

LAMPIRAN

LAMPIRAN 1

Data Pengujian Nilai BPM Elektrokardiograf

Data BPM Kalibrator

Objek	BPM Kalibrator	Rata-Rata
1	63,00	63,50
	64,00	
2	66,00	66,00
	66,00	
3	83,00	79,00
	75,00	

Data BPM Modul EKG

Data ke	BPM Modul EKG		
	BPM 1	BPM 2	BPM 3
1	65,72	70,92	82,76
2	55,61	70,26	78,95
3	54,79	66,52	77,12
4	49,02	67,42	79,16
5	53,05	69,12	82,30
6	59,64	69,04	83,10
7	63,09	78,84	81,97
8	65,08	69,93	84,15
9	71,34	66,52	82,30
10	62,11	66,23	80,11
11	62,57	66,67	78,23
12	65,65	66,52	76,53
13	60,73	69,04	77,82
14	75,85	64,79	80,86
15	61,04	70,01	73,26
16	75,76	71,51	72,12
BPM rata rata	62,57	68,96	79,42

LAMPIRAN 2

Perbandingan Tegangan Gelombang P

	Modul EKG					EKG Kalibrator
Objek	Lead	Max (Vpp)	Min (Vpp)	Tegangan gelombang P (Vpp)	Tegangan kalibrasi gelombang P (mVpp)	Tegangan gelombang P (mVpp)
1	L I	1,320	1,200	0,120	0,15	0,1
	L II	0,320	0,180	0,140	0,18	0,2
	L III	0,020	-0,060	0,080	0,10	0,1
2	L I	0,260	0,180	0,080	0,10	0,1
	L II	0,020	-0,140	0,160	0,20	0,2
	L III	0,320	0,240	0,080	0,10	0,1
3	L I	0,008	-0,040	0,048	0,06	0,1
	L II	0,320	0,220	0,100	0,13	0,1
	L III	0,260	0,160	0,100	0,13	0,1

LAMPIRAN 3

Perhitungan Ralat Nisbi Rangkaian

Amplifier IC AD620

A_n	A_n^2
24	576
23	529
23	529
23	529
$\sum A_n = 93$	$\sum A_n^2 = 2163$

$$\bar{A} = \frac{\sum A_n}{n} = \frac{93}{4},$$

$$= 23,25$$

Menentukan nilai Delta Penguatan

$$\Delta A = \sqrt{\frac{n(\sum A_n^2) - (\sum A_n)^2}{n(n-1)}},$$

$$\Delta A = \sqrt{\frac{4(2163) - (8649)}{4(3)}},$$

$$\Delta A = 0,5.$$

Sehingga dapat dihitung nilai Ralat Nisbi(RN) sebagai berikut:

$$RN = \frac{\Delta A}{\bar{A}} \times 100\%$$

$$RN = \frac{0,5}{23,25} \times 100\%$$

Maka didapatkan nilai RN sebesar:

$$RN = 2,14\%$$

Penguat *Non-Inverting*

A_n	A_n^2
33,60	1128,96
33,20	1102,24
33,33	1111,11
33,50	1122,25
34,00	1156,00
34,00	1156,00
34,00	1156,00
33,75	1139,06
33,78	1140,94
33,60	1128,96
$\sum A_n = 336,76$	$\sum A_n^2 = 11341,52$

