Summary of investigation into P867RA underread on 3800 oximeter.

Start of investigation into this problem Jan 02.

From this date the following prototypes have been constructed and tests carried out :-

Jan 2001	Aristo disposable range of probes evaluated on 3700 & 3800 pulse oximeters. Aristo Disposable (neonatal) gave best results and optics used from these probes until stocks exhausted.
May 2001	Other aristo disposable optics giving favourable results assembled into Viamed probes but prove to read low.
June 2001	4 x MCI supplied prototypes evaluated - all read low.
July 2001	P867RA assembled and tested using Dai Shin samples - reads low.
July 2001	P867RA's assembled using Dolphin disposable optics - all read low .
July 2001	P867RA assembled using O ring in front of the detector - reads low.
July 2001	P867RA's assembled using LED, detector or both from Ohmeda originals - conclude that change of LED to Ohmeda cures or compensates for underread. CSI LED with 2 x infrared emitters fitted - doesnot read on DL-3000.
Aug 2001	P867RA assembled using Dai Shin samples - LED with 2 x IR emitters on board - doesnot work on DL-3000, underreads on both 3700 & 3800 oximeters.
Aug 2001	P867RA assembled using MCI optics, Ohmeda original cable, 23k2 resistor and our remaining parts - component changes cure or compensate for the underread on the 3800.
Sept 2001	3 x MCI built P867RA's progressively shortened with regular testing - found that all three probes read correctly when reduced to 8 ft. - also found that the physical removal of cable outer screen cures the underread on probe at 12 ft length. Recommendation made that all P867RA's supplied as new or repaired as of this date are shortened to 8ft. Cable comparison made between ours and Ohmeda. Pin to pin checks carried out between good and bad probes for capacitance - unable to identify a difference between cable / probe types with only 12 ft lengths to examine. Cable samples provided to SN to be externally checked.

	- Results suggest change of cable to that with greater conductor cross sectional area. Cable ordered, one as above and standard cross sectional area sample without outer screen.
Oct 2001	P867RA assembled using high output infrared LED from Dai Shin - read on finger, doesnot work on DL-3000.
Jan 2002	2 x P867RA's assembled using new cables - both read accurately throughout the range. - prototype with inner screen only earmarked as modification to be embodied into further manufactured P867RA subject to satisfactory testing.
Jan 2002	Both prototypes further evaluated - Results good - both probe prototypes return the target Spo2 value in the range 100 - 80%. - Maximum error - +/- 1% below 80%. - Spo2 values displayed alter by -1% when correctly aligned compared to incorrectly aligned. Ohmeda original finger probe - displayed Spo2 doesnot alter. - Recommend optics are moved forward such that the probe cannot be placed on the finger incorrectly, fingertip against end stop, probe optics above and below finger nail.
Jan / Feb 2002	Prototype probes to be tested and tables generated comparing displayed Spo2 to probe resistor value for the three Ohmeda models available (3700, 3740 & 3800).

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