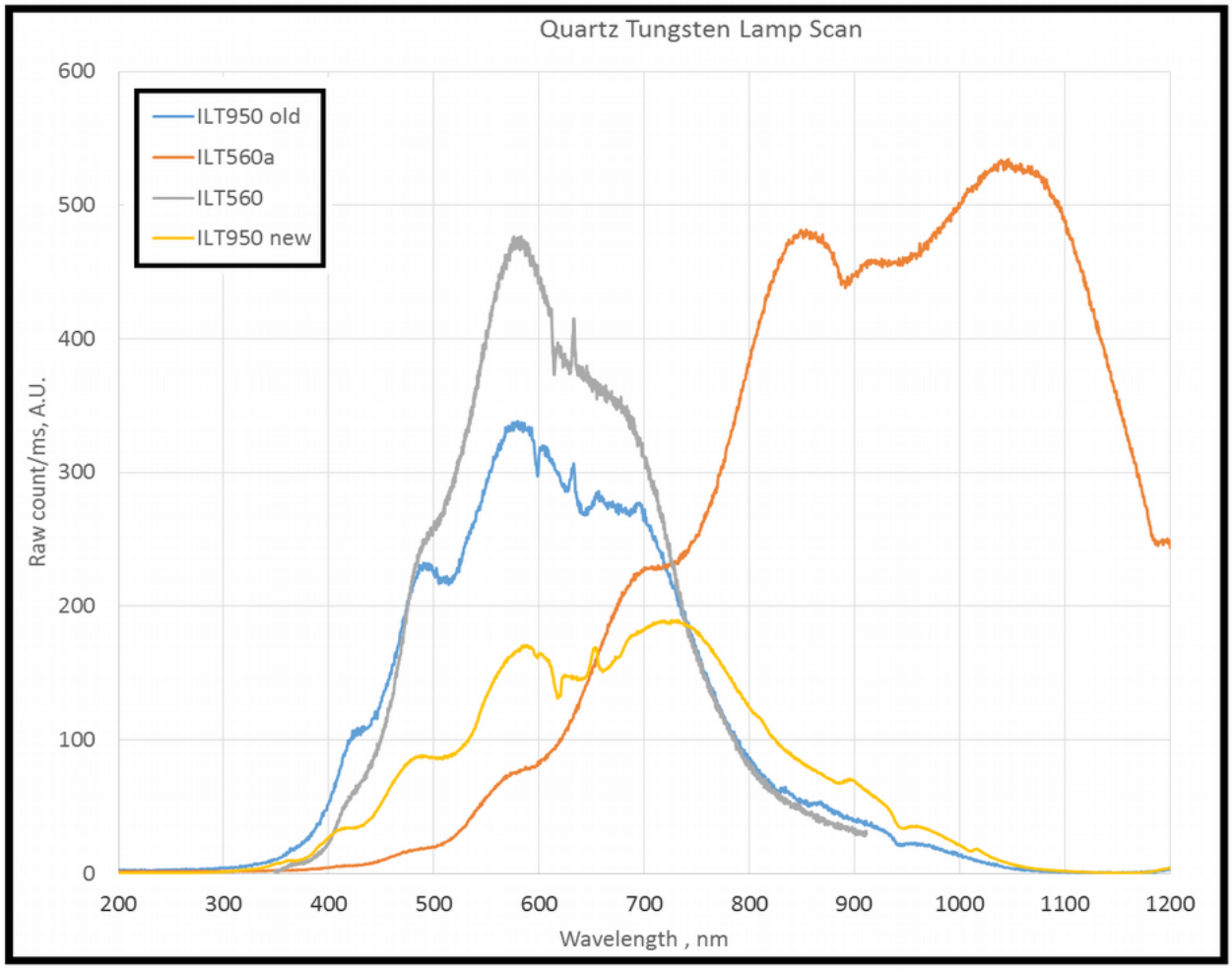
ILT UV, VIS, NIR spectrometer comparisons

For 2018, the new ILT950 detector has been changed to a CMOS sensor. The ILT550 has been replaced with a new line of miniature spectrometers with greatly improved performance.