$$\bar{A} = \frac{\sum A_n}{n} = \frac{336,76}{10},$$

$$= 33,68.$$

Menentukan nilai Delta Penguatan

$$\Delta A = \sqrt{\frac{n(\sum A_n^2) - (\sum A_n)^2}{n(n-1)}},$$

$$\Delta A = \sqrt{\frac{10(11341,52) - (113407,30)}{10(9)}},$$

$$\Delta A = 0,28.$$

Sehingga dapat dihitung nilai Ralat Nisbi (RN) menggunakan persamaan berikut,

$$RN = \frac{\Delta A}{\bar{A}} \times 100\%,$$

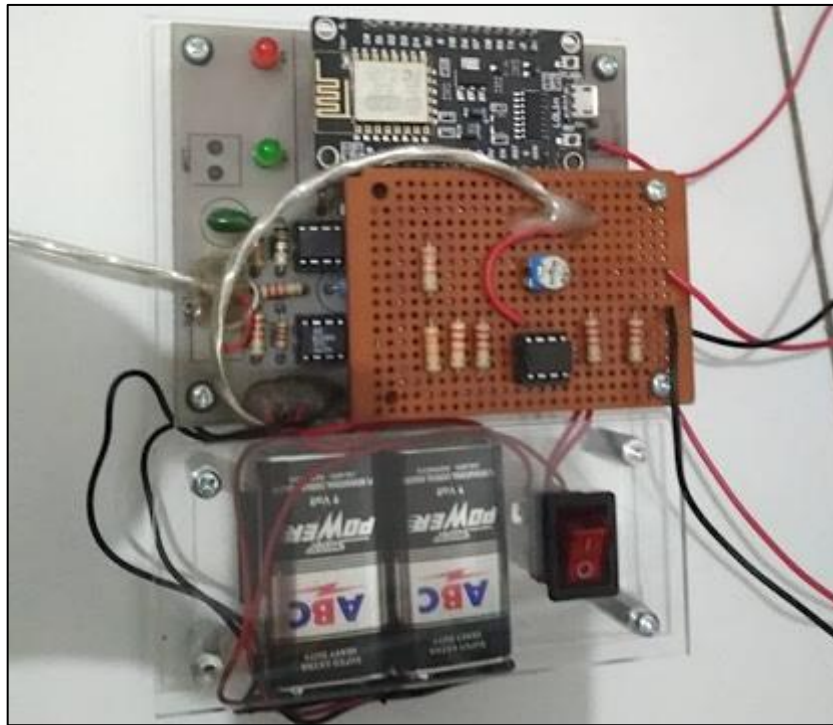
$$RN = \frac{0,28}{33,68} \times 100\%,$$

