

*CRYSTAL-OPTECH*

GG5 082301-2016

Submitted to: MAXGAIN SYSTEMS INC.

**APPROVAL SPECIFICATION OF IR CUT FILTER**  
( 红外截止滤光片规格书 )

**CUSTOMER CODE (客户编号) : MG810211BGIRC**

**CRYSTAL-OPTECH CODE (水晶光电产品号) : 150021100638**

TYPE (型号) : 8\*7.5\*0.21 mm

Customer's Approval By: \_\_\_\_\_

客户签字 :



Checked by: \_\_\_\_\_  
核对:

Issued by: 陈慧建  
编制:

Date: 2016/08/23  
日期:

1. Scope

This Specification applies to IR CUT Filter type No. 150021100638 which supplied from ZHE JIANG CRYSTAL-OPTECH CO., LTD.

目的：此规格书适用于浙江水晶光电科技股份有限公司生产的红外截止滤光片，型号为150021100638。

2. Material

The IR Cut Filter consists of one piece QB56 blue galss(see Fig.1).

材质：红外截止滤光片由一片 QB56 蓝玻璃制成。（如图 1）。

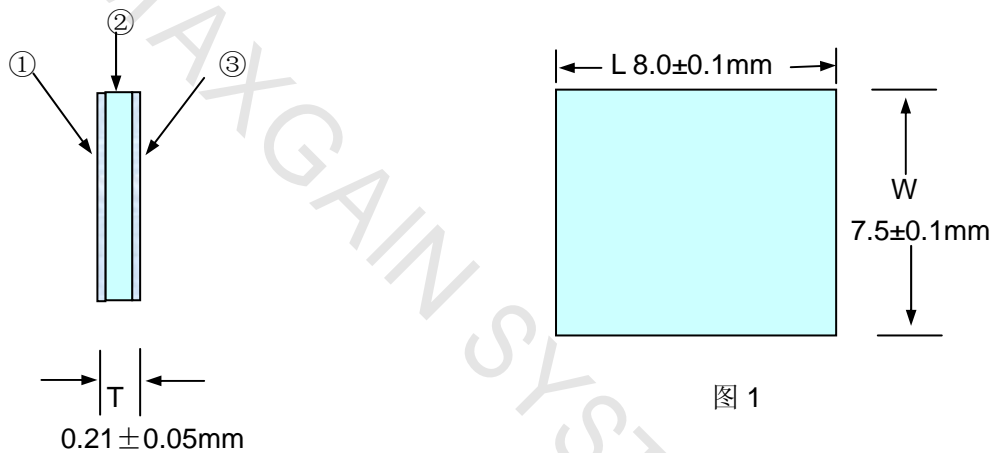


图 1

①IR Coating 红外截止镀膜      ②QB56 Blue Glass QB56 蓝玻璃      ③AR Coating 防反射镀膜

Fig.1. IR CUT FILTER (No Beveling 无倾斜)

3. Optical Characteristics: 光学特性

3.1 Composition (see table 1)：组成

Table1. Each part specification

Part No.	Part Name	Dimension (mm)		
		L	W	T
①	QB56	8	7.5	0.21
公差: Tolerance		±0.1	±0.1	±0.05

分光特性

Table2. Spectral transmission

波长 (nm)	透过率(%)	
	A01=0°	A01=30°
350-395	Tave≤3	Tave≤5
UV T20%-80%	≤10nm	≤30nm
UV T=50%	415±10	400±10
430-565	Tave≥91 , Tmin≥85	Tave≥90 , Tmin≥80
IR T=50%	639±10 (0° 30° 入射角中心波长偏移<5nm)	
曲线拐点	T≤40%	T≤50%
T=15% (0-30° 入射偏移量)	≤35nm	
T=80%-45%	≤100nm	
T=15%-10%	≤10nm	
700-725	Tave≤2	
725-1100	Tave≤0.5 Tmax≤1	
1100-1200	Tmax≤3	/

4. Defect limits

缺陷限制

4.1 Material defect (inclusion, bubble)

缺陷规格 (包裹体、气泡)

No defect are permitted where the maximum size is more than 60μm within the effective area (such as inclusion and bubble) .

