

## LAMPIRAN 1 : Program Arduino

```

#include <LiquidCrystal.h>
#include <SoftwareSerial.h>
#include "VoiceRecognitionV3.h"

const int rs = 12, en = 11, d4 = 7, d5 = 6, d6 = 5, d7 = 4;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);
VR myVR(2,3); // 2:RX 3:TX, you can choose your favourite pins.

long Num1=0;
long Num2=0;
int Number=0;
long Result=0;
char key,action;
boolean result = false;

/** declare print functions */
void printSeperator();
void printSignature(uint8_t *buf, int len);
void printVR(uint8_t *buf);
void printLoad(uint8_t *buf, uint8_t len);
void printTrain(uint8_t *buf, uint8_t len);
void printCheckRecognizer(uint8_t *buf);
void printUserGroup(uint8_t *buf, int len);
void printCheckRecord(uint8_t *buf, int num);
void printCheckRecordAll(uint8_t *buf, int num);
void printSigTrain(uint8_t *buf, uint8_t len);
void printSystemSettings(uint8_t *buf, int len);
void printHelp(void);
void DetectKeys ();
void CalculateResult ();
void DisplayResult ();

// command analyze part
#define CMD_BUF_LEN 64+1
#define CMD_NUM 10
typedef int (*cmd_function_t)(int, int);
uint8_t cmd[CMD_BUF_LEN];
uint8_t cmd_cnt;
uint8_t *paraAddr;
int receiveCMD();
int checkCMD(int len);
int checkParaNum(int len);
int findPara(int len, int paraNum, uint8_t **addr);
int compareCMD(uint8_t *para1 , uint8_t *para2, int len);

int cmdTrain(int len, int paraNum);
int cmdLoad(int len, int paraNum);

```

```

int cmdTest(int len, int paraNum);
int cmdVR(int len, int paraNum);
int cmdClear(int len, int paraNum);
int cmdRecord(int len, int paraNum);
int cmdSigTrain(int len, int paraNum);
int cmdGetSig(int len, int paraNum);
int cmdSettings(int len, int paraNum);
int cmdHelp(int len, int paraNum);
/** cmdList, cmdLen, cmdFunction has correspondence */
const char cmdList[CMD_NUM][10] = { // command list table
{
    "train" }
,
{
    "load" }
,
{
    "clear" }
,
{
    "vr" }
,
{
    "record" }
,
{
    "sigtrain" }
,
{
    "getsig" }
,
{
    "Settings" }
,
{
    "test" }
,
{
    "help" }
,
};
const char cmdLen[CMD_NUM]= { // command length
5, // {"train"},
4, // {"load"},
5, // {"clear"},
2, // {"vr"},
6, // {"record"},
8, // {"sigtrain"},
6, // {"getsig"},
8, // {"Settings"},
4, // {"test"},
4, // {"help"}
};

```



```

cmd_function_t cmdFunction[CMD_NUM]={ // command handle fuction(function
pointer table)
  cmdTrain,
  cmdLoad,
  cmdClear,
  cmdVR,
  cmdRecord,
  cmdSigTrain,
  cmdGetSig,
  cmdSettings,
  cmdTest,
  cmdHelp,
};

/** temporary data */
uint8_t buf[255];
uint8_t records[7]; // save record

void(*saya_reset)(void)=0;

void setup(void)
{
  myVR.begin(9600);
  lcd.begin(16, 2);
  lcd.print("Voice Calculator"); //Display a intro message
  lcd.setCursor(0, 1); // set the cursor to column 0, line 1
  lcd.print("-by Safitri-"); //Display a intro message
  delay(2000); //Wait for display to show info
  lcd.clear(); //Then clean it
  /** initialize */
  Serial.begin(115200);
  Serial.println(F("Elechouse Voice Recognition V3 Module \"train\" sample."));

  printSeperator();
  Serial.println(F("Usage:"));
  printSeperator();
  printHelp();
  printSeperator();
  cmd_cnt = 0;
}

void loop(void)
{
  int len, paraNum, paraLen, i;
  key = buf[4];
  DetectKeys();
  if (buf[3]>0)
  CalculateResult();
  DisplayResult();

  /** receive Serial command */
  len = receiveCMD();
  if(len>0){

```

```

/** check if the received command is valid */
if(!checkCMD(len)){

    /** check parameter number of the received command */
    paraNum = checkParaNum(len);

    /** display the received command back */
    Serial.write(cmd, len);

    /** find the first parameter */
    paraLen = findPara(len, 1, &paraAddr);

void DetectKeys()
{ lcd.clear(); //Then clean it
  if (buf[4]=='R') //
  {Serial.println ("Bersihkan");
  saya_reset();
  }

//mendeteksi number
if (buf[4] == '0')
{Serial.println ("0");
if (Number==0)
Number=0;
else
Number =0;
}

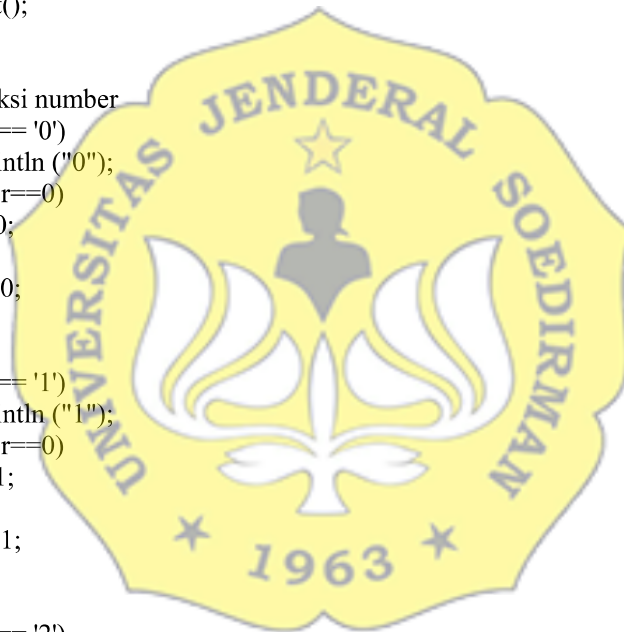
if (buf[4] == '1')
{Serial.println ("1");
if (Number==0)
Number=1;
else
Number =1;
}

if (buf[4] == '2')
{Serial.println ("2");
if (Number==0)
Number=2;
else
Number =2;
}

if (buf[4] == '3')
{Serial.println ("3");
if (Number==0)
Number=3;
else
Number =3;
}

if (buf[4] == '4')

```



```

{Serial.println ("4");
if (Number==0)
Number=4;
else
Number =4;
}

```

```

if (buf[4] == '5')
{Serial.println ("5");
if (Number==0)
Number=5;
else
Number =5;
}

