Specification for Q-PCR Machine

Real time PCR machine for qualitative and quantitative detection of nucleic acid, mutation screening and SNP analysis.

- **1.** The system should be automated for both real-time PCR and post-PCR (end point) analysis using in-built Peltier based PCR machine.
- **2.** System should support applications including absolute quantitation, simultaneous analysis data for relative quantitation of Unlimited plates of 96 wells each, (4-6 colour multiplexing), allelic discrimination (SNP), dissociation curve analysis as well as pathogen detection and plus/minus assay using internal positive control.
- **3.** Instrument should have 96 well sample block of 0.1ml capacity, able to run fast and standard run on the same block. It can also have 6 separate Peltier-controlled blocks with a fixed gradient with a 25-degree range.
- **4.** System should complete Fast 40 cycle protocol in less than 40 minutes and standard protocol in under 2 hours.
- **5.** The system should have LCD touch display with USB interface to export the data.
- **6.** The temperature range of the thermoblock should be 4° C to 99° C with accuracy of $\pm 0.25^{\circ}$ C
- 7. The system should have complete solution for Fast Real time PCR machine: Fast instruments, Fast reagents, Fast protocols and Fast assays. Sample Ramp Rate: fast Mode: ±3.5°C/sec Standard Mode: ±1.6°C/sec Pear Block Ramp Rate: 5.5°C/sec,Temperature Uniformity: ±0.50°C, 30 seconds after clock start.
- **8.** The Excitation source should be single blue LED light source or Tungsten Halogen or high intensity Xenon lamp and emission detection by photodiodes or cooled CCD camera. There should be enough excitation and emission filters to cover majority of dyes.
- **9.** System should be flexible to support 96 well plates individual tubes and 8 strip tubes. The system should be quoted with interchangeable blocks.
- **10.** System software should provide simultaneous analysis data for relative quantitation of Unlimited plates of 96 wells each.
- **11.** The system should have Normalization of reaction due to non-PCR related fluctuations such as pipetting variations, should be possible by using ROX[™] or any other calibrated dye.
- 12. System should support reaction volume 2-30 μ L.
- **13.** All assays should run using Universal Thermal Cycling conditions to eliminate for the Optimisation of PCR machine.
- **14.** The instrument software must be capable of detecting and analysing a different gene, SNP or pathogen target in every well of the 96/384 well plate. The instrument software should not restrict the number of assays or targets that can be run on a single 96/384 well plate.
- **15.** The system should have easy door design for loading and unloading 96 well plates or individual 0.2 ml PCR tubes.
- **16.** System should collect data for all filters for all wells regardless of plate setup. The software should allow reanalysis of data so that data is never lost.
- **17.** The instrument should be pre-calibrated for at least seven dyes including the following during installation at the customer site: FAMTM/SYBR® Green I, VIC®/JOETM, NEDTM/TAMRATM/ and ROXTM. The user should be able to use any of these dyes in an experiment without needing to recalibrate the instrument. Addition of new dyes should be possible without hardware change.
- **18.** The system should be supplied with licensed full version software for primer and probe design with comprehensive assay design and development guidelines for quantitative and qualitative real-time assays, should be provided to enable designing of custom oligo assays.
- **19.** System should be standardized for at least two homogeneous reaction chemistries including SYBR Green I and dual color TaqMan or four colour hybridization probes (FRET).
- **20.** The system should be offered pre-validated and functionally tested Gene Expression Assays as well as SNP Genotyping Assays and the flexibility to design specific assays for new templates of interest.
- **21.** The instrument software should utilize a multi-componenting algorithm designed to provide precise deconvolution of multiple dye signals to enable the simultaneous detection of multiple fluorophores.
- **22.** The system should be supplied with latest configuration desktop system.
- **23.** The system should have warranty of 3 years.
- **24.** The system should be CE/ISO certified.
- **25.** The system should work on 230V,50Hz
- **26.** User/Technical/Maintenance manuals, Certificate of calibration and inspection from factory to be supplied with system.
- **27.** Compliance to each of the above points should be separately indicated and evidence presence for each of them (Product brochures should be highlighted wherever required)
- **28.** The system should be supplied with all the accessories required to function.