



Starna scientific  
'Setting the Standard'

## Quality Assurance in the Analytical Laboratory

# Fluorescence Plate Reader Performance Qualification

## Starna Fluorescence Reference Plates

### Purpose

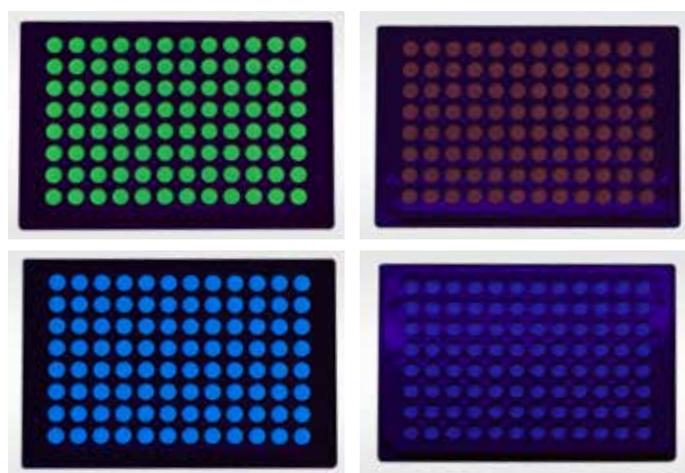
These references are designed for the routine qualification of fluorescence-based plate readers for fluorescence intensity and well-to-well reading reproducibility.

### Description and Discussion

These references were formerly marketed by Matech.

96-well microplates containing inorganic fluorescent reference materials, available in both top- and bottom-reading configurations. Plate dimensions conform to international standards for biomedical screening.

The inorganic fluorophores used are inherently stable and do not suffer from photodecomposition or "bleaching". Solvent evaporation is not an issue as these references are solid state. Four different fluorophores, identified by the wavelength of their principal emission peak, provide a range of excitation and emission wavelengths to match the user's application:

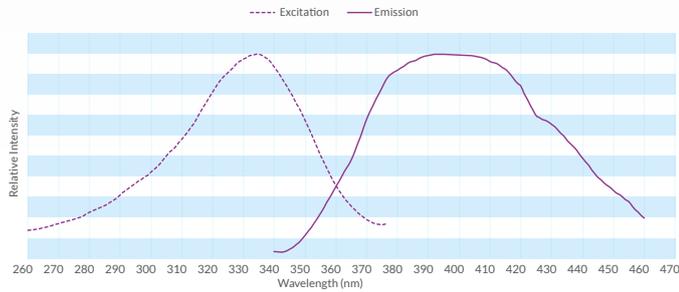


IDENTIFICATION	PEAK EXCITATION WAVELENGTH (NM)	EXCITATION RANGE (NM)	PEAK EMISSION WAVELENGTH (NM)	EMISSION RANGE (NM)
Violet - 395	335	250 - 375	395	340 - 460
Blue - 455	325	250 - 410	455	410 - 550
Green - 517	280	250 - 490	530	480 - 600
Red - 615	280	250 - 530	525, 590, 615, 655, 705	470 - 715
Infrared - 800	440	380 - 680	702	620 - 820

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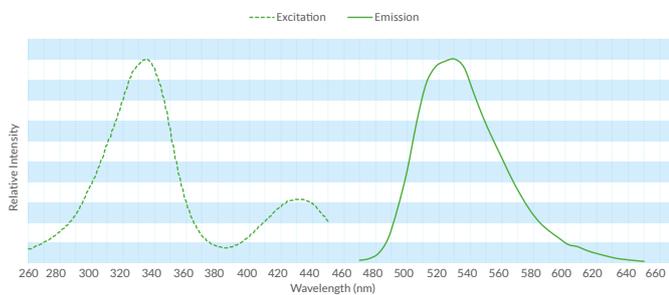
## Starna Fluorescence Reference Plates

Matech Violet Excitation and Emission Spectra



**Violet-395**

Matech Green Excitation and Emission Spectra

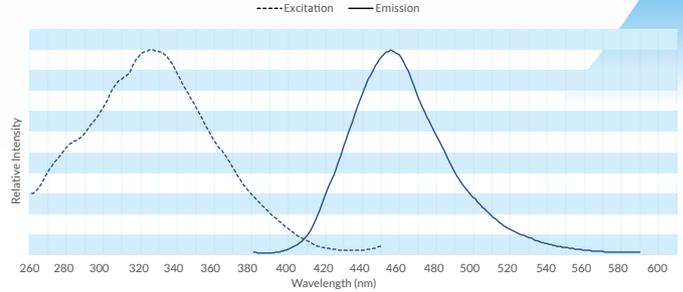


**Green-517**

Note that spectra obtained on individual instruments will vary, especially when cut-off filters are used to distinguish between excitation and emission energies. Instrument resolution will also be a factor. The spectra above should be representative of what is achievable with modern plate reader instruments.