```

```

if (buf[4] == '6')
{Serial.println ("6");
if (Number==0)
Number=6;
else
Number =6;
}

```

```

if (buf[4] == '7')
{Serial.println ("7");
if (Number==0)
Number=7;
else
Number =7;
}

```

```

if (buf[4] == '8')
{Serial.println ("8");
if (Number==0)
Number=8;
else
Number =8;
}

```

```

if (buf[4] == '9')
{Serial.println ("9");
if (Number==0)
Number=9;
else
Number =9;
}

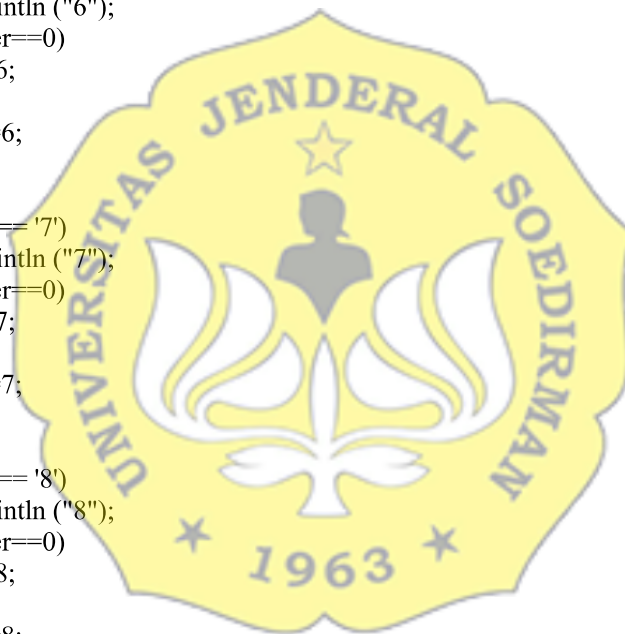
```

//mendeteksi num2 setelah sama dengan

```

if (buf[4] == '=')
{Serial.println ("=");
Num2=Number;
result = true;
}

```



```

//mendeteksi operator
if (buf[4] == '+' || buf[4] == '-' || buf[4] == 'x' || buf[4] == ':') //Detecting Keys
{ Num1 = Number;
  if (buf[4] == '+')
  {Serial.println ("Addition"); action = '+';}
  if (buf[4] == '-')
  {Serial.println ("Subtraction"); action = '-'; }
  if (buf[4] == 'x')
  {Serial.println ("Multiplication"); action = '*';}
  if (buf[4] == ':')
  {Serial.println ("Multiplication"); action = ':';}
  delay(100);
}
}

void CalculateResult()
{
  if (action=='+')
    Result = Num1+Num2;
  if (action=='-')
    Result = Num1-Num2;
  if (action=='*')
    Result = Num1*Num2;
  if (action=='/')
    Result = Num1/Num2;
}

void DisplayResult()
{
  lcd.setCursor(0, 0); // set the cursor to column 0, line 1
  if (buf[4]!=0)
  {lcd.print(Num1); lcd.print(action); lcd.print(Num2);}

  if (buf[4]!='=')
  {lcd.print(" ="); lcd.print(Result);} //Display the result

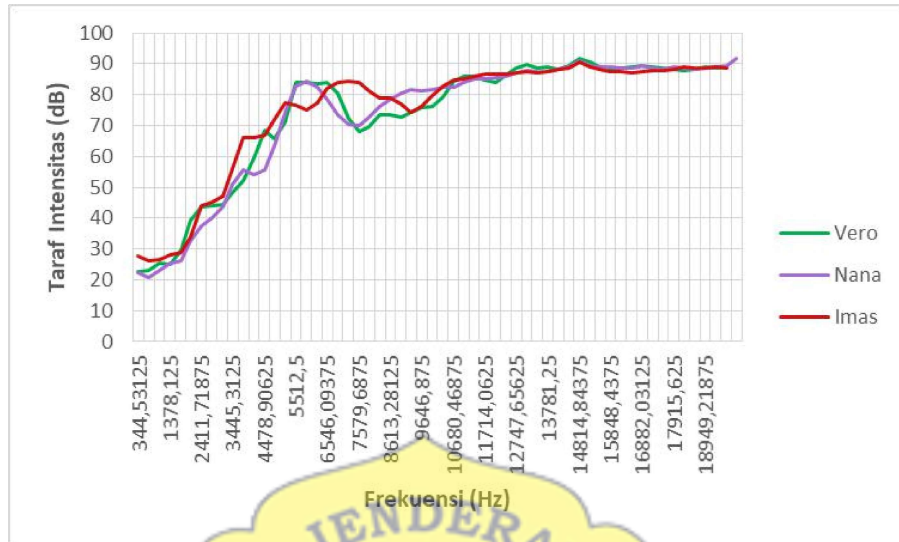
  lcd.setCursor(0, 1); // set the cursor to column 0, line 1
  lcd.print(Number); //Display the result

}

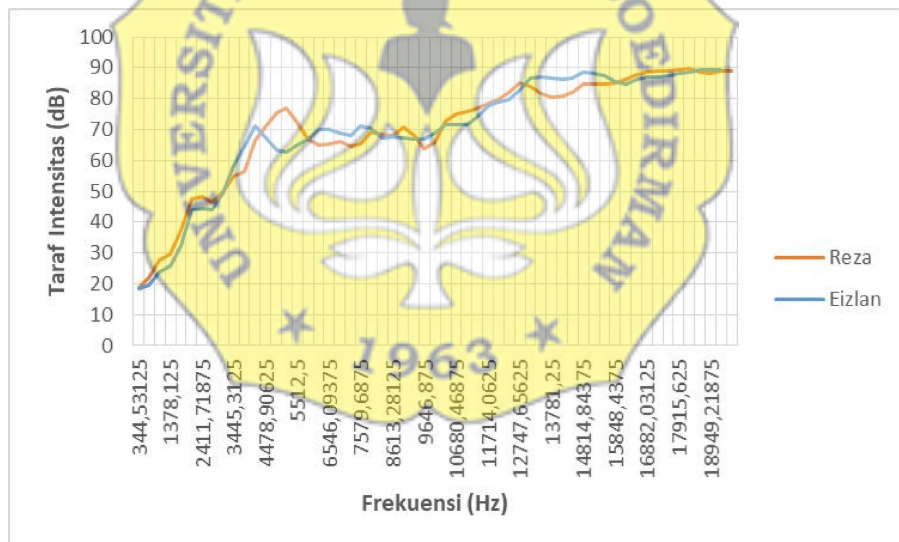
void printSeperator()
{
  for(int i=0; i<80; i++){
    Serial.write('-');
  }
  Serial.println();
}

