

EEG Electrodes cont.

22, 11, 5.5, 2.75mm ECG electrodes

- Print 2 Sets
- Acquire ECG using BIOPACK.
 - Note down their settings.
 - Filters
 - Sample rate
 - Scale
 - Other settings
 - Electrode Configuration
- Analyze the signals.
 - Calculate MSE, MAE, SNR, Cross Corr., Coherence
 - Time domain view (One-two portion) (separate plots, comparison plot)
 - Spectral view (separate plots, comparison plot)
 - Coherence view

	22	11	5.5	2.75
Devinda	☒	☒	☒	☒
Kalana	☒	☒	☒	☒
Kulunu	☒	☒	☒	☐
Hirumi	☒	☒	☒	☒

Applied filters: 0.05 – 100 Hz BP , 50-60 Notch filter

Sample rate: 500Hz

Scale: 20mV

Time Scale: 20s

Other settings: Non

Electrode configuration: Lead II

Position : Resting

Note : Biopack ECG practical two use for the experiment with some modifications



Figure 1 Printed electrodes

Experimental setup

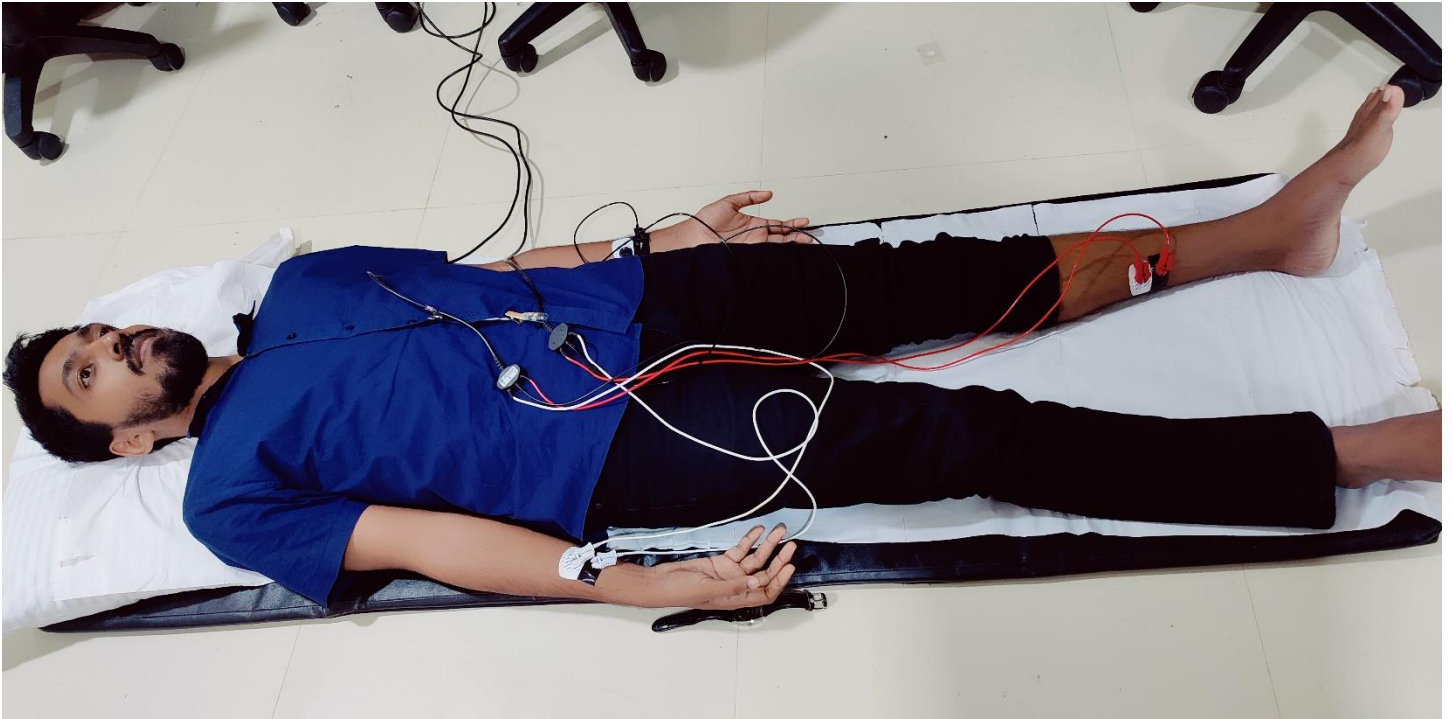


Figure 2 Subject 1 at the experiment

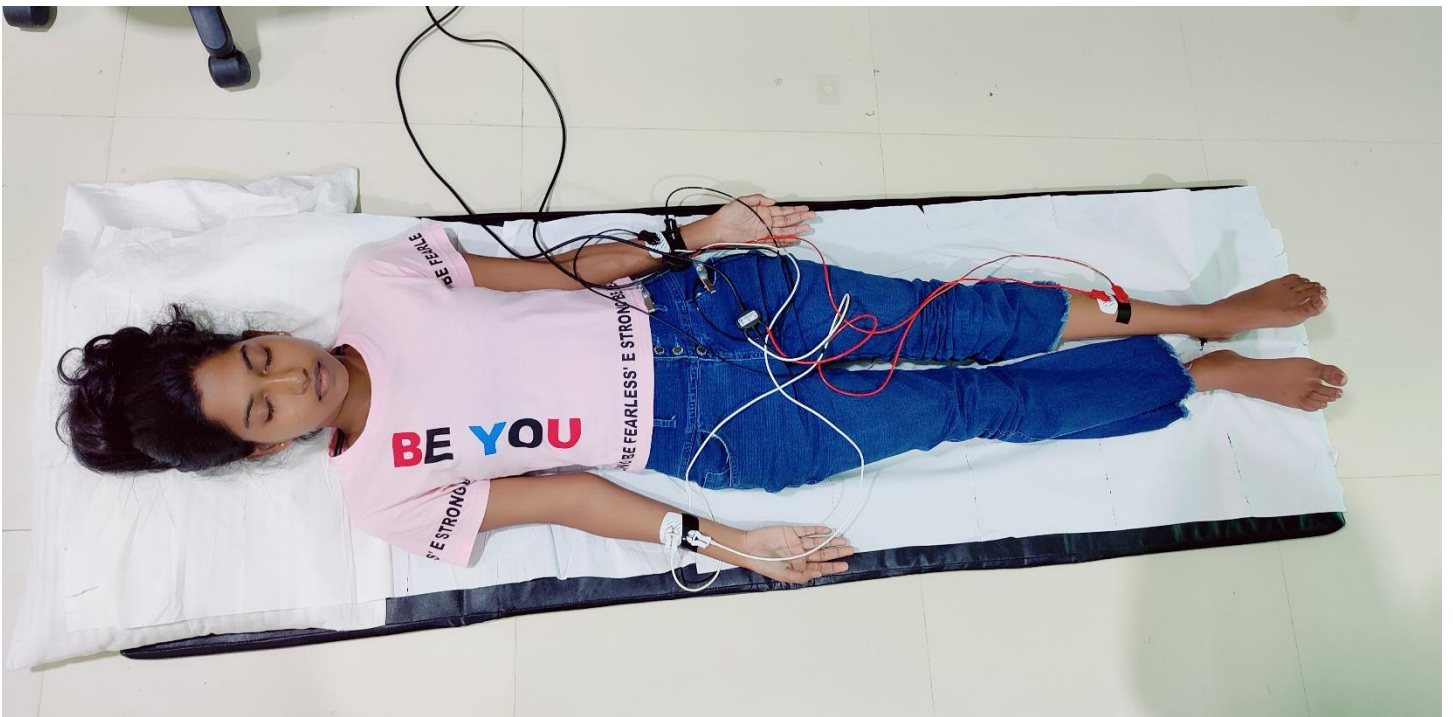


Figure 3 Subject 2 at the experiment

Results and discussion

- For $D = 2.75$ mm

Results for 2.75mm-devinda electrodes

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MSE : 0.0399447
SNR : -18.485dB
MAE : 0.120
Correlation : 91.832%

