set.

However, in order to avoid the reset noise cause reset, there is a mechanism to judge about whether the reset is needed or not.

The closed interval of Low can be shown as the following.

(Test condition: VDDIO=1.65V~3.6V, VSS=0V, TA=-20℃~+70℃)

Parameter	Symbol	Conditions	Spec			Unit
			Min.	Typ.	Max.	
Reset low pulse width	Trst	-	20	-	-	μs

Table: Reset timing

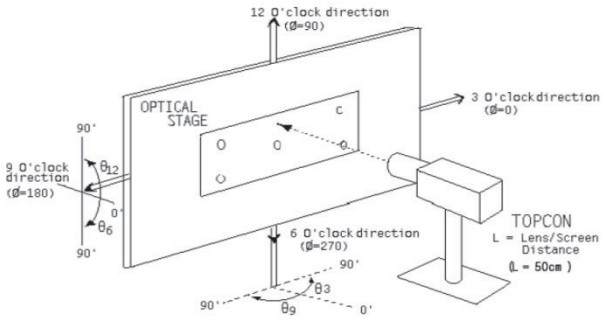
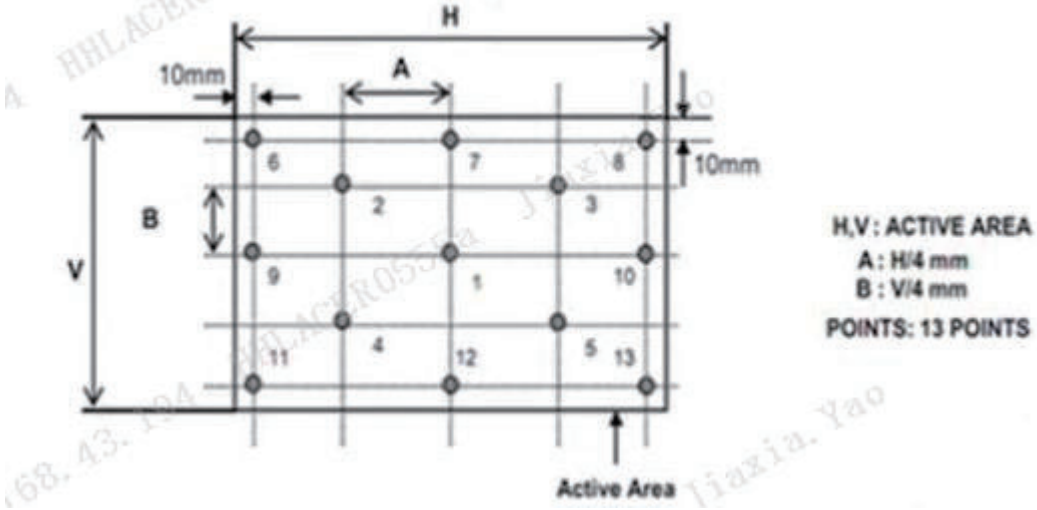
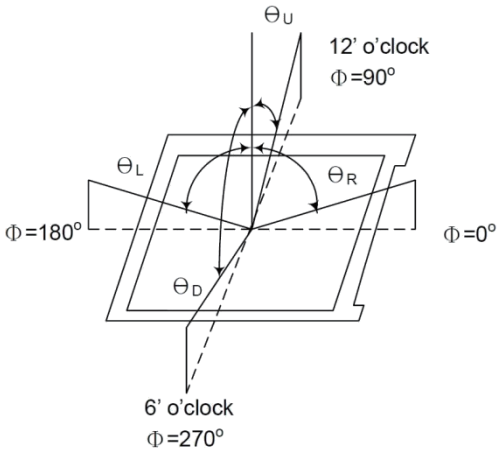