```

LAMPIRAN 2 : Analisis frekuensi pada *database*

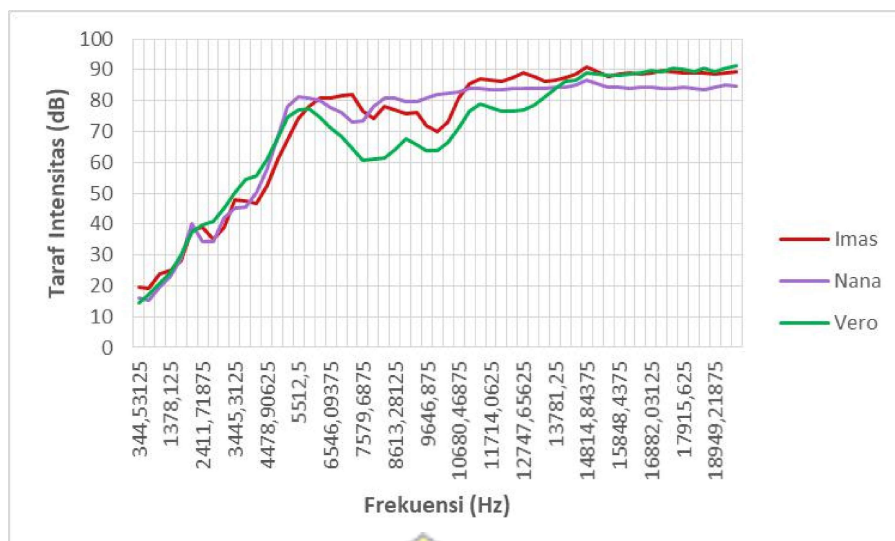


Gambar 1 Perintah suara satu “1” untuk perempuan

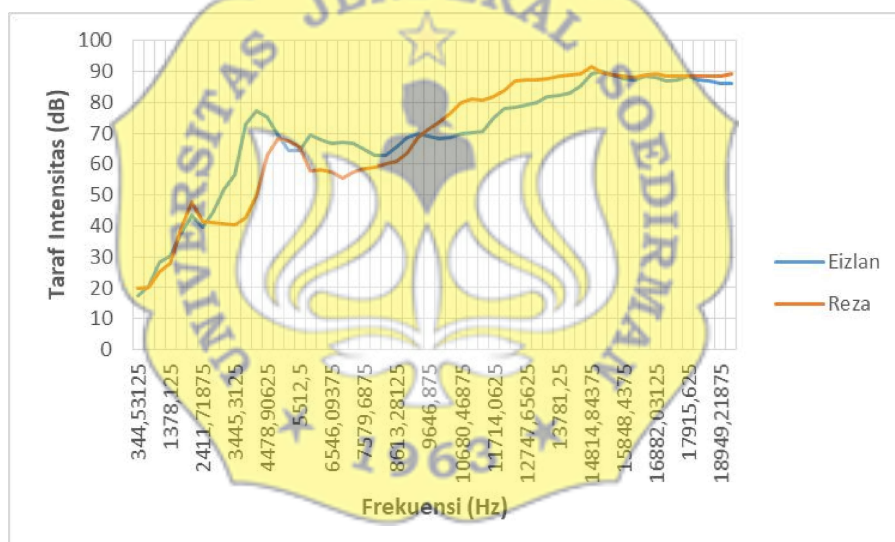


Gambar 2 Perintah suara satu “1” untuk laki-laki

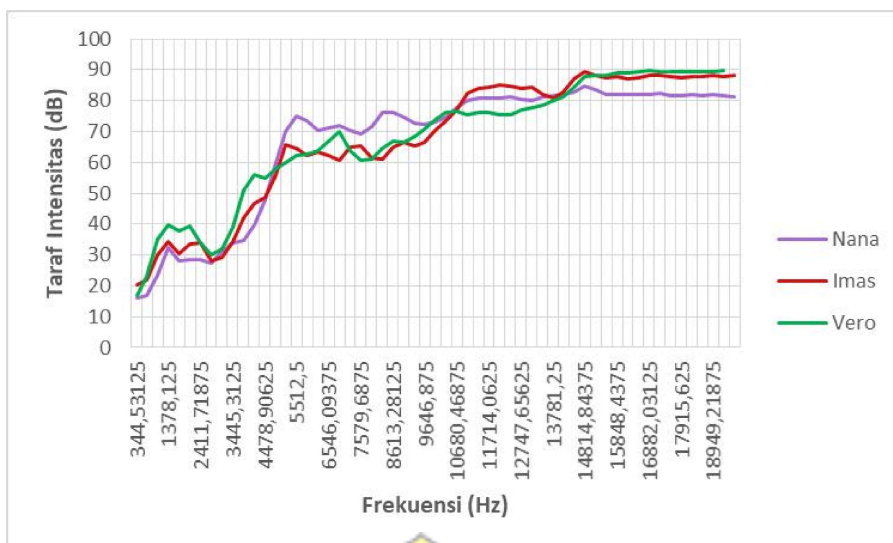




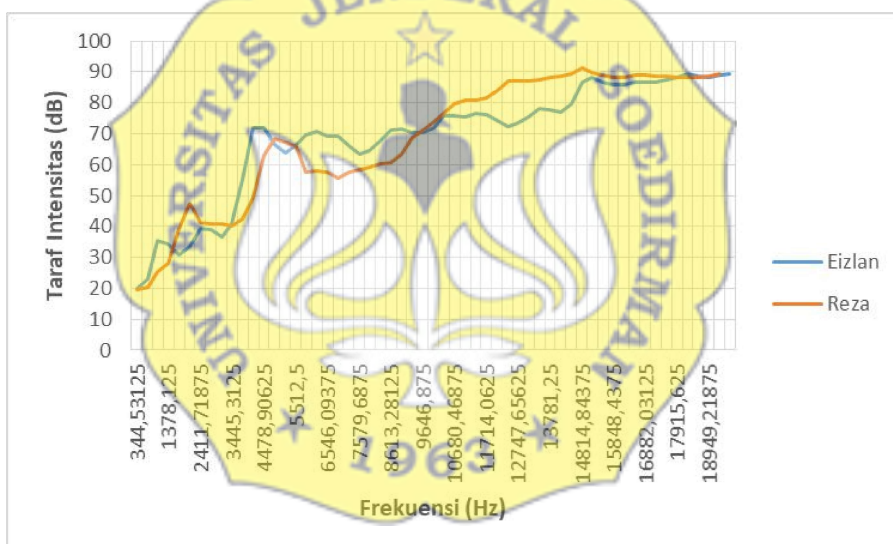
**Gambar 3** Perintah suara dua “2” untuk perempuan