Results for 2.75mm-hirumi electrodes

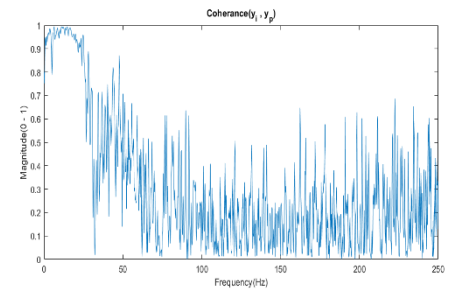
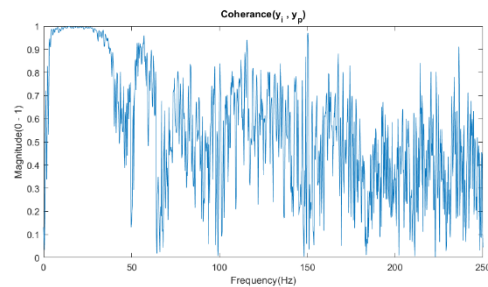
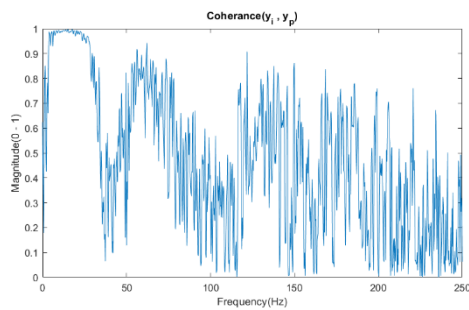
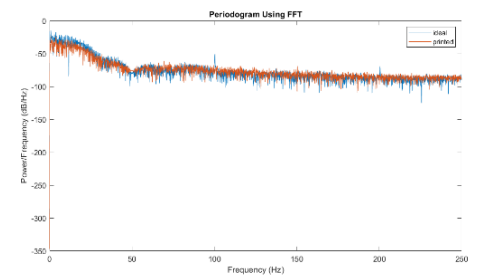
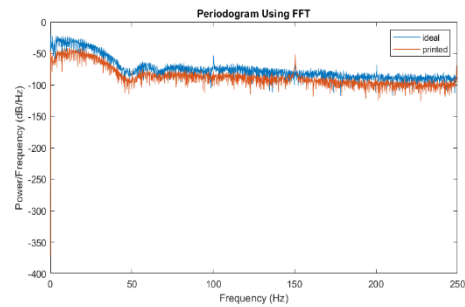
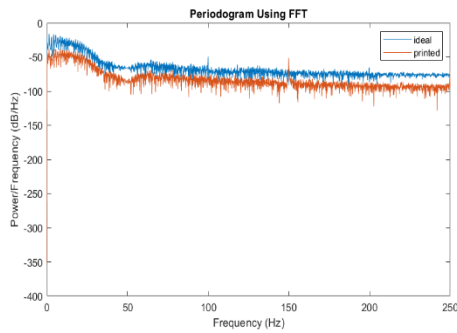
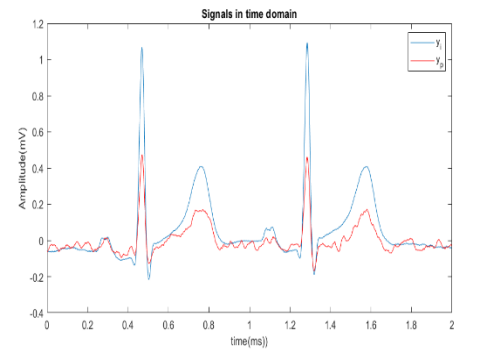
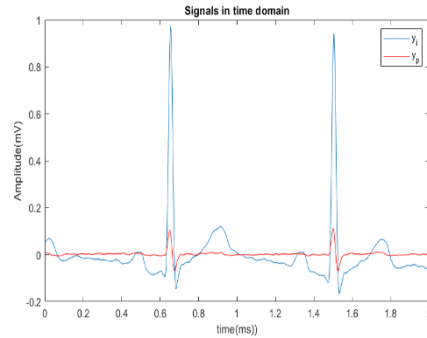
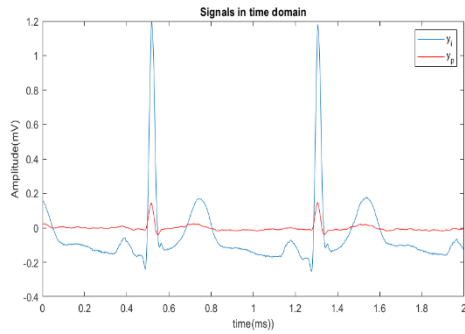
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MSE : 0.0187866
SNR : -17.736dB
MAE : 0.070
Correlation : 83.654%

