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(54) **SHORT-WAVE INFRARED SUPER-CONTINUUM LASERS FOR EARLY DETECTION OF DENTAL CARIES**
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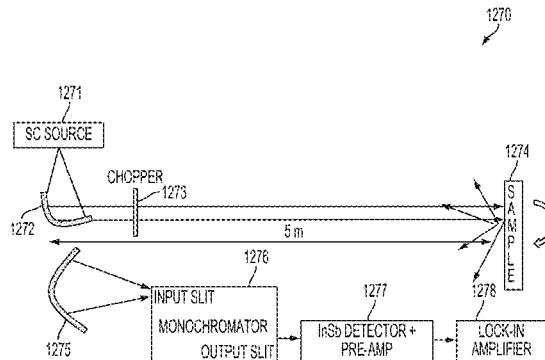
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(57) **ABSTRACT**
A wearable device for use with a smart phone or tablet includes a measurement device having a plurality of LEDs generating a near-infrared input optical beam that measures physiological parameters. The measurement device includes lenses configured to receive and to deliver the input beam to skin which reflects the beam. The measurement device includes a reflective surface configured to receive and redirect the light from the skin, and a receiver configured to receive the reflected beam. The light source is configured to increase a signal-to-noise ratio of the input beam reflected from the skin by increasing the light intensity from the LEDs and modulation of the LEDs. The measurement device is configured to generate an output signal representing a non-invasive measurement on blood contained within the skin. The wearable device is configured to wirelessly communicate with the smart phone or tablet which receives and processes the output signal.

10 Claims, 16 Drawing Sheets



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