Table 1: Summary of Kubios HRV Standard and Kubios HRV Premium features

FEATURES	Standard	Premium
Data support		
• IBI or RR interval data files: Garmin and Suunto FIT files, Polar TXT files, custom formatted text and CSV files	✓	✓
• ECG/PPG data files: EDF/EDF+, GDF, Biopac ACQ3, Cardiology XML, ISHNE Holter ECG, Physionet MIT, and custom formatted text and CSV files	–	✓
• Supported HR monitors: ActiHeart, emWave, Firstbeat Bodyguard, Garmin (Forerunner and Fenix series), Polar (V800), Suunto (Ambit and Spartan series), Zephyr BioHarness	✓	✓
+ Direct export from Polar Flow (RR/IBI data from all Polar Flow compatible monitors when H6, H7 or H10 heart rate sensor is used in measurement)	–	✓
• Supported ECG/PPG devices: Actiwave Cardio, AliveCor Kardia, Biopac, Bittium Faros, Empatica E4, Mindfield MindMaster, Shimmer and several clinical Holter and ECG monitors	–	✓
Pre-processing		
• Built-in QRS detector for accurate detection of ECG R-waves and pulse wave detector for PPG data	–	✓
• Tools for noisy data handling	–	✓
• Beat correction methods: ECG based beat detection corrections / Automatic beat correction / Threshold based beat correction	– / – / ✓	✓ / ✓ / ✓
• Smoothness priors method for removing very low frequency trend components when performing short-term HRV analysis	✓	✓
Analysis options		
• Automatic analysis sample generation (based on predefined CSV file)	–	✓
• Stress index, PNS index and SNS index	✓	✓
• Time-domain parameters: Mean RR and HR, min/max HR, SDNN, RMSSD, pNN50, HRV triangular index, TINN etc.	✓	✓
+ HR deceleration (DC) and acceleration capacity (AC)	–	✓
• Frequency-domain parameters: VLF, LF and HF band powers (in absolute, relative and normalised units), peak frequencies and LF/HF ratio	✓	✓
• Spectrum estimation methods: Welch's periodogram / Lomb-Scargle periodogram / AR spectrum estimate	✓ / – / ✓	✓ / ✓ / ✓
• Basic nonlinear parameters: Poincaré plot, approximate entropy (ApEn), sample entropy (SampEn) and detrended fluctuation analysis (DFA)	✓	✓
+ Correlation dimension (D_2), recurrence plot analysis (RPA), multiscale entropy (MSE)	–	✓
• Built-in algorithm for ECG derived respiration (EDR) providing an accurate estimate of respiratory rate, which is needed in reliable RSA component estimation	–	✓
• Time-varying analysis: instantaneous values for energy expenditure (EE), training impulse (TRIMP), stress index, PNS/SNS indexes, and all time-domain and frequency-domain HRV parameters and certain nonlinear parameters. Spectrogram with Fire-colormap	–	✓
Reports and results export		
• HRV reports (PDF reports) including: time-domain, frequency-domain and nonlinear results / Time-varying analysis results	✓ / –	✓ / ✓
• ECG print (PDF report) showing the raw ECG trace for selected time period	–	✓
• HRV analysis results export options: PDF file / CSV text file / MATLAB MAT file	✓ / ✓ / –	✓ / ✓ / ✓
• "SPSS friendly" batch file export (ideal for group analyses or repeated measurements)	–	✓

the user to have a Matlab license. System requirements for running Kubios HRV are similar to those of Matlab (see https://www.mathworks.com/support/sysreq/) and only 64-bit operating systems are supported. Please note that **correct version of MATLAB Runtime (available at Kubios download page) must be installed** in order to run Kubios HRV.