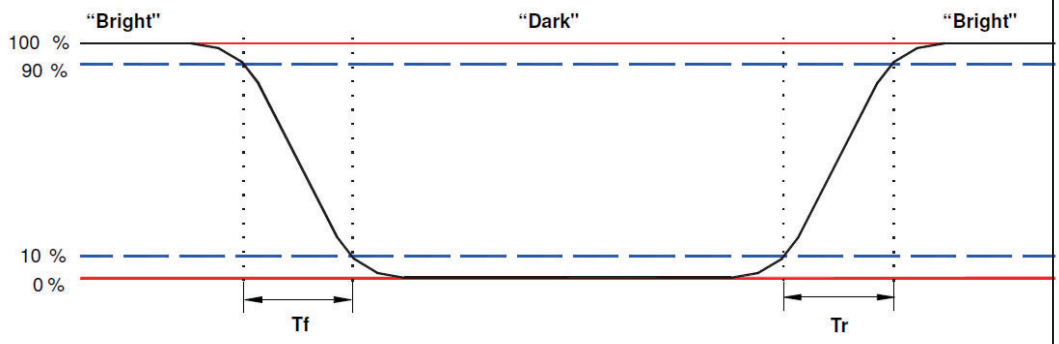
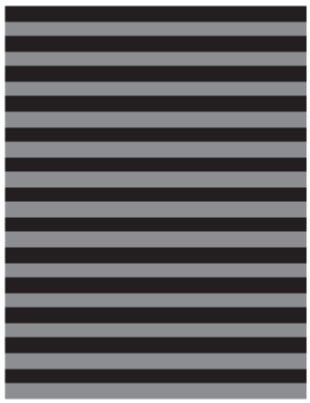
Figure: Reset timing

6 Electro-Optical Specification

Test condition：25℃±3℃，65±20%RH，暗房。

No	Item		Symbol	Condition	Value			Unit	Remark
					Min.	Typ.	Max.		
1	Luminance		-	Full white with CG	315	350	385	cd/m^2	Note1.
2	Luminance Uniformity		-	Full white	75	-	-	%	Note2
3	Contrast Ratio		CR	Normal Θ=Φ=0°	100000	-	-	-	Note3.
4	Response time		Ton+Toff	Normal Θ=Φ=0°	-	-	2	ms	Note4.
5	Color Coordinate of CIE1931	White	X	Normal Θ=Φ=0°	0.27	0.29	0.31	-	Note1.
			Y		0.28	0.30	0.32		
		Red	X		0.666	0.686	0.706		
			Y		0.291	0.311	0.331		
		Green	X		0.195	0.235	0.275		
			Y		0.68	0.72	0.76		
		Blue	X		0.123	0.143	0.163		
			Y		0.024	0.044	0.064		
6	Color Gamut			vs NTSC	90	109		%	Note5
7	Viewing Angle			Top/Bottom/Right/Left CR>1000	80			°	Note3.
8	Gamma			V(Gray)= 48,72,104,132, 164,192,224 Lum(gray255)=350nit	2.0	2.2	2.4	-	
9	Color shift			@30 degree		4	5	JNCD	Note6.
10	亮度衰减率 Luminance decrease ratio			@30 degree	-	-	45	%	Note7.
11	色温			-	7738	8538	9338	K	
12	Flicker			Normal Θ=Φ=0°	-	-	-30	dB	Note8.
13	Crosstalk			-	-	-	4	%	Note9.
14	OLED Life Time			L＞95% @ 25℃	240				Note10.
15	色温均一性			Full white	90	-	-	%	Note2 备注：待panel产出实测后定版规格
16	残影			-	-	-	5	Min	Note11.
备注：（见下表）									

序号	项目	内容
Note1	光学特性测试	
Note 2	亮度均匀性测试	 Measurement equipment CA310 or similar equipment
Note 3	视角及对比度说明	 Contrast Ratio Dark Room C.R=LW/LB LW: full white luminance of display center point ; LB: full black luminance of display center point.

Note 4	响应时间测试	
Note 5	色域测试	Definition of Color of NTSC Ratio. $S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$
Note 6	色偏测试	For JNCD measure: Fix on one pattern like white pattern, On the condition θ=0 Ø=0°, we can get the color coordinate (u1', v1') and on 30° we can get another color coordinate (u2', v2') Delta = Square Root((u2' - u1')^2 + (v2' - v1')^2) JNCD stands for "Just Noticeable Color Difference" For the (u', v') color space JNCD=0.0040. 2JNCD means Delta u"v"<0.0080 For color shift we need to measure white pattern
Note 7	亮度衰减率	Definition of Luminance decrease ratio Test pattern : Full White The luminance decrease ratio is calculated by using following formula: $\text{Luminance decrease ration} = 1 - \frac{\text{Luminance test at left, right, top, bottom} = 30°}{\text{Luminance test at left, right, top, bottom} = 0°}$
Note 8	闪烁 **Flicker**	Suggested Instruments: **Konica Minolta CA-310** or **Klein Instruments K-8**  **Odd** row : **L0** Black **Even** row : **L186** gray level Flicker Test Pattern The flicker level is defined by **Fast Fourier Transformation (FTT)** as follows:

$$Flic\,\mathrm{ker} = 20\log_{10}\left(2\frac{f_{FFTC}(n)}{f_{FFTC}(0)}\right) + FS(Hz) \quad (\mathrm{dB})$$