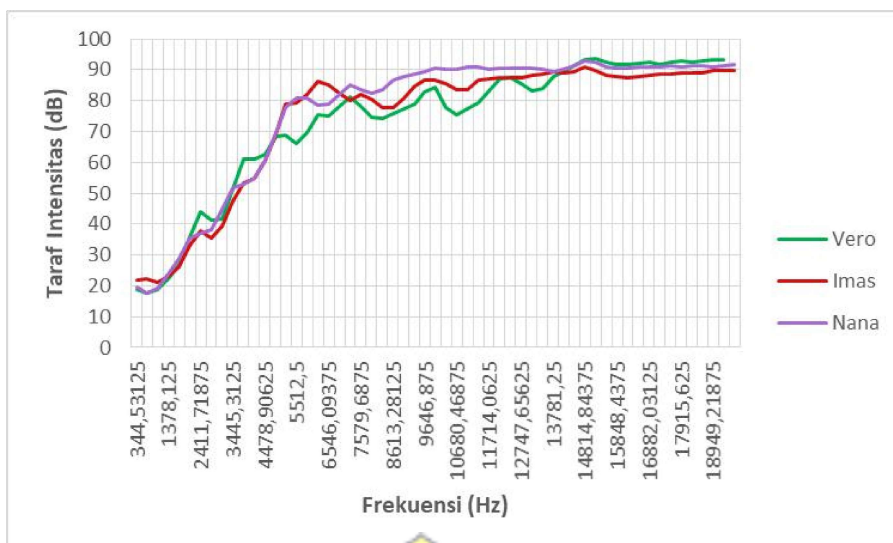
**Gambar 4** Perintah suara dua “2” untuk laki-laki



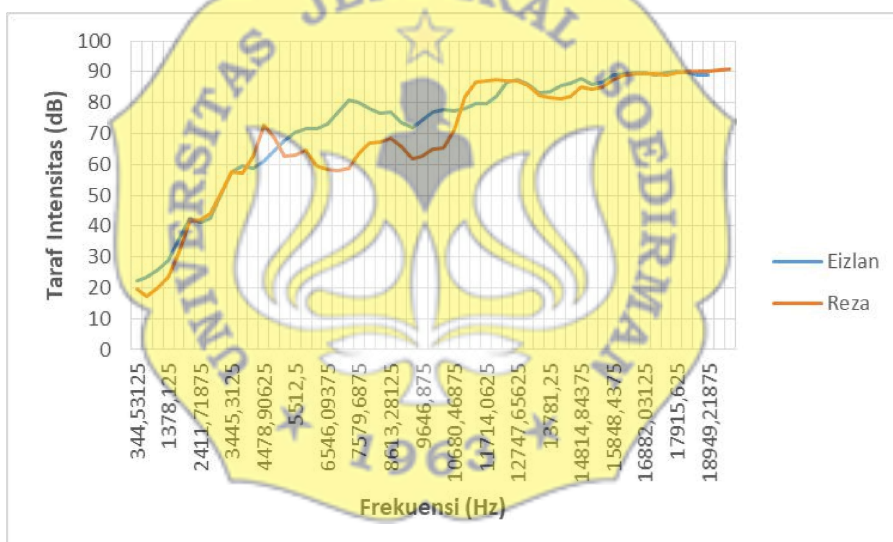
**Gambar 5** Perintah suara tiga “3” untuk perempuan



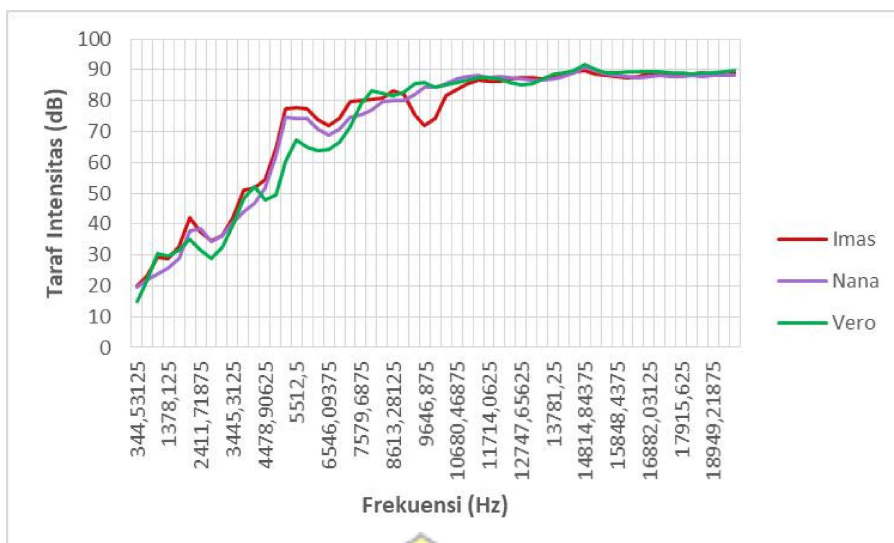
**Gambar 6** Perintah suara tiga “3” untuk laki-laki



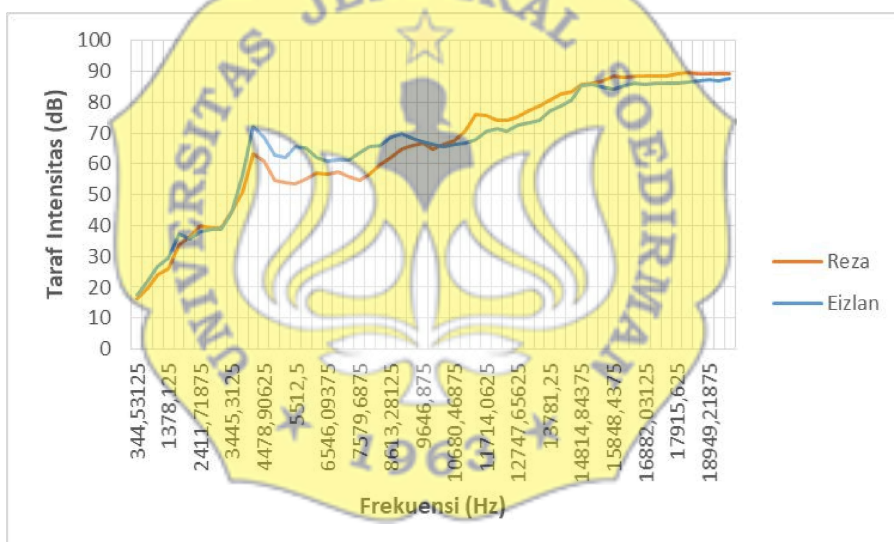
**Gambar 7** Perintah suara empat “4” untuk perempuan



