Characteristics of the Panasonic UD-8xx series Thermoluminescent Dosimeters

UD-802A	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/ cm^2	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Remarks The most commonly used Panasonic dosimeter in the US. Use of natural LiBO makes neutron dosimetry possible if the appropriate energy correction factor for neutrons is known.				

UD-802A2	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 75 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 75 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Remarks The most commonly used Panasonic dosimeter in the US. Use of natural LiBO makes neutron dosimetry possible if the appropriate energy correction factor for neutrons is known.				

UD-804A	Element 1	Element 2	Element 3	Element 4
Phosphor	NONE	$CaSO_4$	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm
Remarks Intended for environmental measurements. Contains no first element. Remaining three elements are replicate $CaSO_4$. Can measure low doses (about 10 mR/month). Addition of an element 1 of $Li_2B_4O_7$ with 14 mg/cm^2 makes environmental beta measurement possible. When E1 is added, the dosimeter is designated as a UD-814.				

UD-806A	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Four elements of LiBO				

UD-807	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O$	NONE	NONE	NONE
Front Filtration				
Rear Filtration				
Remarks A single element of LiBO not set in a regular Panasonic dosimeter. Used for extremity monitoring. Must be manually inserted into a special dosimeter in order to be read by the UD-702 manual TLD reader or by the UD-710, UD-716, or UD-7900 automatic TLD readers.				

UD-808A	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$CaSO_4$	$^{7}Li_2{}^{11}B_4O_7$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 60 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 60 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Intended for use together with the UD-809. Measures beta particles and photons, but is insensitive to neutrons. An algorithm must be used to separate photons from neutrons in the UD-809.				

UD-809A	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$
Front Filtration	Cadmium – 0.7 mm	Tin – 0.7 mm	Cadmium – 0.7 mm	Cadmium – 0.7 mm
Rear Filtration	Cadmium – 0.7 mm	Cadmium – 0.7 mm	Cadmium – 0.7 mm	Tin – 0.7 mm
Remarks A primary neutron dosimeter, intended to be used with the UD-808. An algorithm is used to determine the contribution of thermal, epithermal, and fast neutrons.				

UD-810A1	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/ cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Remarks A specially designed dosimeter not intended for general use.				

UD-810A2	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks A specially designed dosimeter not intended for general use.				

UD-812-A5	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7{}_7$	$^{7}Li_2{}^{11}B_4O_7$	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-812-A7	Element 1	Element 2	Element 3	Element 4
Phosphor	$CaSO_4$	$CaSO_4$	$CaSO_4$	$CaSO_4$
Front Filtration	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm
Rear Filtration	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-812-A11	Element 1	Element 2	Element 3	Element 4
Phosphor	$CaSO_4$	$CaSO_4$	$CaSO_4$	$CaSO_4$
Front Filtration	Lead/Tin 0.7 mm	Lead/Tin 0.7 mm	Lead/Tin 0.7 mm	Lead/Tin 0.7 mm
Rear Filtration	Lead/Tin 0.7 mm	Lead/Tin 0.7 mm	Lead/Tin 0.7 mm	Lead/Tin 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-812-A14	Element 1	Element 2	Element 3	Element 4
Phosphor	$CaSO_4$	$CaSO_4$	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead - 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead - 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-813-A1	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{n}Li_2B_4O_7$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead - 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead - 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-813-A4	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{6}Li_2{}^{10}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$
Front Filtration	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-813-A6	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{6}Li_2{}^{10}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$
Front Filtration	Plastic – 75 mg/cm^2	Plastic – 75 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-813-A9	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$CaSO_4$	$^{n}Li_2B_4O_7$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 75 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-813-A14	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$CaSO_4$	$^{n}Li_2B_4O_7$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Not a standard Panasonic dosimeter. Available for special design and use.				

UD-814-A1	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$CaSO_4$	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 14 mg/cm^2	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Lead – 0.7 mm	Lead – 0.7 mm	Lead – 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use. Often used like the UD-804 environmental dosimeter except with the addition of a LiBO element in position 1, encapsulated in 14 mg/cm^2 plastic to enable monitoring for beta particles in the environment.				

UD-814-A4	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{n}Li_2B_4O_7$	$^{n}Li_2B_4O_7$	$CaSO_4$	$^{n}Li_2B_4O_7$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 60 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 60 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Not a standard Panasonic dosimeter. Available for special design and use. Often used like the UD-804 environmental dosimeter except with the addition of a LiBO element in position 1, encapsulated in 14 mg/ cm^2 plastic to enable monitoring for beta particles in the environment.				

UD-814-A6	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$CaSO_4$
Front Filtration	Plastic – 14 mg/ cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Lead – 0.7 mm
Remarks Not a standard Panasonic dosimeter. Available for special design and use. Often used like the UD-804 environmental dosimeter except with the addition of a LiBO element in position 1, encapsulated in 14 mg/ cm^2 plastic to enable monitoring for beta particles in the environment.				

UD-814-A9	Element 1	Element 2	Element 3	Element 4
Phosphor	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{7}Li_2{}^{11}B_4O_7$	$^{6}Li_2{}^{10}B_4O_7$
Front Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 14 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Not a standard Panasonic dosimeter. Available for special design and use. Often used like the UD-804 environmental dosimeter except with the addition of a LiBO element in position 1, encapsulated in 14 mg/cm^2 plastic to enable monitoring for beta particles in the environment.				

UD-815	Element 1	Element 2	Element 3	Element 4
Phosphor	NONE	NONE	$CaSO_4$	$CaSO_4$
Front Filtration	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Rear Filtration	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2	Plastic – 160 mg/cm^2
Remarks Originally intended for automatic calibration of the UD-710 automatic TLD reader. The design of this dosimeter is similar to the design of the UD-811 dosimeter except for encapsulation. Most users prefer to use the same type dosimeter for calibration as is used for routine monitoring of personnel and/or the environment.				