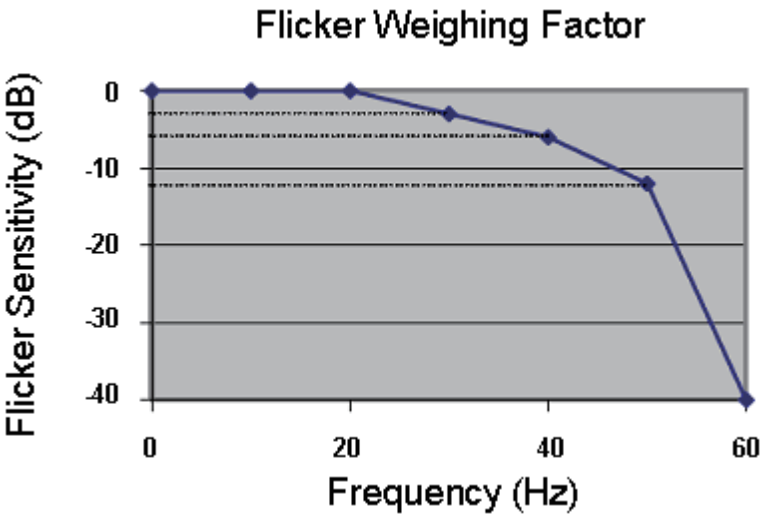
Where

fFFTC(n) is the n-th FFT coefficient.

fFFTC(0) is the 0-th FFT coefficient which is DC component.

FS(Hz) is the flicker sensitivity as a function of frequency.

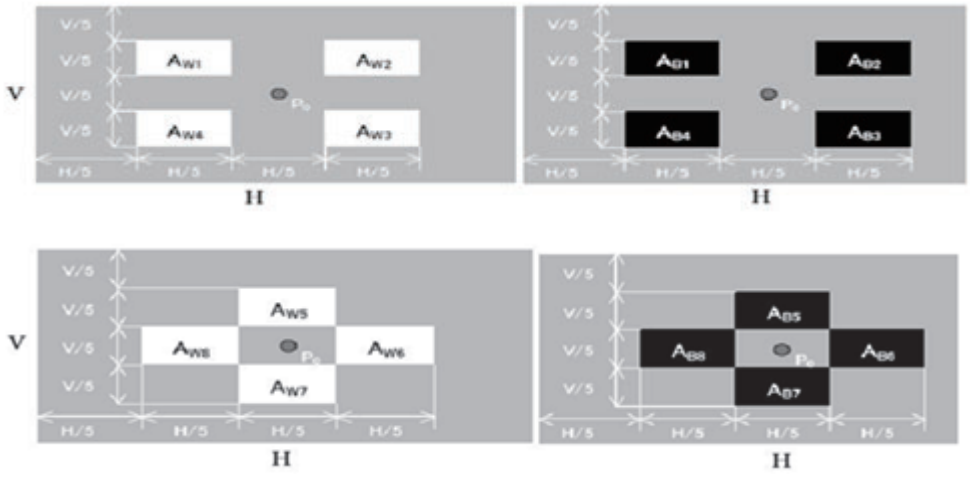
The peak flicker level shall be reported based on the calculation using above formula in which FS(Hz) is determined by the flicker weighing factor shown below.



