

No. IGII-156
(EN)

Wide Dynamic-range Color X-ray Image Intensifier

AVAILABLE NOW!



August, 2020

Scope of Disclosure	For Customer meeting only
Owner	Device Engineering div.

Characteristic/ Application

- Wide Dynamic-range Images with Color I.I. and Color Camera
- Invisible white-out area turned visible
→ See “Plastic Package of Removal Battery”
- In one X-ray condition, thick and thin material image can be visible at a glance
→ See “Thickness Step Chart Images”



Possible and Expected Application:

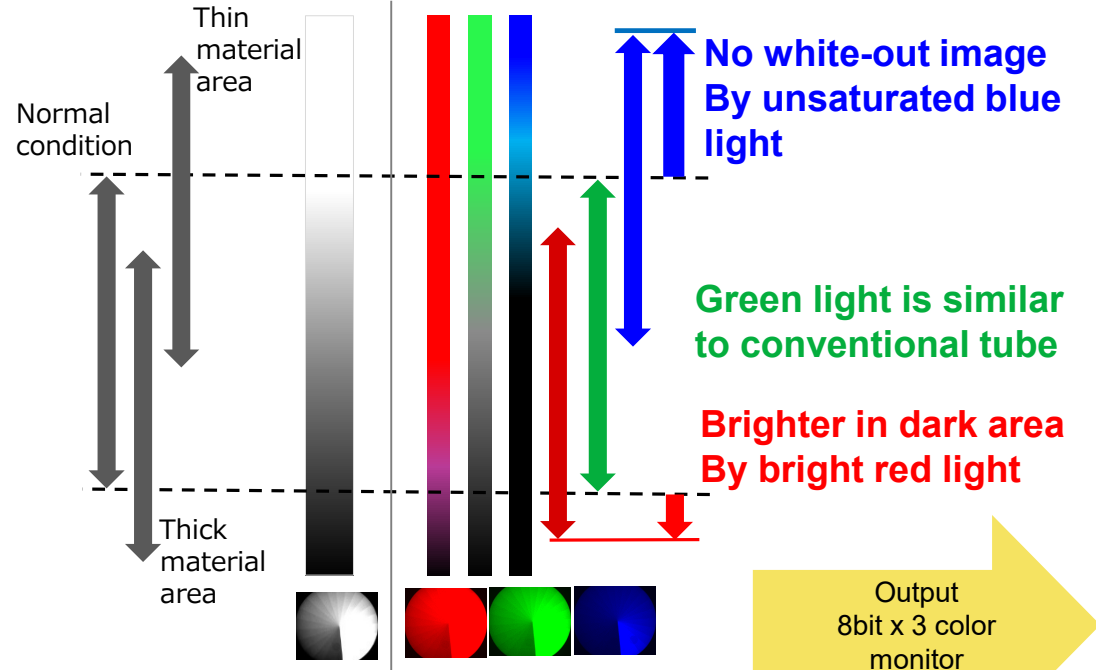
Multi-layer LIB or Electronic Components

Whole area inspection with one X-ray condition

Foreign particle detection in food inspection

using dual energy X-ray

Technology for Wide Dynamic-range Color Image



Inspection Monitor
(example of monitor display)

Color (original) Color (reverse) B&W (green)

RED 8bit GREEN 8bit BLUE 8bit



X-ray Condition:
The Best X-ray condition may vary depend on the thickness of object material

One color camera can get three color images at once

Three color images are divided by electronic signal

Not only high bit monitor but regular 8bit monitor can display all range image by individual color description.

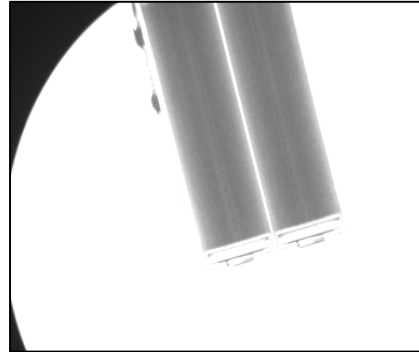
Black-out image can be displayed in RED,
White-out image can be displayed in BLUE,
In one regular 8bit color monitor.