Maka didapatkan nilai RN sebesar,

$$RN = 0,83\%.$$

LAMPIRAN 4

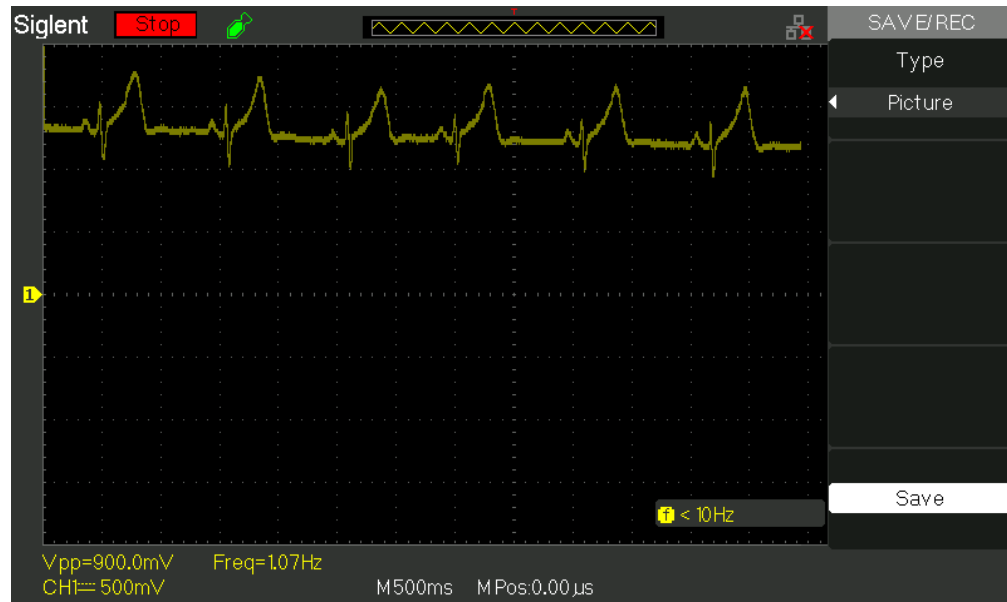
Gambar Rancang Bangun EKG Berbasis IoT



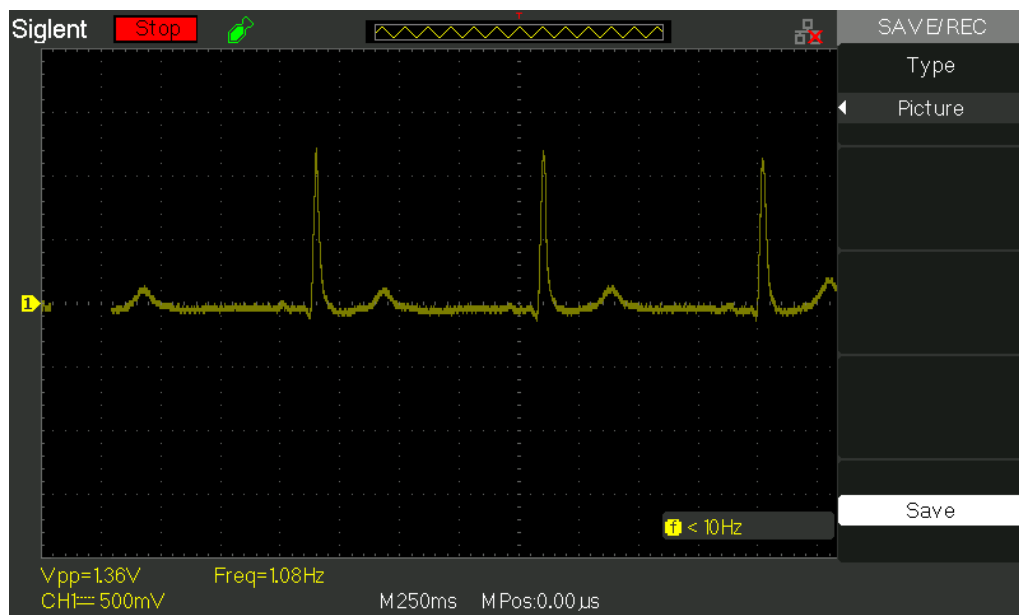
LAMPIRAN 5