Note 9

串扰 **Crosstalk**

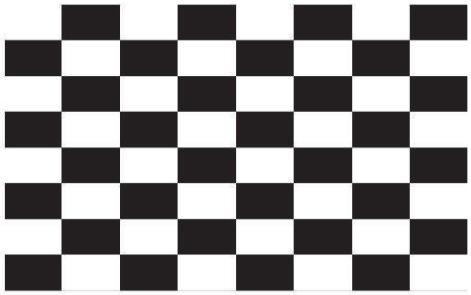
4% Black or white window， 127Gray background



$L_{W_OFF} = \frac{L_{W1}+L_{W2}+L_{W3}+L_{W4}}{4}$ $L_{B_OFF} = \frac{L_{B1}+L_{B2}+L_{B3}+L_{B4}}{4}$

For white window Awi(i=5 to 8),

$$CT = \frac{|L_{Wi_ON} - L_{W_OFF}|}{L_{W\ OFF}} \times 100\% \ \ (i = 5\ to\ 8)$$

		For white window ABi (i=5 to 8), $CT = \frac{\lvert L_{Bi_ON} - L_{B_OFF} \rvert}{L_{B_OFF}} \times 100\% \ (i = 5 \ to \ 8)$ The maximum cross-talk value shall be noted in the measurement report.
Note 10	寿命测试 **Life Time**	OLED life time is defined by the **Minimum Duration Time** that the luminance is decayed to a specific ratio (ex. **92%**) of initial state. Test Pattern under duration period: **L255** White
Note 11	残 影 **Image Retention**	At room temperature(25℃), using chessboard pattern (8 * 8) light on 30min, and switch to 128 gray. The Image retention should not be seen after 5 mins. 

7 Reliability

7.1 Environmental Test

Item	Main spec	No. of failures / No. of examinations
High Temperature Operation	70℃/ 120hrs	5
Low Temperature Operation	-20℃/ 120hrs	5
High Temperature Storage	85℃/ 120hrs	5
Low Temperature Storage	-40℃/ 120hrs	5
High Temperature Humidity Operation	60℃/93%RH/ 120hrs	10
Thermal Shock	-40℃~85℃ dwell time=0.5hr, 72 cycles.	10

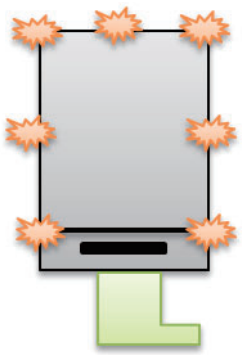
7.2 Electrical Test

Item	Main spec	Note
Air Discharge	±6 kV , 150pF/330Ω (Module level; with CG)	LCM 上电，自动循环画面 LCM 上电测试允许出现短暂屏闪/屏花/循环暂停，1s 内能自动恢复，测试结束后检测画面正常,TP 功能正常。放电次数 10 次。
Contact Discharge	±4 kV, 150pF/330Ω (Module level; with CG)	

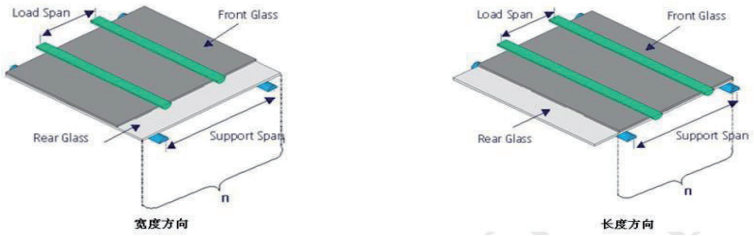
7.3 Mechanical Test

Test item	Test condition	Note
Glass Strength Test-4PB	应变 B10≥1500u 应力 B10≥100MPa（参考）	Panel Qty 80pcs Note 12
Packing vibration-proof test	2g, f=10->55->10Hz apply in each of X, Y, and Z direction for 30 min	Package
Packing Drop test	Drop the packing from 60cm height, 6-faces, 3-edges and 1-corner(one time for each)	Package
COF 弯折测试	R角=0.5mm，在弯折区反向弯折180度，连续弯折30次，测试完毕后，将在同位置进行反向弯折90度，5次。	5pcs
连接器插拔寿命（FPC单体）	频率/次数：5次/min；20次	功能应无异常 补充说明：（FPC供应商单独管控，MDL不会特别测试）