有效区内点状缺陷不得大于 60um。

Note: The size is defined as follows: (Length + Width)/2

瑕疵尺寸大小: (长+宽)/2

4.2 Scratches: 刮伤

No scratches are permitted where the maximum width is more than 20μm within the effective area.

有效区之内刮伤宽度不得大于 20um。

4.3 Edge Chips:崩边

No edge chips are permitted where both of the thickness and width are more than 0.3mm and the length is more than 0.8mm.

崩边宽度、深度均不大于 0.3mm, 长度不大于 0.8mm。

4.4 Dust:灰尘

Dust can be wiped out is acceptable.

可以吹去的灰尘允许有。

## 5. Durability:

耐久性

### 5.1 Requirement:

规范要求

It shall be free of any visual defect and comply with transmission rate specification.

An object the limit: effective area.

不得含有目视可见的瑕疵，而且产品必须符合分光规格。

### 5.2 Storage in high temperature

高温中的储藏

It shall conform 5.1, after 500Hs at 85°C then 24Hs at room temperature.

高温+85°C贮存环境中放置 500 小时，移至室温 24 小时后仍符合 5.1 规范。

### 5.3 Storage in low temperature

低温中的储藏

It shall conform 5.1, after 500Hs at -40°C then 24Hs at room temperature.

低温贮存-40°C环境中放置 500 小时，移至室温 24 小时后仍符合 5.1 规范。

### 5.4 Temperature cycle

温度循环

It shall conform 5.1, after 10 cycles of -40°C (2.5 Hs) and +85°C (2.5 Hs) and then 24Hs at room temperature.

低温-40°C (2.5 小时) 及+85°C (2.5 小时) 温度环境中循环 10 次 移至室温 24 小时后仍符合 5.1 规范。

### 5.5 Humidity 湿度

It shall conform 5.1, after 500Hs at +65°C, 90% relative humidity, then 24Hs at room temperature.

于+65°C, 90%相对湿度环境中放置 500 小时后移至室温 24 小时后仍符合 5.1 规范。

6. Packing 包装

Packing shall be made using a special package which does not touch the main surface. Each tray contains 100pcs covered by lid. Each five trays shall be lapped and labeled with air cushion lapping. (See figure2.)

包装需使用特殊包装方式不接触到产品主要表面，每层装载盒可承载 100 片，用防静电包装袋包裹。每五个装载盒再用防静电包装袋包裹，并于袋上贴上标识，在运输中以气泡垫包裹。

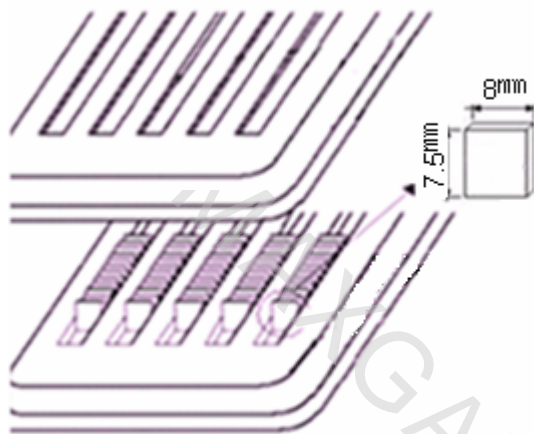


Fig. 2 Packing  
包装示意图

PART NO	
SPEC.	
TRACKING NO.	
MAXGAIN SYSTEMS. INC.	