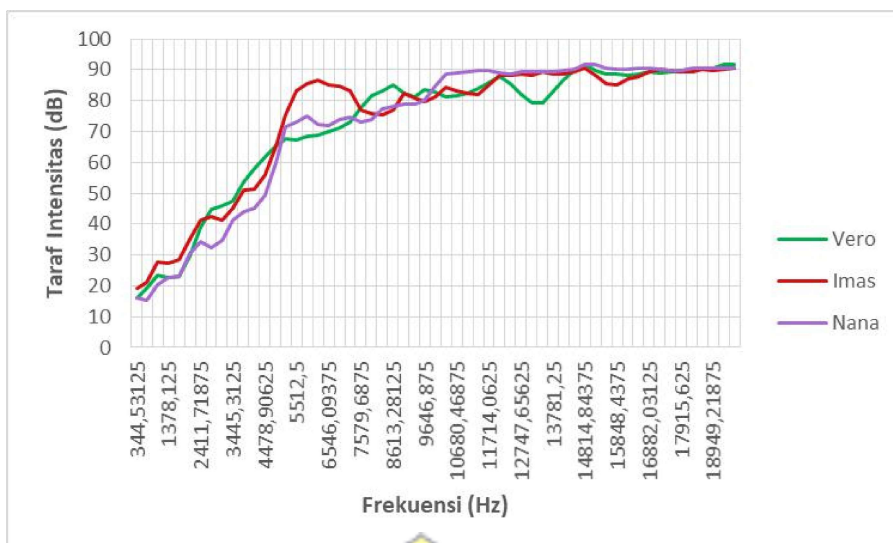
**Gambar 8** Perintah suara empat “4” untuk laki-laki



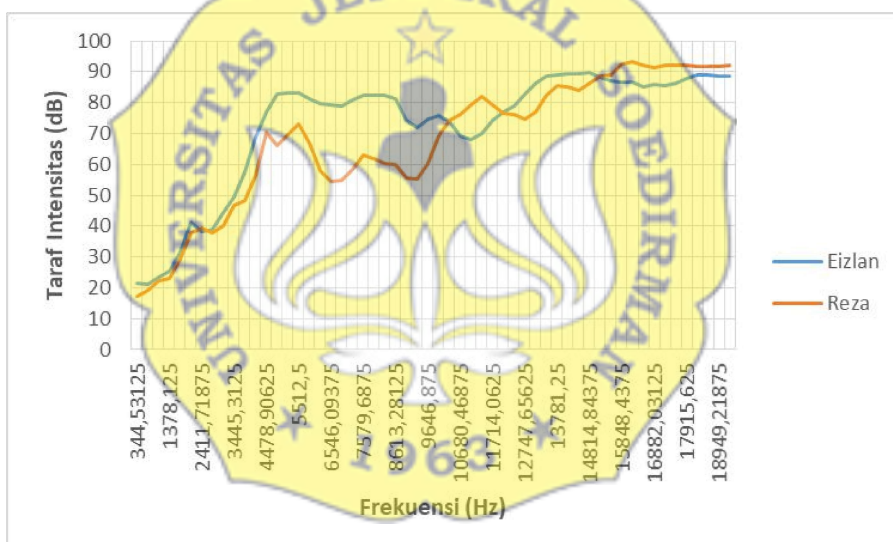
Gambar 9 Perintah suara lima "5" untuk perempuan



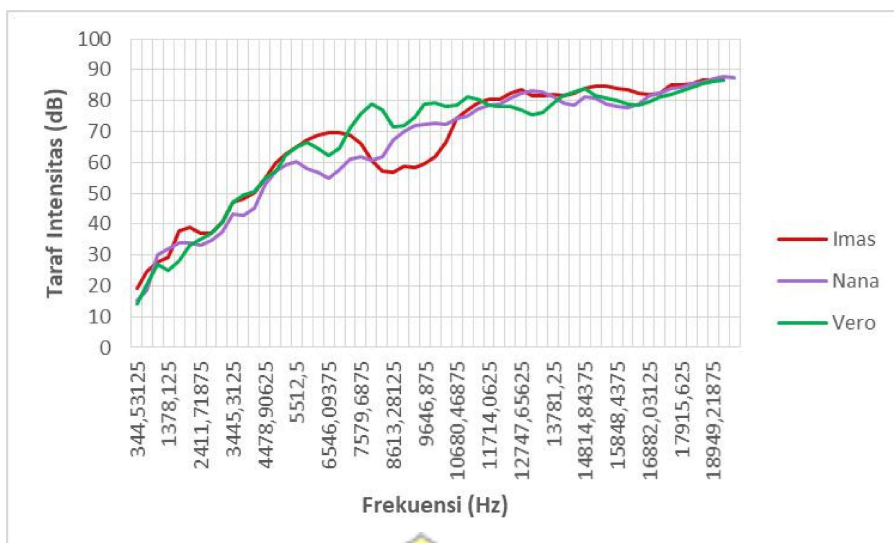
Gambar 10 Perintah suara lima "5" untuk laki-laki



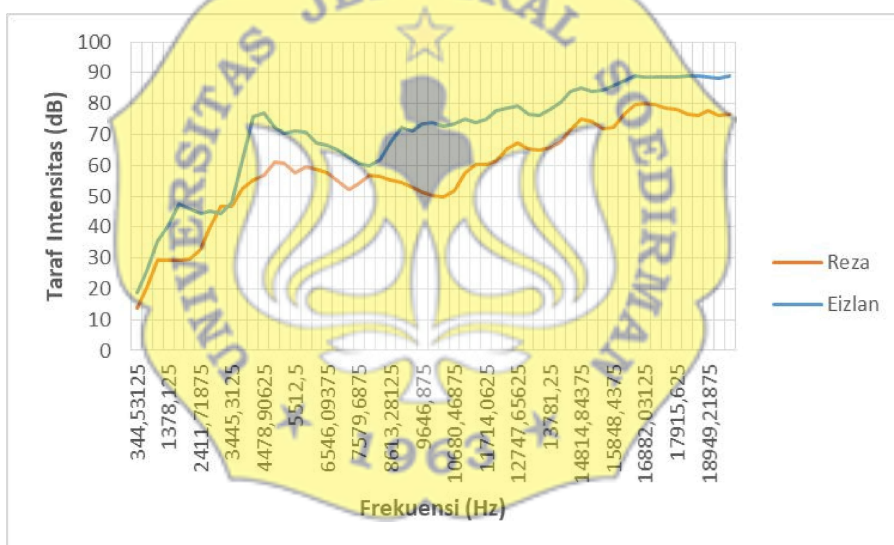
Gambar 11 Perintah suara enam “6” untuk perempuan



