

List of Tables

		Page No.
2.1	Invasive blood glucose meters	15
2.2	Various noninvasive techniques for blood glucose monitoring	32
2.3	10% Intralipid suspension constituents	47
3.1	Absorption characteristics corresponding to the stretch and vibration patterns of the bonds present in the glucose molecule	57
3.2	Glucose sensitivity analysis at 940 nm wavelength	62
3.3	Model EDC-20 of Edkits Electronics (Sine wave signal generator)	68
3.4	Modulating sine wave signal characteristics	69
3.5	Testronix Model-72 (Sine-Square Oscillator)	70
3.6	Carrier sine wave signal characteristics	71
3.7	AD633 features and benefits	72
3.8	Amplitude Modulated Signal characteristics	74
3.9	Waveform features as received by the USR unit	77
3.10	Square wave signal characteristics	78
3.11	The output signal parameters as acquired from the fingertip of the study subject	85
3.12	Performance assessment parameters	98
5.1	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels as acquired during OGTT over healthy subjects.	116
5.2	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	117
5.3	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	122
5.4	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	123
5.5	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	128
5.6	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	129
5.7	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	135
5.8	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	136
5.9	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	140
5.10	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	141

5.11	Blood Glucose Levels and corresponding HbA1c levels	143
5.12	Reference (invasive), predicted (noninvasive) fasting blood glucose values and its corresponding GHb% and, HbA _{1c} % values as obtained from the healthy subjects	145
5.13	Reference (invasive), predicted (noninvasive) fasting blood glucose values and its corresponding GHb% and, HbA _{1c} % values as obtained from the diabetic subjects	146
5.14	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	149
5.15	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	150
5.16	Blood pressure classification in adult subjects	152
5.17	Fasting stage blood glucose and blood pressure values of the healthy normal subjects (I to V) as observed during all the three consecutive days of the clinical study.	154
5.18	Fasting stage blood glucose and blood pressure values of the diabetic subjects (VI to X) as observed during all the three consecutive days of the clinical study.	155
5.19	Postprandial stage blood glucose and blood pressure values of the normal subjects (I to V) as observed during all the three consecutive days of the clinical study.	156
5.20	The postprandial stage blood glucose and blood pressure values of the diabetic subjects (VI to X) as observed during all the three consecutive days of the clinical study.	157
5.21	Random stage blood glucose and blood pressure values of the healthy normal Subjects (I to V) as observed during all the three consecutive days of the clinical study.	158
5.22	Random stage blood glucose and blood pressure values of the diabetic subjects (VI to X) as observed during all the three consecutive days of the clinical study.	159
5.23	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	162
5.24	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	163
5.25	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	169
5.26	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	170
5.27	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels.	173

5.28	Performance summary and comparison with other noninvasive techniques and CGMS(s) based published data.	174
6.1	Clarke Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels	179
6.2	Performance comparison of non-invasive blood glucose measurement-techniques and electrochemical CGMS utilizing Clarke Error Grid Analysis	180
6.3	Parkes Error Grid Analysis of Reference (Invasive) and Predicted (Noninvasive) Blood Glucose Levels	183
6.4	Accuracy measure based performance comparison of non-invasive blood glucose measurement-techniques, and Electrochemical CGMS(s) utilizing Mean Absolute Error (MAE)	185
6.5	Accuracy measure based performance comparison of non-invasive blood glucose measurement-techniques and Electrochemical-CGMS(s) utilizing Percentage of Mean Absolute Relative Error (%MARE)	186
6.6	Accuracy measure based performance comparison of our non-invasive blood glucose Technique to Electrochemical/Micro-dialysis based CGMS(s) utilizing Median Absolute Error (MdAE).	187
6.7	Accuracy measure based performance comparison of non-invasive blood glucose measurement-techniques and Electrochemical-CGMS(s) utilizing Percentage of Median Absolute Relative Error (%MdARE)	188
6.8	Accuracy measure based performance comparison of non-invasive blood glucose measurement-techniques utilizing Root Mean Squared Error (RMSE).	189
6.9	Accuracy measure based performance comparison of non-invasive blood glucose measurement-techniques utilizing Standard Error of Prediction (SEP)	190
6.10	Pearson correlation coefficient (r) analysis	191
6.11	Performance measures of different blood glucose measuring techniques classified based on their degree of invasiveness	192
6.12	Rank Correlation coefficients Analysis	194
6.13	Bland-Altman Plot based analysis	196
6.14	Mountain Plot based analysis	198
6.15	Linear model validity	199
6.16	Independent samples t-test and Welch-test	201
6.17	Deming Regression Analysis	202
6.18	Total Error Limits: ISO 15197-2013	204