Gambar Pengujian Modul EKG Pada Osiloskop

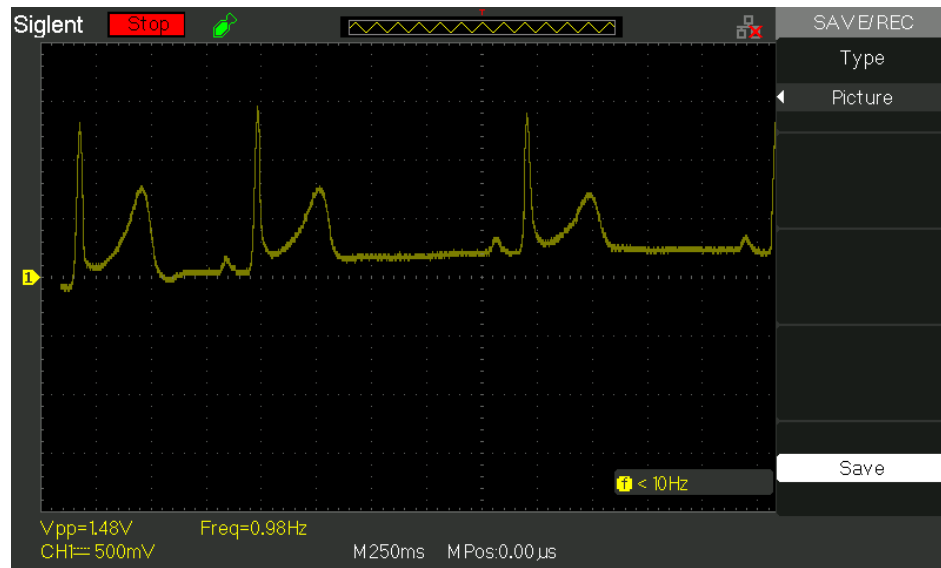
Gambar Lead I Objek 1 Osiloskop



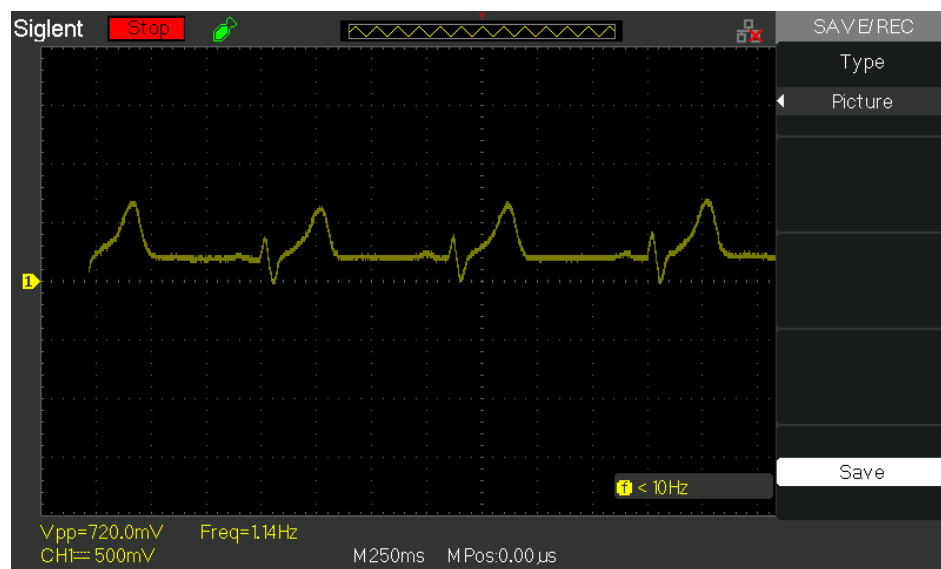
Gambar Lead II Objek 1 Osiloskop



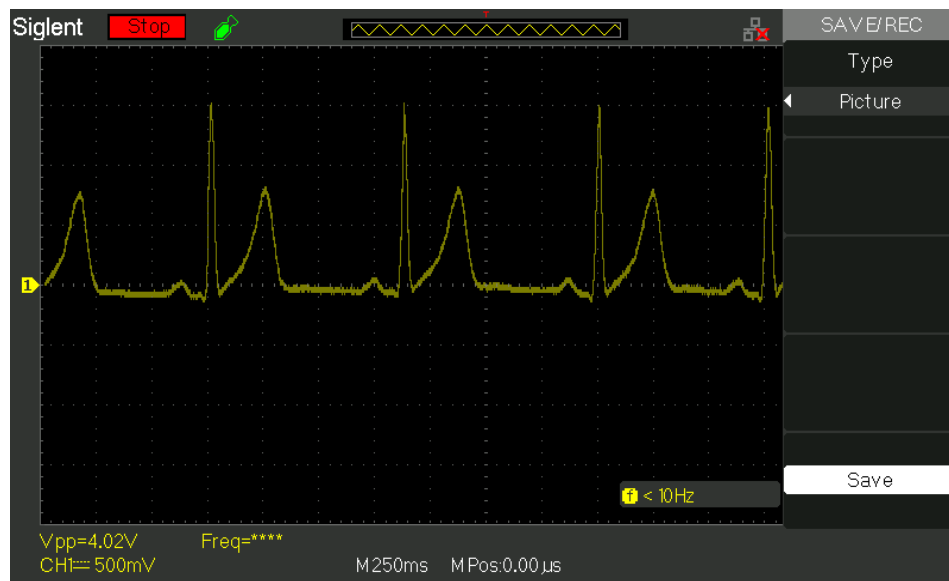