Conventional I.I. and Monochrome camera

Wide Dynamic-range Color I.I. and color camera

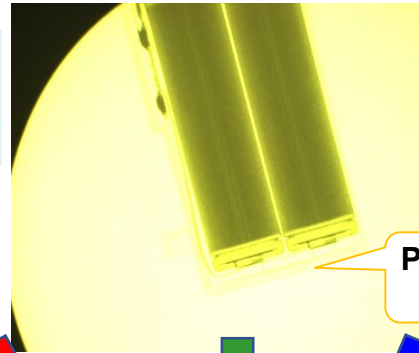
Plastic Package of Removal Battery

Conventional I.I.
(B/W image,
Actual color is green)



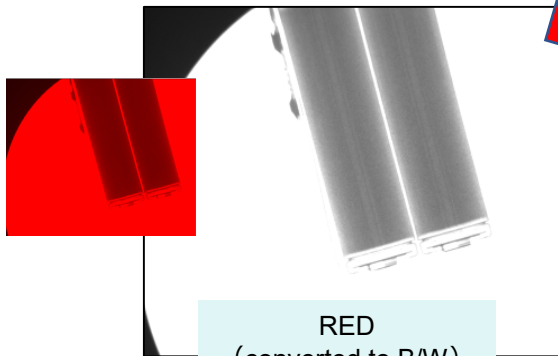
100kV-1mA
Tungsten target
Focal Spot size 0.4
9 inch Size Image Intensifier
Camera: STC-SC500POE (2/3" QSXGA GigE)

WDC I.I.
(Color output image,
Actual color is orange)

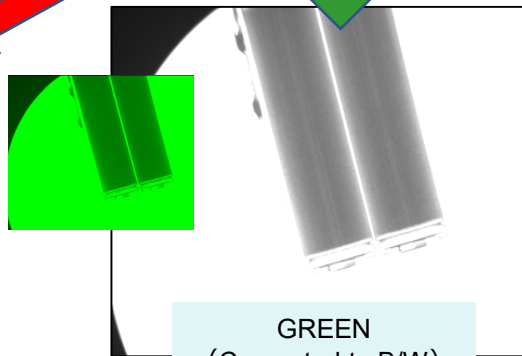


Dark & Bright
area are visible
in one
X-ray Shot

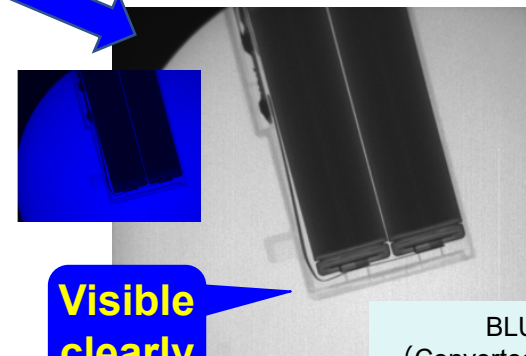
Plastic Case
is Visible



RED
(converted to B/W)



GREEN
(Converted to B/W)



Visible
clearly

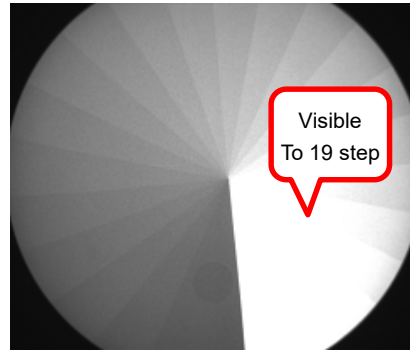
BLUE
(Converted to B/W)

Thickness Step chart

Step chart
Al 22 steps by 1mm

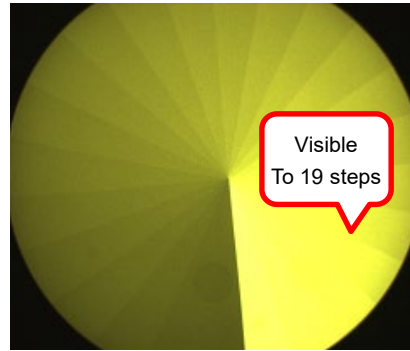


Conventional I.I.
(B/W image,
Actual color is green)

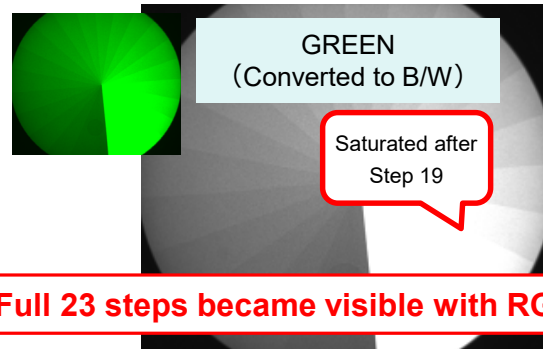


70kV-1mA
Tungsten target
Focal Spot size 0.4
9 inch Size Image Intensifier
Camera: STC-SC500POE (2/3" QSXGA GigE)

WDC I.I.
(Color output image,
Actual color is orange)