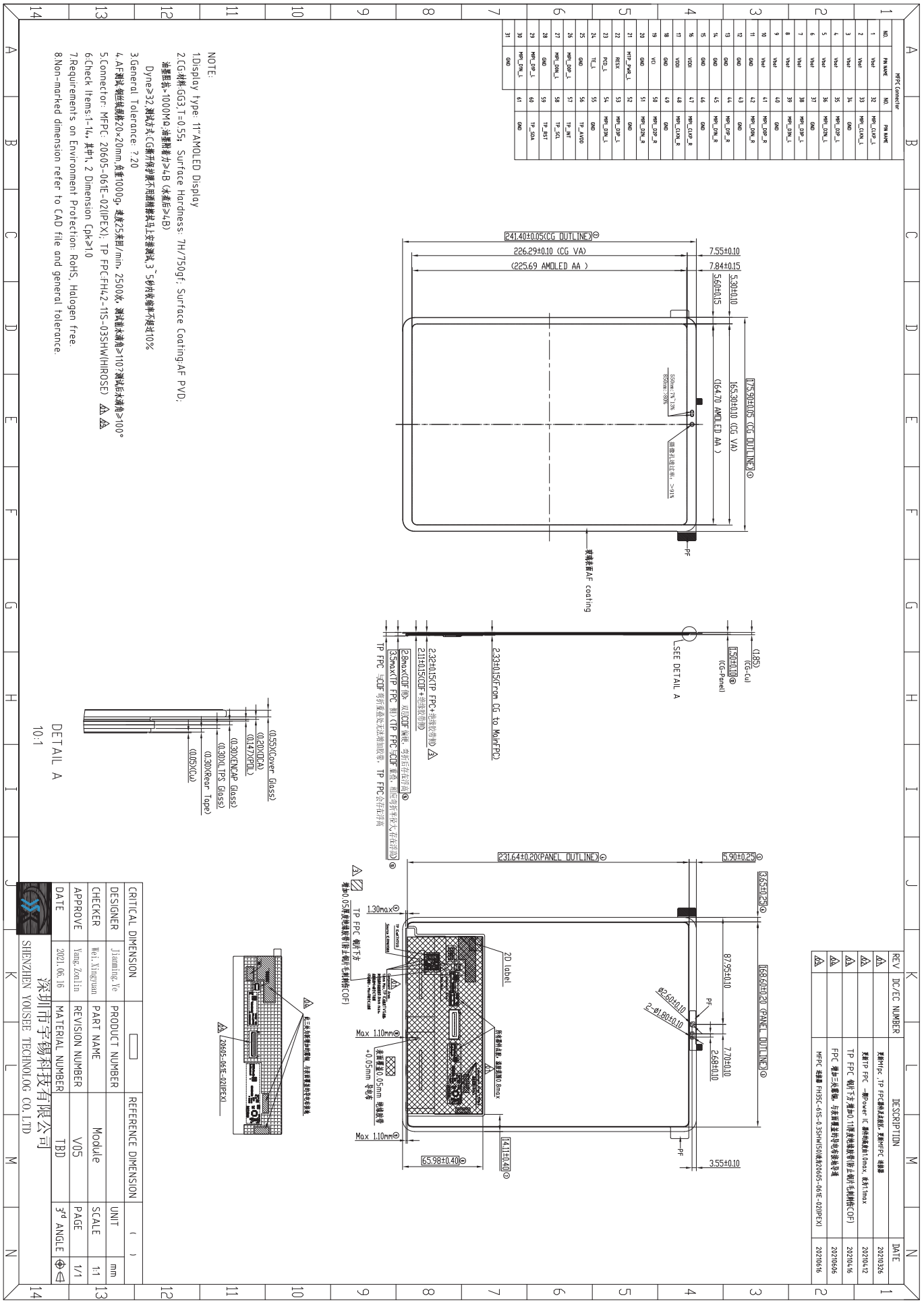
Note 11 The discharge gun and the panel keep vertical