Gambar Lead III Objek 1 Osiloskop



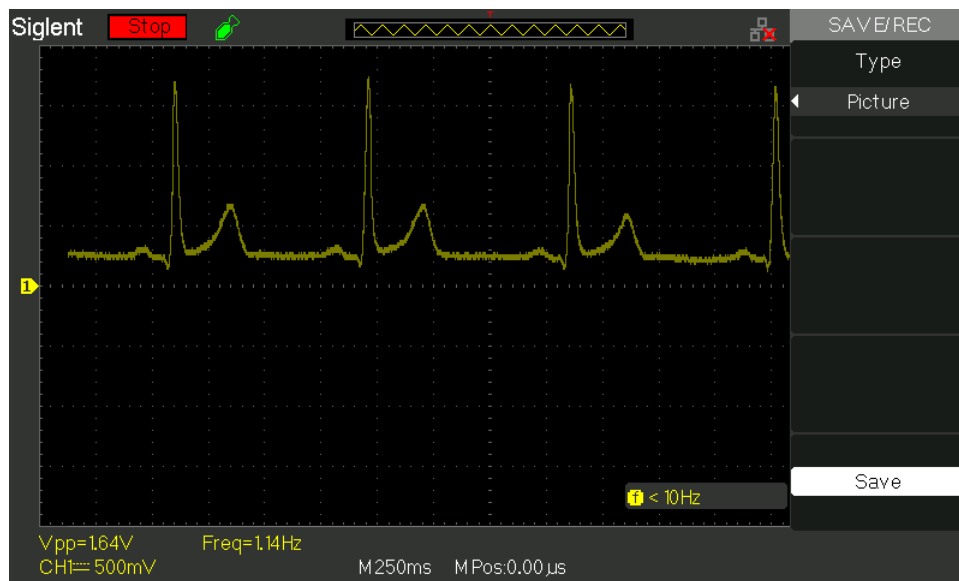
Gambar Lead I Objek 2 Osiloskop



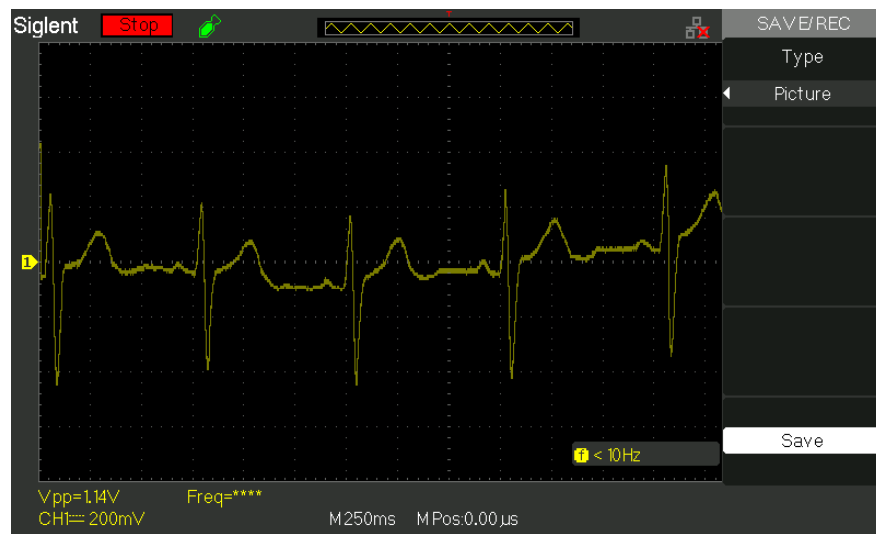
Gambar Lead II Objek 2 Osiloskop



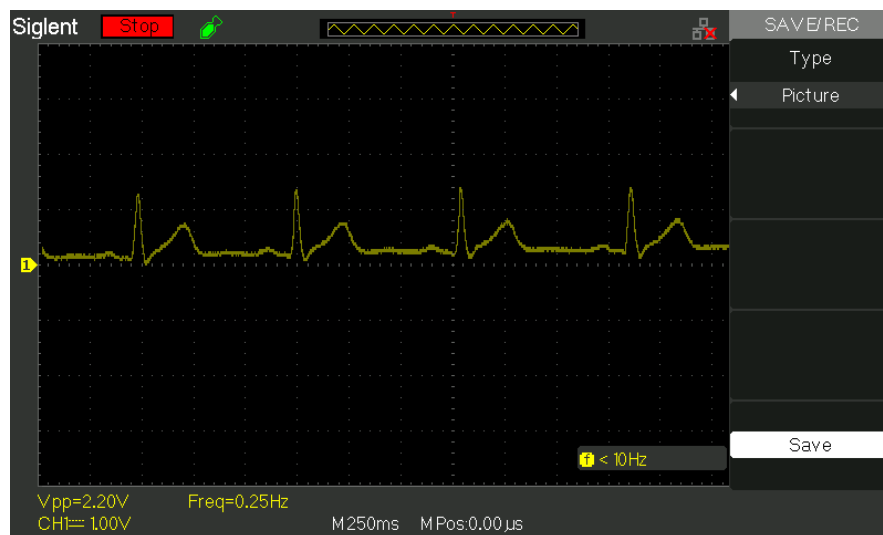