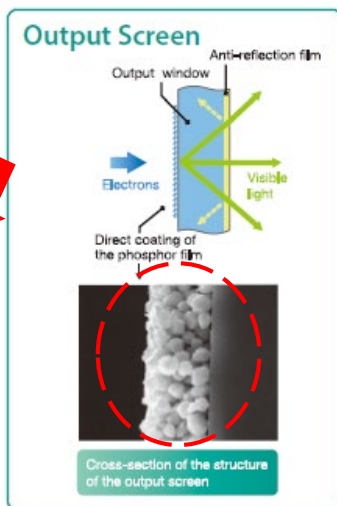
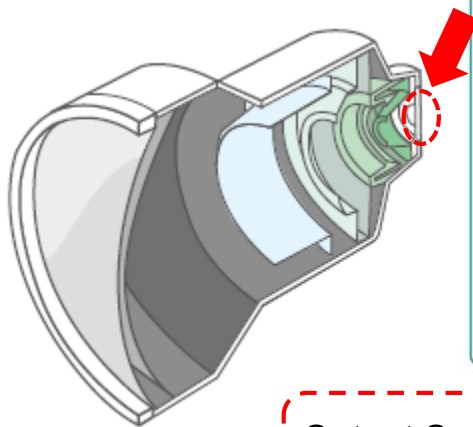
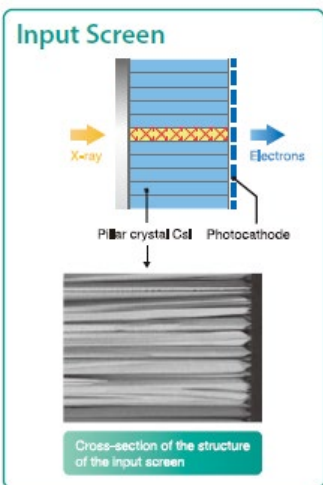


Dark & Bright
area are visible
in one
X-ray Shot



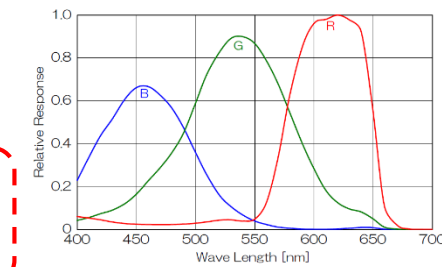
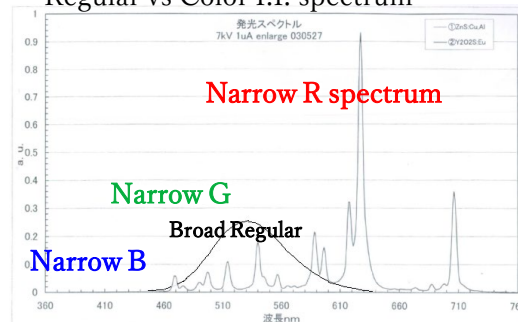
Full 23 steps became visible with RGB images

Construction and optical output spectrums



Output Screen Phosphor is Changed From Regular to Color

RGB color output of Image Intensifier Regular vs Color I.I. spectrum



RGB color input (sample camera)
Example of RGB filter

Available Size; 4inch - 12inch size (output window size 20 or 25 mmΦ)

Recommendable product; E5877CS-P1K (4inch)

OPTION; Be input window: OK

High Resolution CsI: OK

Neutron input: OK

High Speed type: Not Available

BASIC PERFORMANCE

Color E5877CS-P1K vs Regular E5877J-P1K

		Color E5877CS-P1K	Regular E5877J-P1K	
Mechanical	Input Field Size		Normal 100mm / Magnified 50mm	
	Output Image Diameter (typ.)		20 mm	
	Housing Length (typ.)		226 mm	
	Weight (approx.)		7 kg	
Optical (under X-ray condition)	Output Window (Phosphor)		Color / Mono	
	Contrast Ratio		(N/A) / 22:1	
	Conversion Factor (typ.)	(cd/m ²)/(μGy/s)	3.3	10
		(cd/m ²)/(mR/s)	30	90
	Central Resolution (Lp/cm) (typ.)	N mode	75	77
		M mode	110	

Economical Solutions for quick introduction

High performance with reasonable cost

- Only a small cost increase compared to conventional solutions

Free rental sample tube available
Demonstrations possible in CETD Japan

Actually used with color camera

Reference: Toshiba review (please find the magazine in public website)
keyword: Color I.I., Color Image Intensifier, Neutron

Canon

CANON ELECTRON TUBES & DEVICES CO., LTD.