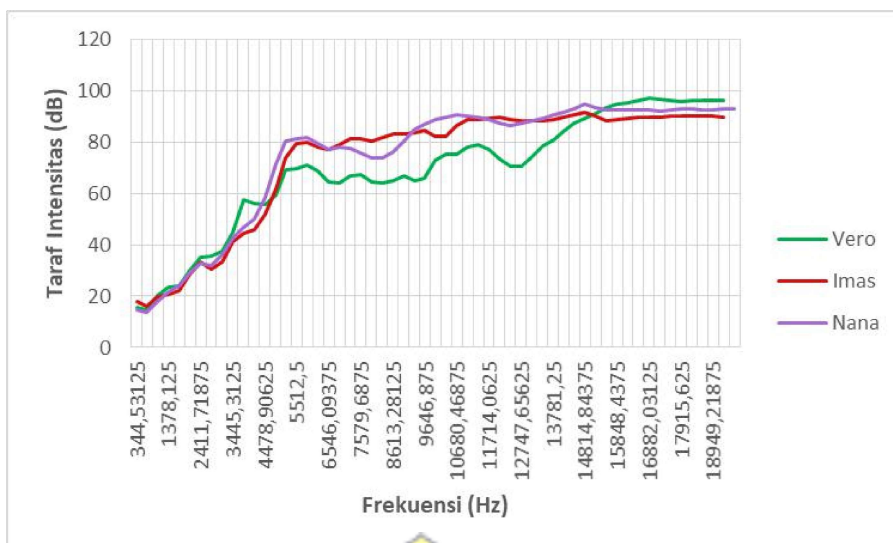
Gambar 12 Perintah suara enam “6” untuk laki-laki



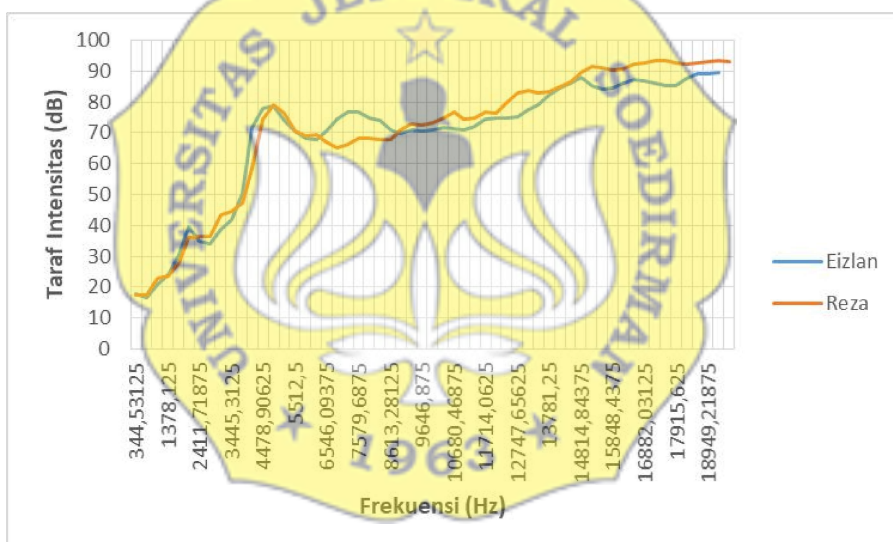
Gambar 13 Perintah suara tujuh “7” untuk perempuan



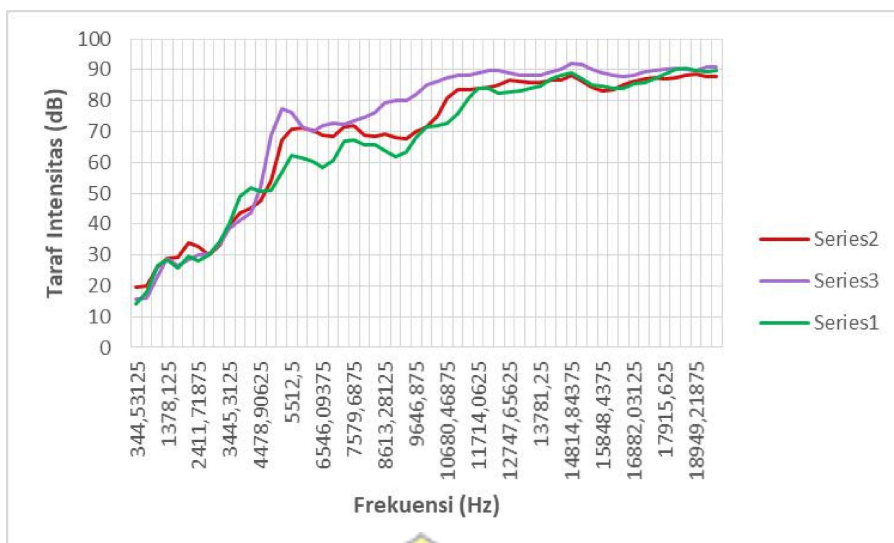
Gambar 14 Perintah suara tujuh “7” untuk laki-laki



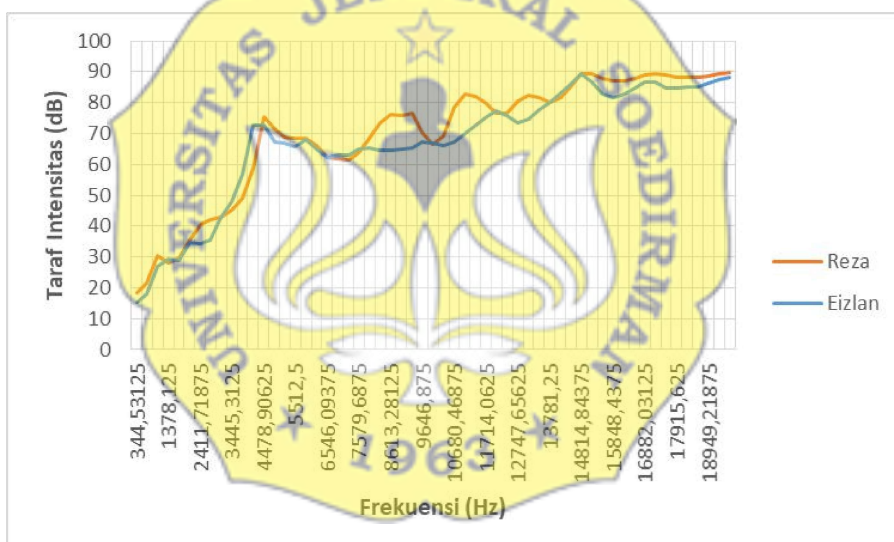
Gambar 15 Perintah suara delapan “8” untuk perempuan