Results for 2.75mm-kalana electrodes

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MSE : 0.0115638
SNR : -2.582dB
MAE : 0.073
Correlation : 95.355%

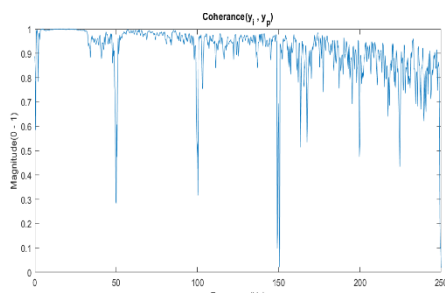
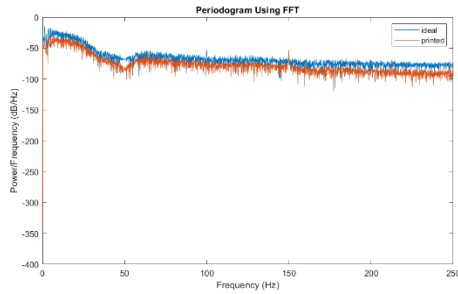
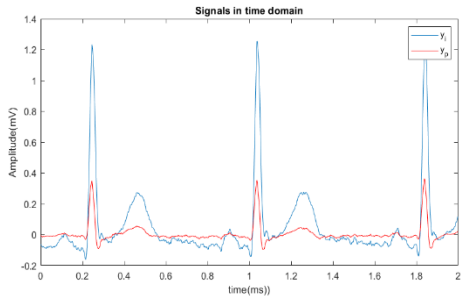


- For $D = 5.5$ mm

Results for 5.5mm-devinda electrodes

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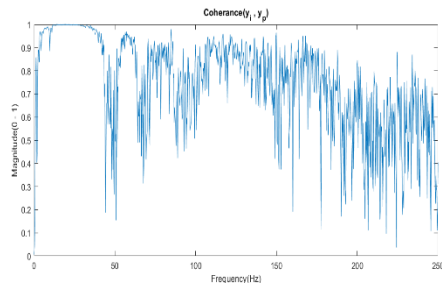
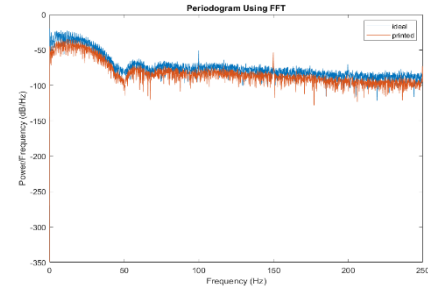
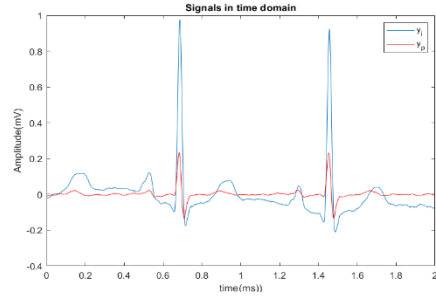
MSE : 0.0302062
 SNR : -9.576dB
 MAE : 0.110
 Correlation : 94.342%