Note 12 Glass Strength Test- 4PB

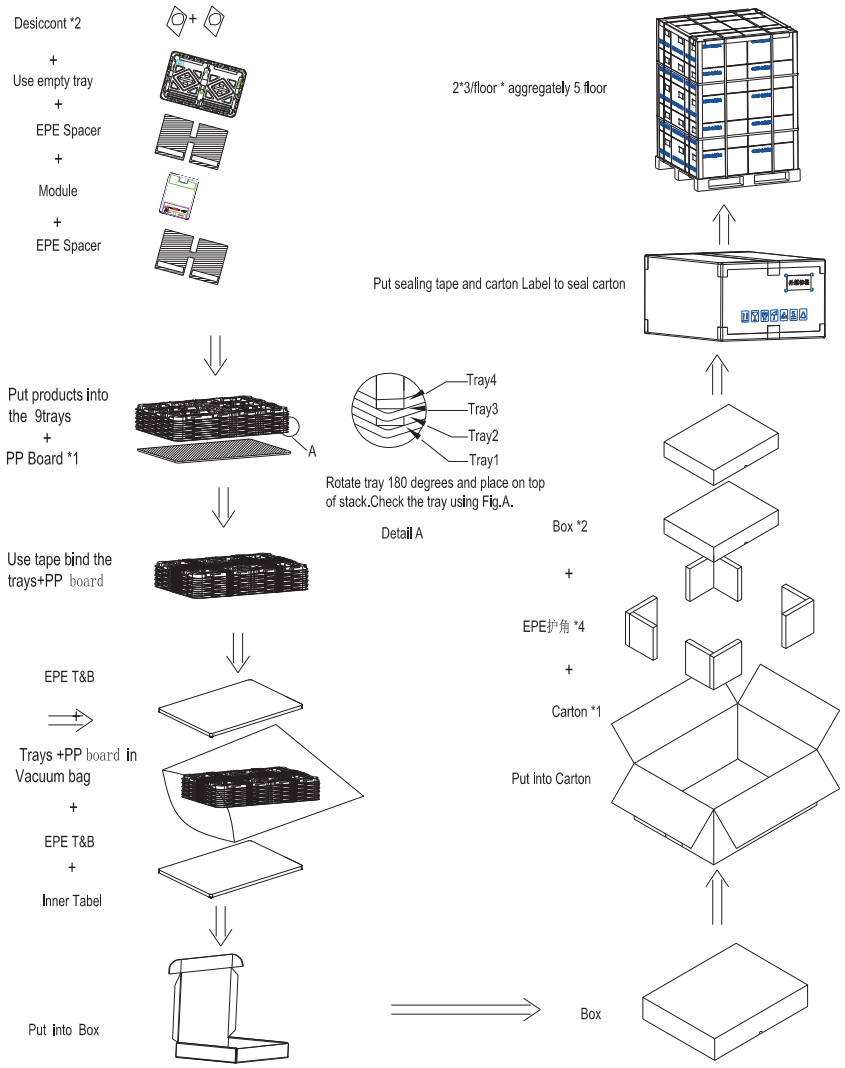


Note 13 The standard of RA pass is no function fail


MFPC Connector
NO. PIN NAME
Vbat
MIPI_CLKP_L
MIPI_CLKN_L
GND
MIPI_D3P_L
MIPI_D3N_L
MIPI_D2P_L
MIPI_D2N_L
MIPI_D1P_R
MIPI_D1N_R
MIPI_D0P_R
MIPI_D0N_R
MIPI_CLKP_R
MIPI_CLKN_R
MIPI_D0P_L
MIPI_D0N_L
MIPI_D1P_L
MIPI_D1N_L
MIPI_D2P_R
MIPI_D2N_R
MIPI_D3P_R
MIPI_D3N_R
VCI
VDDI
RESX
PCD_L
TE_L
TP_INT
TP_RST
TP_SCL
TP_SDA
241.40±0.05(CG OUTLINE)
226.29±0.10 (CG VA)
(225.69 AMOLED AA)
7.55±0.10
7.84±0.15
5.60±0.15
5.30±0.10
175.90±0.05 (CG OUTLINE)
165.30±0.10 (CG VA)
(164.70 AMOLED AA)
PF
AF coating
(1.85)
(CG-Cu)
1.50±0.10
(CG-Panel)
SEE DETAIL A
2.33±0.15(From CG to MainFPC)
2.33±0.15(TP FPC+胶纸厚度)
2.11±0.15(COF+胶纸厚度)
2.8max(COF)
3.5max(TP FPC 叠加(TP FPC+COF 重叠，相应弯折处无存在空间)
TP FPC 与COF 弯折重叠处无法增加胶带，TP FPC会存在异响
231.64±0.20(PANEL OUTLINE)
5.90±0.25
3.65±0.25
1.30max
TP FPC 朝下方
增加0.05厚度硬质背衬(背衬材料非COF)
2D label
87.95±0.10
Φ2.60±0.10
2-Φ1.80±0.10
PF
7.70±0.10
2.69±0.10
158.60±0.20 (PANEL OUTLINE)
Max 1.10mm
+0.05mm 导电布
表面覆盖0.05mm 绝缘胶带
所有器件最高0.8max
14.11±0.40
65.98±0.40
3.55±0.10
(0.55)(Cover Glass)
(0.20)(OCA)
(0.147)(POL)
(0.30)(ENCAP Glass)
(0.30)(LTPS Glass)
(0.30)(Rear Tape)
(0.05)(GL)
DETAIL A
10:1
20695-061E-02(IPEX)
NOTE:
1.Display type: 11"AMOLED Display
2.CG:材料(GG3,T=0.55; Surface Hardness: 7H/750gf; Surface Coating:AF PVD;
油墨阻抗>1000MΩ,油墨附着力≥4B (水煮后≥4B)
Dyne≥32,测试方式(CG膜开保护膜不用酒精擦拭且上线前测试,3~5秒内收缩率不超过10%
3.General Tolerance: ?.20
4.AF测试:铅丝绕圈20×20mm,负重1000g,速度25来回/min, 2500次, 测试前水滴角≥110°测试后水滴角≥100°
5.Connector: MFPC: 20605-061E-02(IPEX); TP FPC:FH42-11S-03SHW(HIROSE)
6.Check Items:1-14, 其中1, 2 Dimension Cpk≥10