Gambar 16 Perintah suara delapan “8” untuk laki-laki

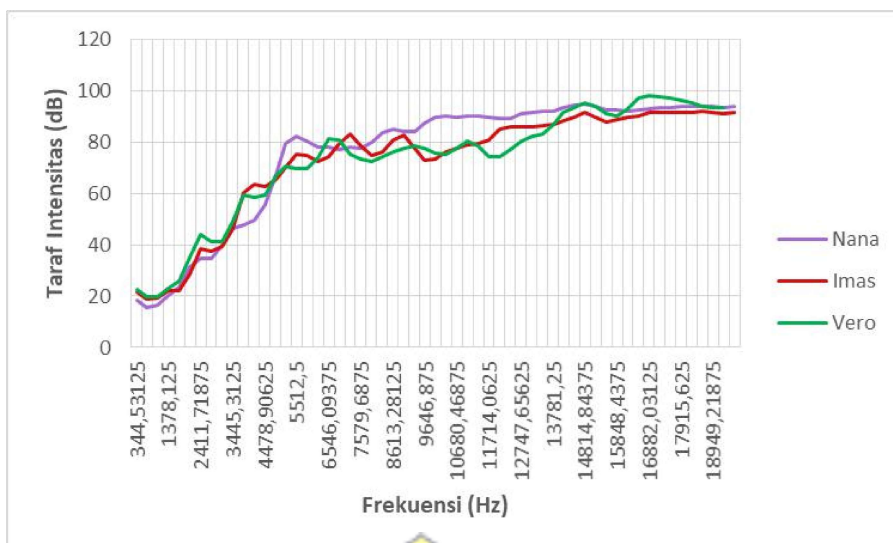


**Gambar 17** Perintah suara sembilan “9” untuk perempuan

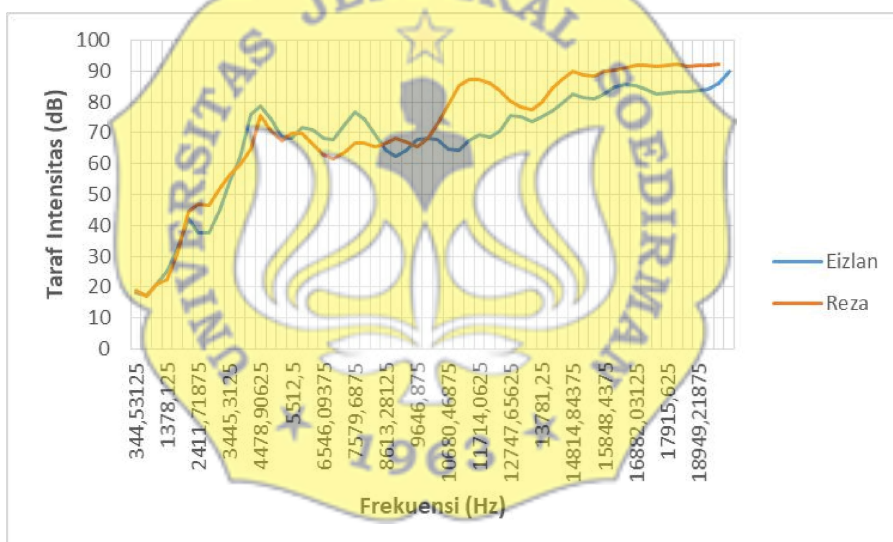


**Gambar 18** Perintah suara sembilan “9” untuk laki-laki

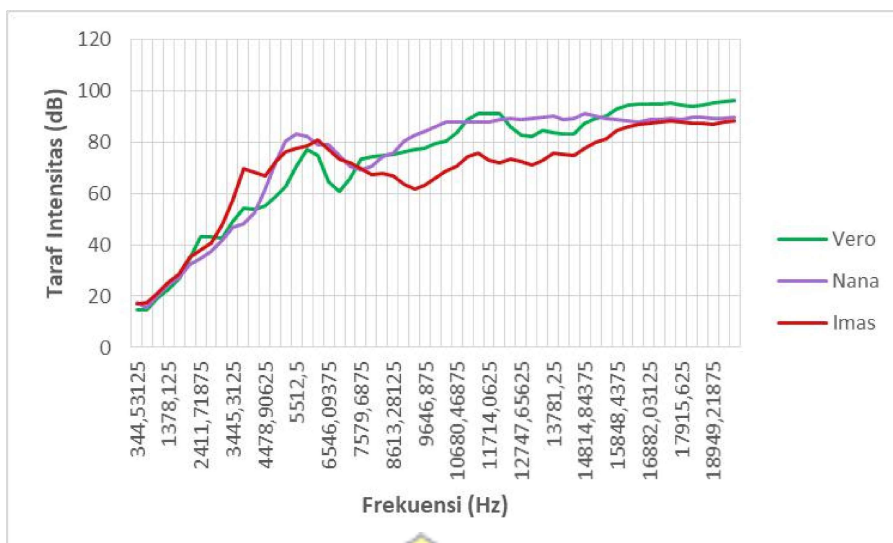




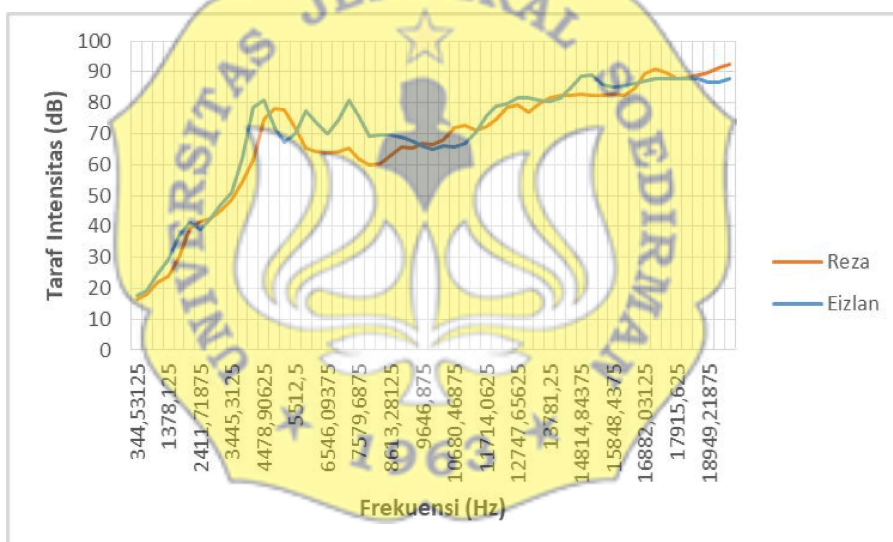
Gambar 19 Perintah suara tambah “+” untuk perempuan