Results for 5.5mm-hirumi electrodes

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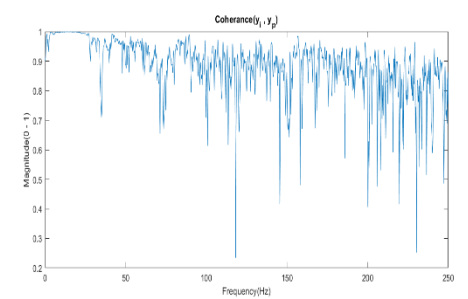
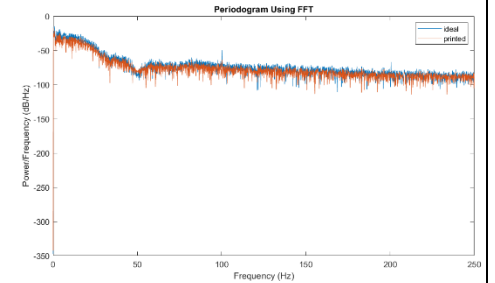
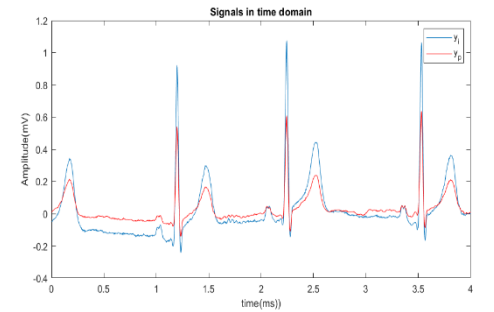
MSE : 0.0154213
 SNR : -10.440dB
 MAE : 0.070
 Correlation : 86.794%



Results for 5.5mm-kalana electrodes

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MSE : 0.0069020
 SNR : 2.014dB
 MAE : 0.055
 Correlation : 97.294%