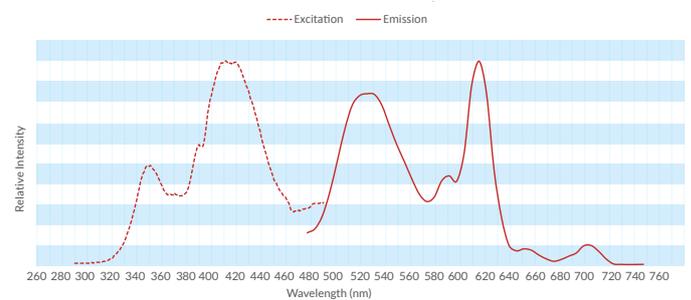
The Calibration Certificate supplied with each reference plate gives normalized emission spectrum data over the working range, plus relative intensity values for all the wells in the plate and the calculated coefficient of variation for those readings. Typical data (for a bottom reading BR615 plate) is shown below:

Matech Blue Excitation and Emission Spectra



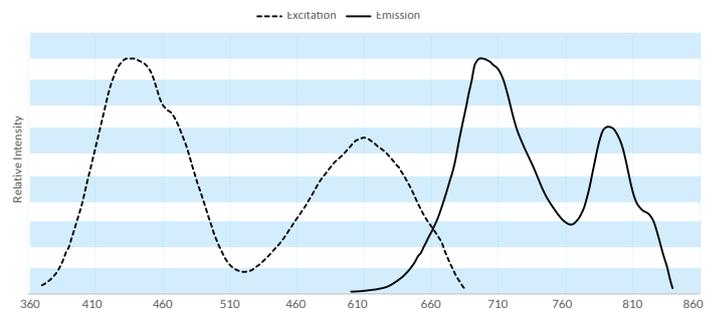
**Blue-455**

Matech Red Excitation and Emission Spectra



**Red-615**

Matech InfraRed Excitation and Emission Spectra



**Infrared 800**

	1	2	3	4	5	6	7	8	9	10	11	12
A	0.941	0.957	0.953	0.957	0.952	0.954	0.950	0.949	0.927	0.925	0.918	0.913
B	0.952	0.951	0.953	0.960	0.956	0.957	0.946	0.932	0.938	0.908	0.918	0.931
C	0.956	0.957	0.960	0.960	0.951	0.949	0.946	0.948	0.929	0.926	0.918	0.916
D	0.951	0.962	0.961	0.965	0.961	0.952	0.952	0.945	0.941	0.938	0.928	0.921
E	0.965	0.962	0.960	0.966	0.960	0.961	0.957	0.957	0.945	0.953	0.931	0.939
F	0.972	0.969	0.948	0.966	0.963	0.958	0.963	0.958	0.942	0.935	0.932	0.965
G	0.987	0.968	0.964	0.958	0.965	0.967	0.970	0.982	0.971	0.945	0.963	0.960
H	1.000	0.971	0.967	0.971	0.977	0.983	0.982	0.973	0.944	0.942	0.938	0.947

**CV: 1.83%**

The maximum coefficient of variation (CV) in fluorescence intensity across all wells is warranted to not exceed five percent.

# Fluorescence Plate Reader Performance Qualification

## Starna Fluorescence Reference Plates

### Certification and Documentation

A Certificate of Calibration and Traceability and full instructions for use are provided with each Reference Material. The certificate is supplied in electronic format, on a USB drive in the same box as the references, allowing hard copy to be produced on demand and giving easy interface to the user's own IT systems. Certification measurements are made on a reference fluorescence plate reader that has been qualified using Standard Reference Materials certified by the National Institute of Standards and Technology (NIST) in the USA, or against primary physical references such as elemental emission lines.

### Warranty

STARNA offers a Lifetime Guarantee on all Starna reference materials, unless otherwise stated, such that any reference material that moves outside its published uncertainty budget will be replaced free of charge. This guarantee is subject to the reference materials being re-certified at least every three years and that the references have not been physically, thermally or optically abused. The STARNA UKAS accredited calibration laboratory aims to re-certify and despatch references within five working days from receipt.

### Accreditation

Starna Scientific is accredited to both ISO 17034 as a Reference Material producer, and ISO/IEC 17025 as a Calibration Laboratory for optical reference measurements. Starna Scientific's manufacturing facility is accredited to the ISO 9001 Quality Management System with BSI. For details see [www.starna.com/accreditations](http://www.starna.com/accreditations).

### How to Order

IDENTIFICATION	EMISSION PEAK WAVELENGTHS (NM)	NO. OF WELLS	TOP/BOTTOM READING	CATALOGUE NUMBER
Violet 395	395	96	Top	TR-395
		96	Bottom	BR-395
Blue 455	455	96	Top	TR-455
		96	Bottom	BR-455
Green 517	530	96	Top	TR-517
		96	Bottom	BR-517
Red 615	525, 590, 615, 655, 705	96	Top	TR-615
		96	Bottom	BR-615
Infrared 800	702	96	Top	TR-800
		96	Bottom	BR-800



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