Spectrometer models

- ILT950UV: 200-450 nm (not shown)
- ILT950: 200-1100 nm
- ILT560a: 350 nm to 900 nm Standard (250-900 nm requires RAA4 and dual source calibration upgrade)
- ILT560: 360 nm to 900 nm Standard
- ILT560I: 600 nm to 1000 nm (NIR custom- upon request)
- ILT950-NIR 900 1750 nm

Spectral Sensitivity Curves:



The 2018 newest model ILT950 with CMOS has the flattest sensitivity curve making it the best overall broad band spectrometer. It also comes in a UV optimized version covering 200-450 nm (not shown). The ILT560a also has a very broad measurement range, but the silicon CCD array has much greater IR sensitivity. The ILT560 has a smaller measurement range and peaks in this visible range. The ILT950 CCD array model is noted for comparison of units I the field only, and is no longer available.

Definitions of the basic spectrometer specs.:

Cmax: maximum count (for 16 bits A/D, it should be 2^16=65536), Cdark: RMS of the dark counts (no input signal and scan average set to 1), Cnoise: RMS of the noise level with the input signal reaches the full scale (scan average set to 1).
Dynamic range: Cmax/Cdark. It is not related to input light level at all.
S/N: signal to noise ratio when the input signal reaches the full scale. So this is the best S/N for the device without averaging scans. Cmax/Cnoise
Stray light: usually use long pass standard filter with known cut off wavelength (usually 400 or 600nm) and measure the transmission below the cut off wavelength.
Resolution: Defined as the maximum number of spectral peaks that can be resolved. It is the smallest wavelength range a spectrometer can differentiate and plot changes in both output and wavelength.

	ILT950 CCD	ILT950 CMOS	ILT950 IR	ILT560	ILT560a
Optical bench	Symmetrical Czerny-Turner, 75mm focal length	Symmetrical Czerny-Turner, 75mm focal length	Symmetrical Czerny-Turner, 50mm focal length	Symmetrical Czerny-Turner, 75mm focal length	Cross Czerny-Turner
wavelength range	250-1050nm 200~450nm (UV)	250-1050nm 200~450nm (UV)	900-1700nm	350-880nm(VIS)	250-1050nm
Resolution	~1.4nm ~0.7 for UV	~1.4nm ~0.7 for UV	6nm	1.2nm	1.5nm
Stray light	<0.2%@600nm	<0.1%	<1%	<0.2%	<0.1%@600nm
Entrance Slits	25um, 50um for UV	25um, 50um for UV	50um	50um	25um
Peak	600nm	550nm	1450nm	600nm	600nm
Detector	CCD linear array 2048pixels	CMOS 2048pixels 14x200um	InGaAs linear array, 256 pixels, 50μm x 500μm	CCD linear array 2048pixels	CCD linear array, 2048 pixels, size 14x200um
Signal/Noise	200:1	300:1	500:1	220:1	400:1
AD converter	16bits, 2MHZ	16bits,2MHz	16bits, 500KHz	16bits, 6MHz	16bits
Integration Time	1.1ms-1min	0.03ms-1min	0.01ms-2s	1.1ms-1min	0.5ms-10sec
Interface	USB2.0	USB2.0	USB2.0	USB2.0	USB2.0
Data transfer speed	85ms/scan	1.8ms/scan	0.53ms/scan	4.6ms/scan	
I/O	HD-26 connector, 2 analog In, 2 analog out, 3 digital in, 12 digital out, trigger, sync	HD-26 connector, 2 analog In, 2 analog out, 3 digital in, 12 digital out, trigger, sync	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 13 Digital out, trigger, sync	5 bidirectional programmable I/O; 1 analog out; 1 analog in,1x5Vz	
Dynamic Range	1300	2200	5000	1500	3300
Dimension weight	125x170x40mm, 500g	125x170x40mm, 500g	185x84x185 mm, 2.7 Kg	96x68x20mm, 175g	91x60x34.5mm, 300g
Power supply	Default USB power	Default USB power, 350mA or with SPU2 external 12VDC, 150mA		Default USB power, 250mA	Default USB power, 350mA or with SPU2 external 12VDC, 150mA
Bottom Line	**Obsolete**	**Balanced sensitivity overall**	**NIR measurement**	**VIS measurement and compact size**	**broad range below 1100nm and Compact size**

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