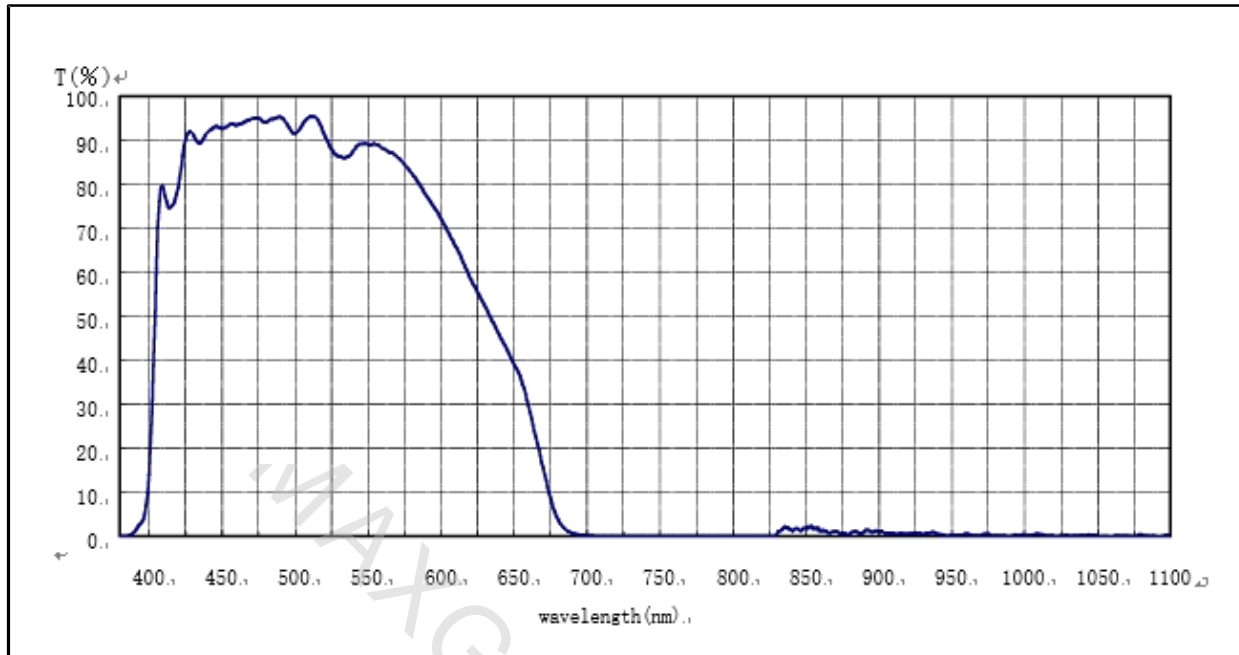
P/O NO.	
PART NO.	
ITEM	8*7.5*0.21
Q'TY	500pcs
LOT NO.	*****
INSPECTION	
MAXGAIN SYSTEMS. INC.	



浙江水晶光电科技股份有限公司  
ZHEJIANG CRYSTAL-OPTECH CO.,LTD

光学特性曲线图

Optical characteristic curve (angel : 30°)