Gambar Lead III Objek 2 Osiloskop



Gambar Lead I Objek 3 Osiloskop



Gambar Lead II Objek 3 Osiloskop

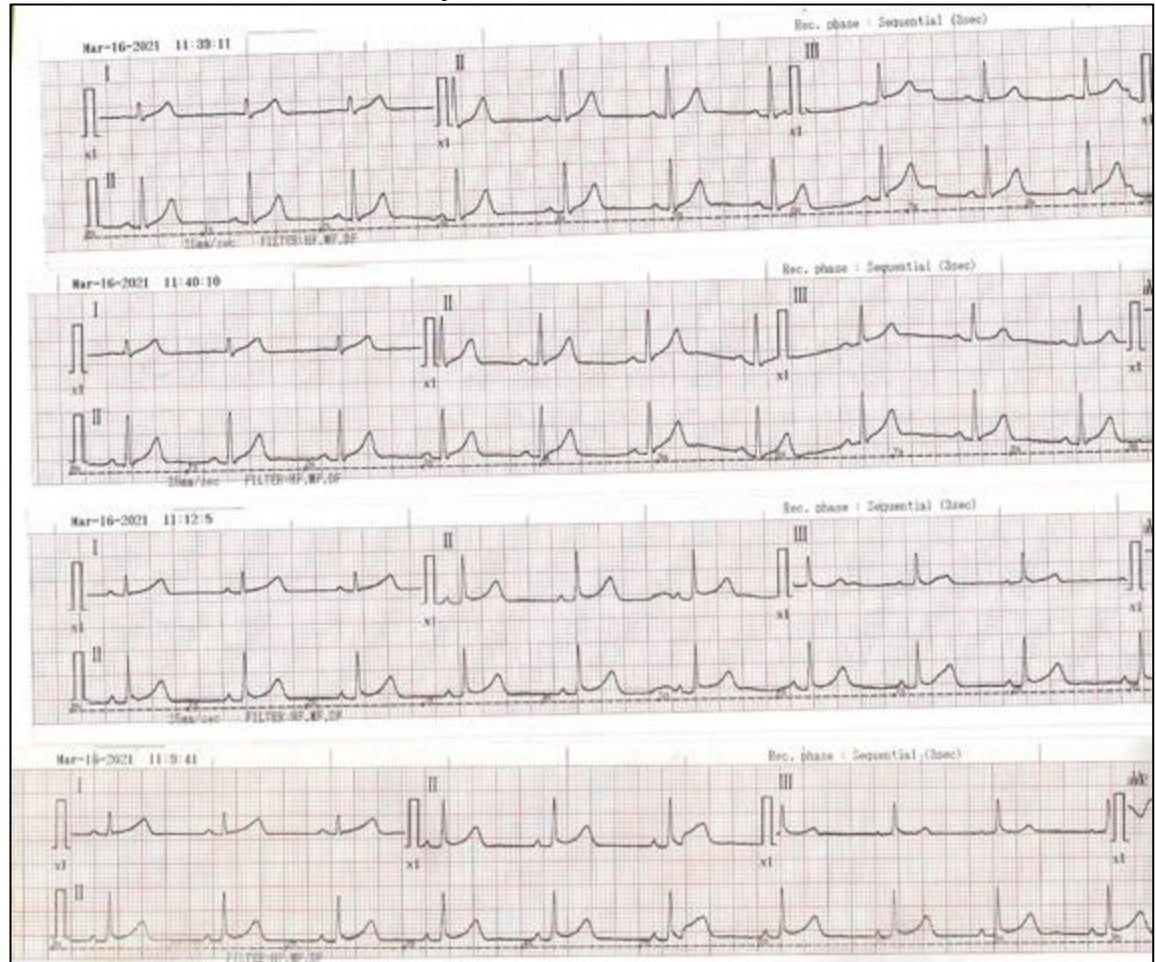


Gambar Lead III Objek 3 Osiloskop