7.Requirements on Environment Protection: RoHS, Halogen free.
8.Non-marked dimension refer to CAD file and general tolerance.
REV DC/EC NUMBER DESCRIPTION DATE
关联TP FPC 一侧"Cover (C 面料粘贴处)1.0max, 其余1.1max
TP FPC 铜片下方增加0.11厚硬质背衬(背上铜片非COF)
FPC 增加三处胶粘，与表面覆盖特殊绝缘胶带
MFPC 连接器 FH35C-61S-0.3SHW(50)或20605-061E-02(IPEX)
2021.06.16
CRITICAL DIMENSION
DESIGNER Jianming Ye
CHECKER Wei.Xingyuan
APPROVE Yang.Zonlin
DATE 2021.06.16
PRODUCT NUMBER
PART NAME Module
REVISION NUMBER V05
MATERIAL NUMBER TBD
REFERENCE DIMENSION
UNIT mm
SCALE 1:1
PAGE 1/1
3rd ANGLE
深圳市宇锡科技有限公司
SHENZHEN YOUSEE TECHNOLOG CO.,LTD

9 Packing Specification

1. 整箱材料说明						
NO	料号	品名	材料	尺寸（mm）	数量（个）	备注
1	TBD	YXB00QBC73.A	Module	174.66*238.26*2.25	30	
2	LA000001A	外箱标签	纸	52*100*0.1	1	
3	LA000002A	内箱标签	纸	52*100*0.075	4	
4	LA000008A	标签（BBK大）	纸	75*80*0.1	1	
5	LA000010A	标签（BBK小）	纸	50*10*0.1	1	
6	PK40143LA/ PK40112HA	吸塑盘	PET	455*290*16	18	
7	PK50139LA /PK50110HA	EPE-Spacer	EPE	380.mm*235.mm*1mm	32	
8	PK500001A	EPE填充物（规格2）	EPE	457.00*292.00*10	4	
9	PK100001B	纸箱	纸	516*338*248	1	
10	PK200001A	纸盒	纸	459*294*115	2	
11	PK700001A	干燥剂	干燥剂	55*75	4	
12	PK300001A	静电防尘袋	PE	660*440*0.28	2	
13	PK600001A	PP 板	PP	457*292*5	2	
14	PK500002A	EPE护角	EPE	120*244*100	4	
15	TBD	栈板	木材	TBD	1/30	
2. 整栈板产品数量说明						
（1）整个吸塑盘的产品数量		每列的产品数量1个X每行的产品数量1个=2个， 其中第八层只放一个模组				
（2）整个纸盒的产品数量		整个吸塑盘的产品数量2个X包装产品的吸塑盘数量8个（不包括最上方的空盘）=16-1=15 个				
（3）整个纸箱的产品数量		整个纸盒的产品数量15个X包装产品的纸盒数量2个=30个				
（3）整个栈板的产品数量		整箱产品数量32个X纸箱的数量30个=900个				



10 The Control of Hazardous substances

The Control of Hazardous substances refer to document《有害物质管控标准书》(Standard document for the Control of Hazardous substances) -IS-110, The Latest Version.