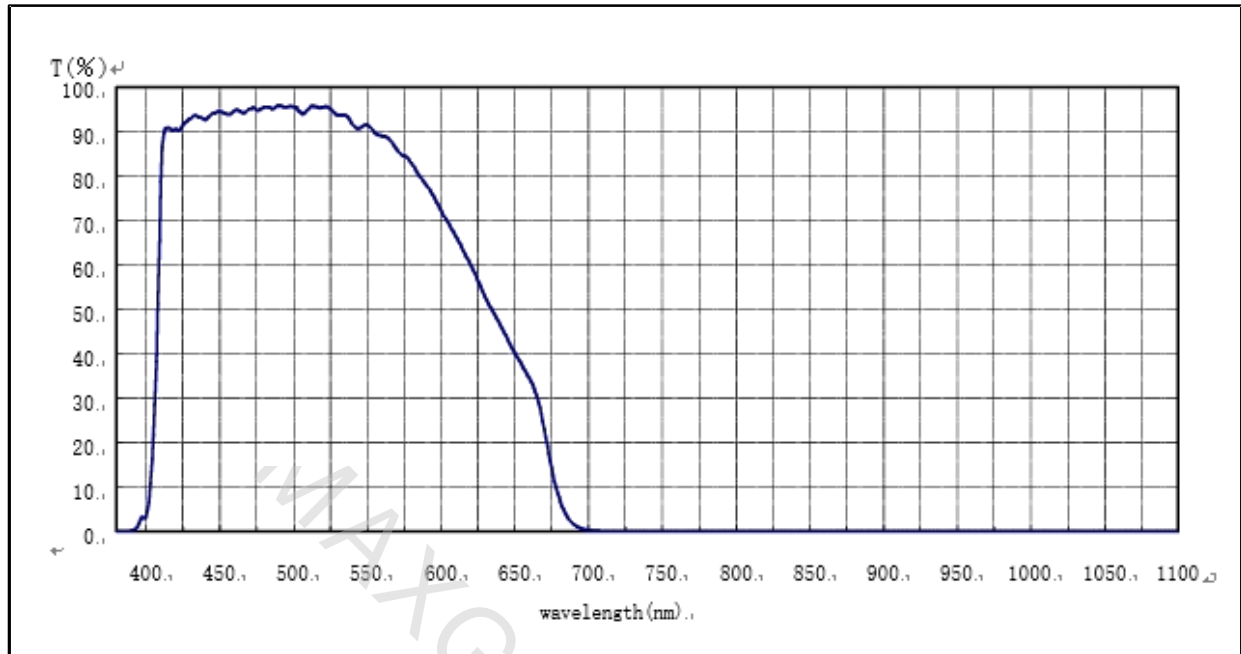
$\lambda$ (nm)	T (%)	$\lambda$ (nm)	T (%)	$\lambda$ (nm)	T (%)	$\lambda$ (nm)	T (%)
350	0.019	610	65.99	870	1.18	629	53.11
360	0.114	620	58.75	880	0.58	630	52.45
370	0.041	630	52.45	890	1.06	631	51.80
380	0.03	640	45.77	900	1.25	632	51.04
390	1.10	650	39.18	910	0.70	633	50.35
400	14.07	660	29.67	920	0.58	634	49.65
410	78.86	670	15.51	930	0.47	635	48.97
420	79.33	680	3.98	940	0.62	636	48.48
430	91.45	690	0.77	950	0.32	637	47.77
440	91.82	700	0.22	960	0.63	638	47.20
450	92.67	710	0.07	970	0.21	639	46.32
460	93.45	720	0.04	980	0.23	640	45.77
470	94.85	730	0.04	990	0.02	641	45.08
480	94.10	740	0.04	1000	0.25	642	44.54
490	95.39	750	0.04	1010	0.49	643	43.81
500	91.72	760	0.03	1020	0.13	644	43.24
510	95.42	770	0.01	1030	0.23	645	42.57
520	91.35	780	0.01	1040	0.19	646	42.00
530	86.43	790	0.00	1050	0.13	647	41.23
540	87.72	800	0.01	1060	-0.07	648	40.54
550	89.17	810	0.00	1070	0.14	649	39.76
560	88.19	820	0.00	1080	0.49		
570	86.32	830	0.43	1090	0.05		
580	82.58	840	1.58	1100	0.21		
590	77.40	850	1.95				
600	72.13	860	1.42				



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ZHEJIANG CRYSTAL-OPTECH CO.,LTD

光学特性曲线图

Optical characteristic curve (angel : 0°)



$\lambda$ (nm)	T (%)	$\lambda$ (nm)	T (%)	$\lambda$ (nm)	T (%)	$\lambda$ (nm)	T (%)
350	-0.018	610	66.57	870	0.00	629	53.53
360	0.18	620	60.10	880	0.00	630	52.77
370	0.061	630	52.77	890	0.00	631	52.07
380	0.04	640	46.70	900	0.00	632	51.39
390	0.20	650	40.29	910	0.00	633	50.80
400	3.27	660	34.50	920	0.00	634	50.23
410	78.72	670	23.00	930	0.02	635	49.66
420	90.61	680	7.65	940	0.01	636	49.05
430	92.94	690	1.66	950	0.01	637	48.47
440	92.73	700	0.34	960	0.00	638	47.84
450	94.51	710	0.10	970	0.00	639	47.28
460	94.77	720	0.03	980	0.00	640	46.70
470	95.16	730	0.01	990	0.00	641	46.06
480	95.64	740	0.01	1000	0.00	642	45.41
490	95.77	750	0.01	1010	0.01	643	44.76
500	95.64	760	0.01	1020	0.01	644	44.12
510	95.03	770	0.00	1030	0.00	645	43.42
520	95.54	780	0.00	1040	0.00	646	42.71
530	93.75	790	0.00	1050	0.00	647	42.05
540	91.71	800	0.00	1060	0.00	648	41.43
550	91.55	810	0.00	1070	0.00	649	40.83
560	89.08	820	0.00	1080	0.01		
570	85.97	830	0.00	1090	0.01		
580	83.00	840	0.00	1100	0.03		
590	77.98	850	0.00				
600	72.18	860	0.00				