LAMPIRAN 6**Gambar Grafik EKG Kalibrator**

Grafik EKG Kalibrator Lead I Objek 1 dan 2

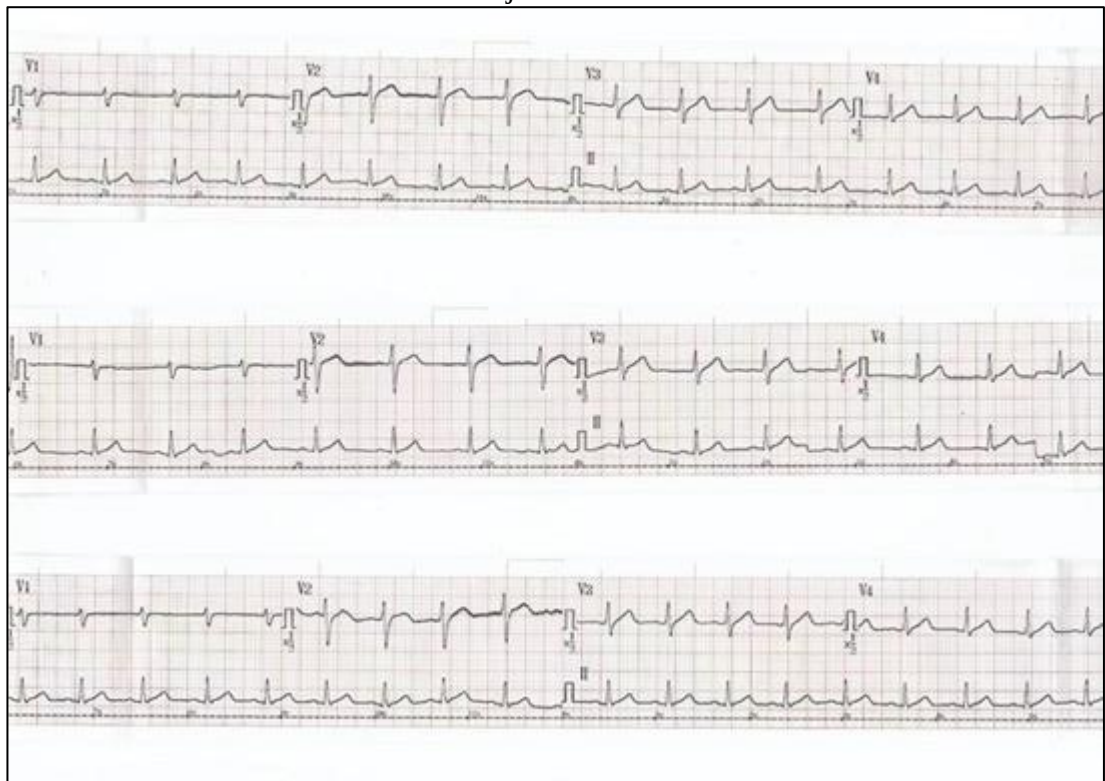


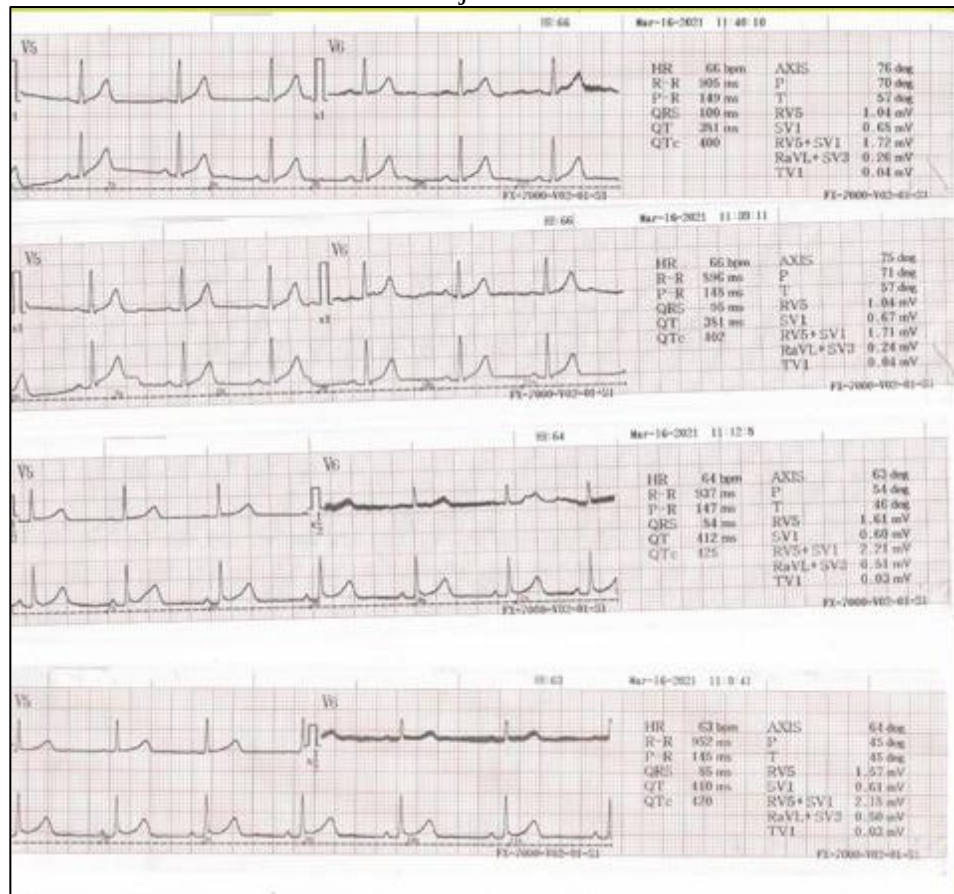
Grafik EKG Kalibrator Lead I-III Objek 3



Grafik EKG Kalibrator Lead V₁-V₄ Objek 1 Dan 2



Grafik EKG Kalibrator Lead V₁-V₄ Objek 3

Grafik EKG Kalibrator Lead V₅-V₆ Objek 1 Dan 2Grafik EKG Kalibrator Lead V₅-V₆ Objek 3

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