For D = 11mm ,

Results for 11mm-devinda electrodes

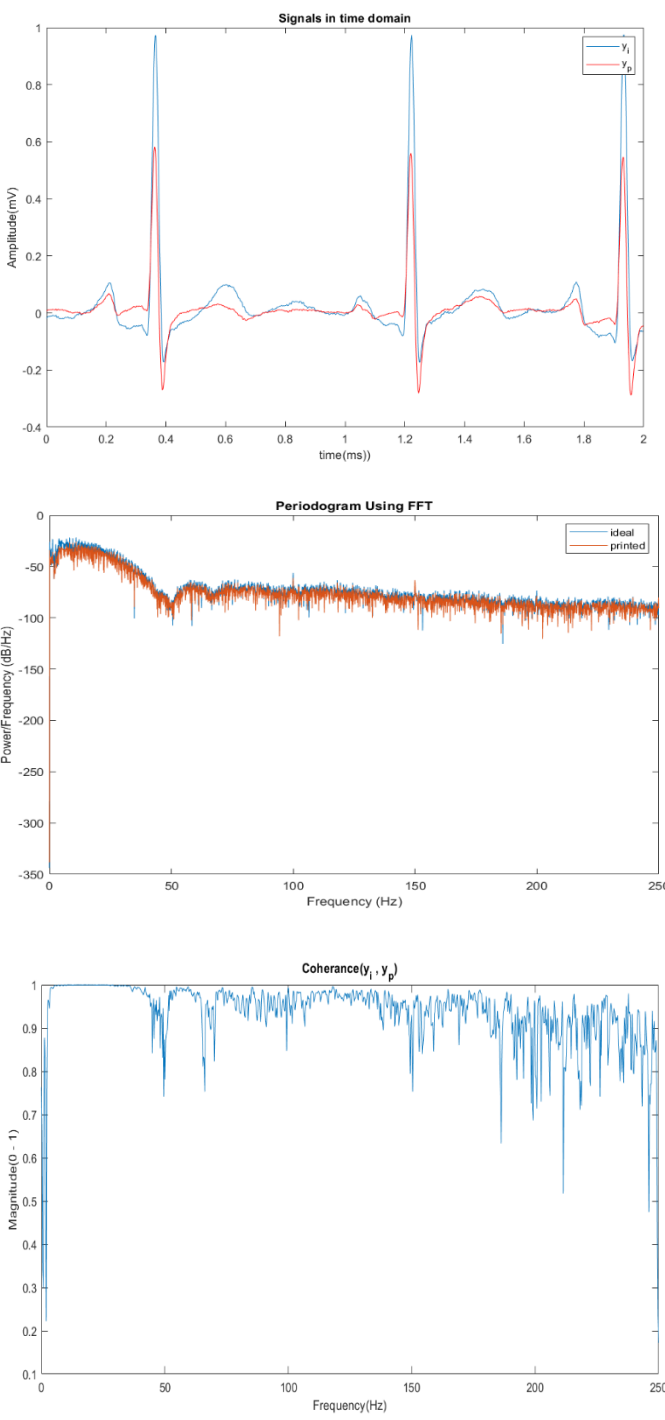
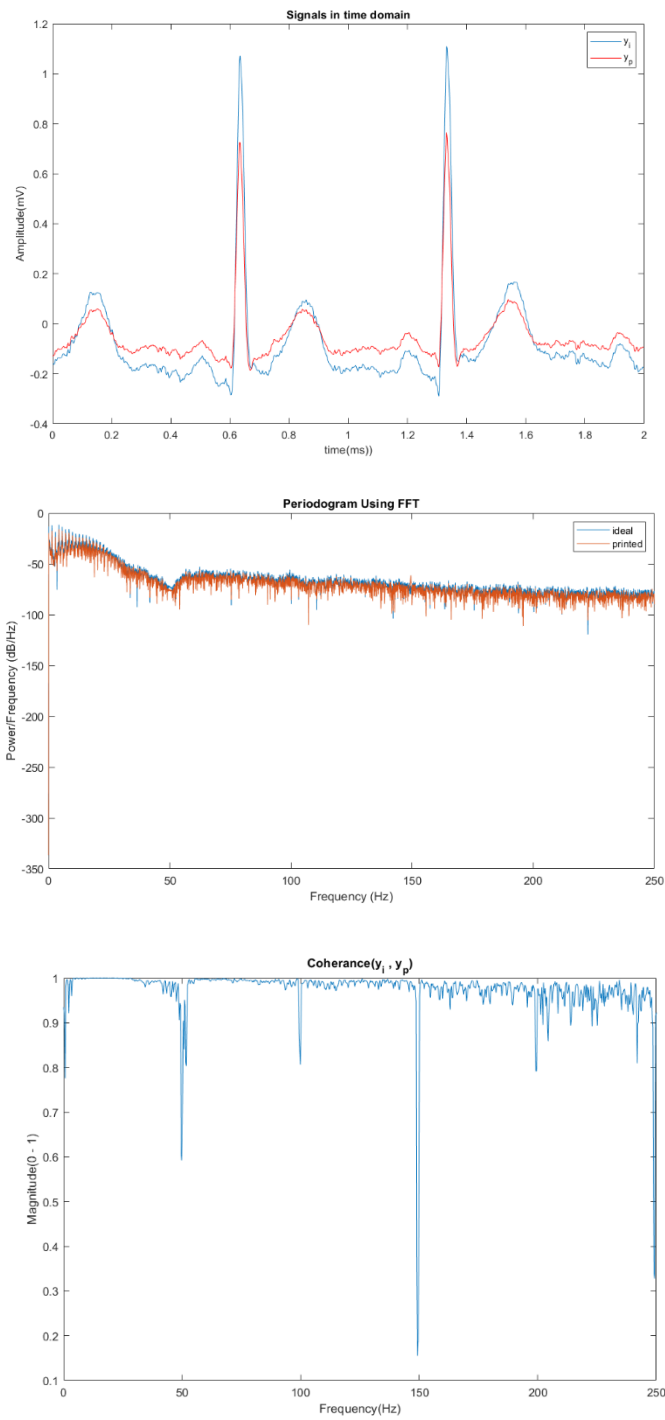
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MSE : 0.0073880
SNR : 4.558dB
MAE : 0.057
Correlation : 98.940%

Results for 11mm-hirumi electrodes

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MSE : 0.0069172
SNR : 0.856dB
MAE : 0.046
Correlation : 93.028%

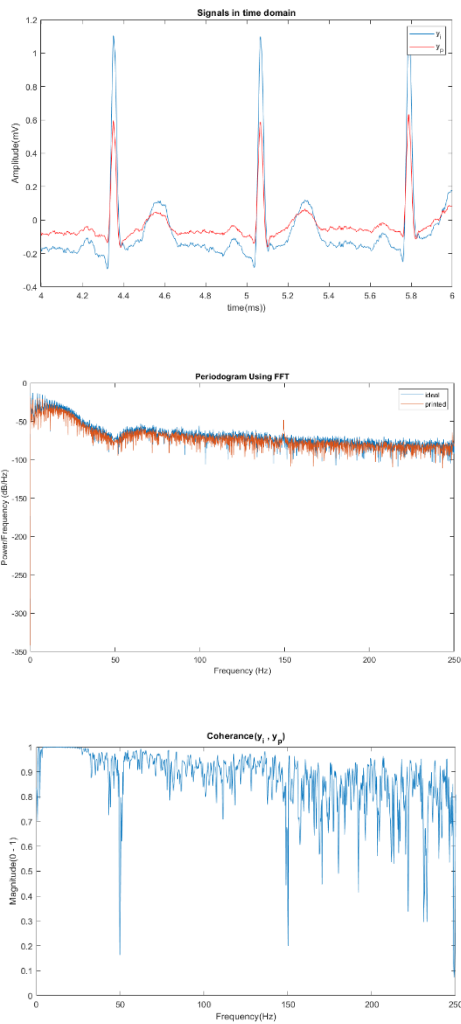


For D = 22mm ,

Results for 22mm-devinda electrodes

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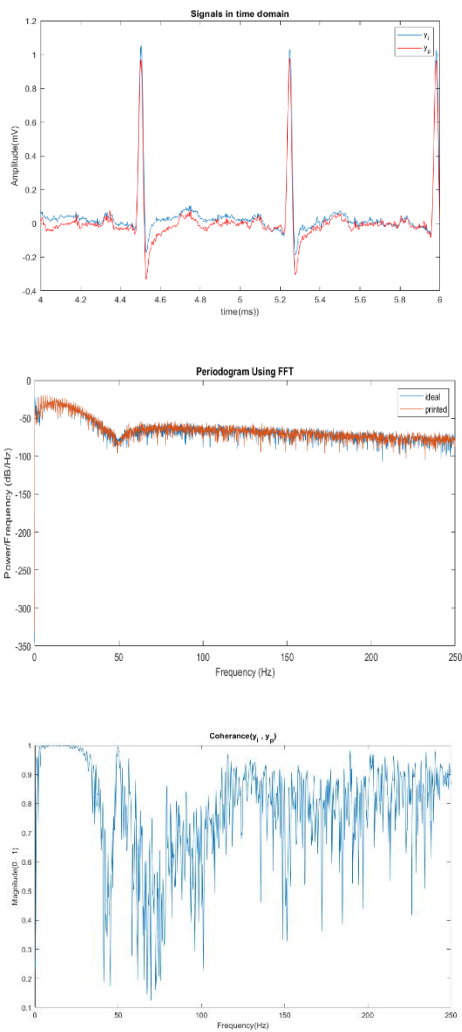
MSE : 0.0157835
SNR : -0.607dB
MAE : 0.085
Correlation : 96.093%



Results for 22mm-hirumi electrodes

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MSE : 0.0020786
SNR : 10.652dB
MAE : 0.035
Correlation : 95.931%



Results for 22mm-kalana electrodes

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MSE : 0.0025544
SNR : 10.040dB
MAE : 0.041
Correlation : 95.799%