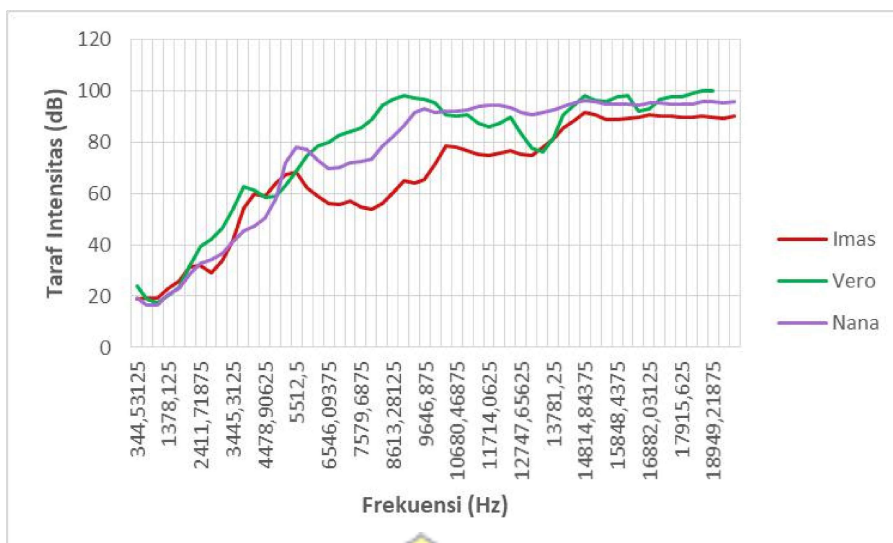
Gambar 20 Perintah suara tambah “+” untuk laki-laki



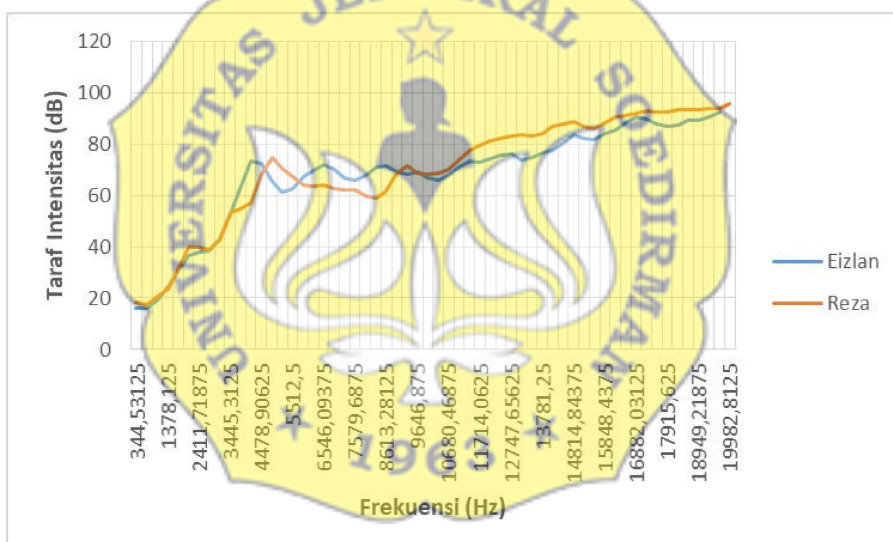
Gambar 21 Perintah suara kurang “-” untuk perempuan



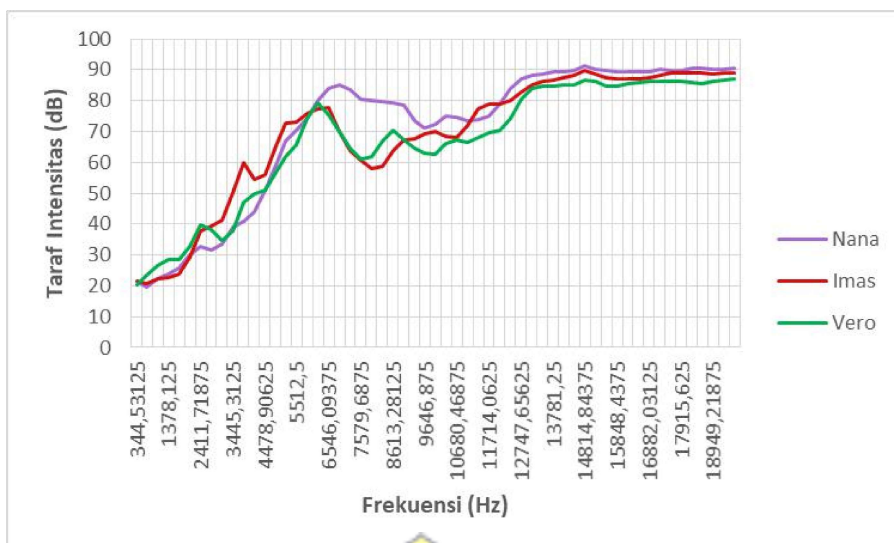
Gambar 22 Perintah suara kurang “-” untuk laki-laki



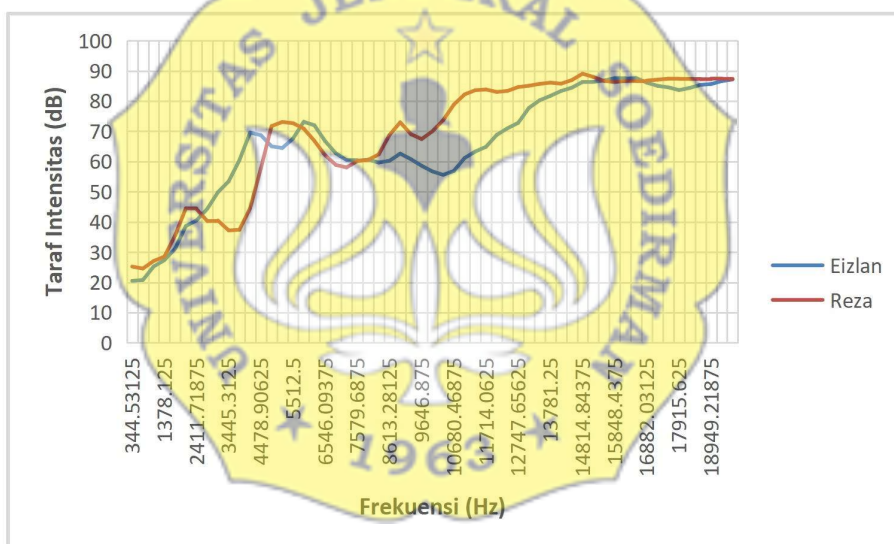
Gambar 23 Perintah suara kali “x” untuk perempuan



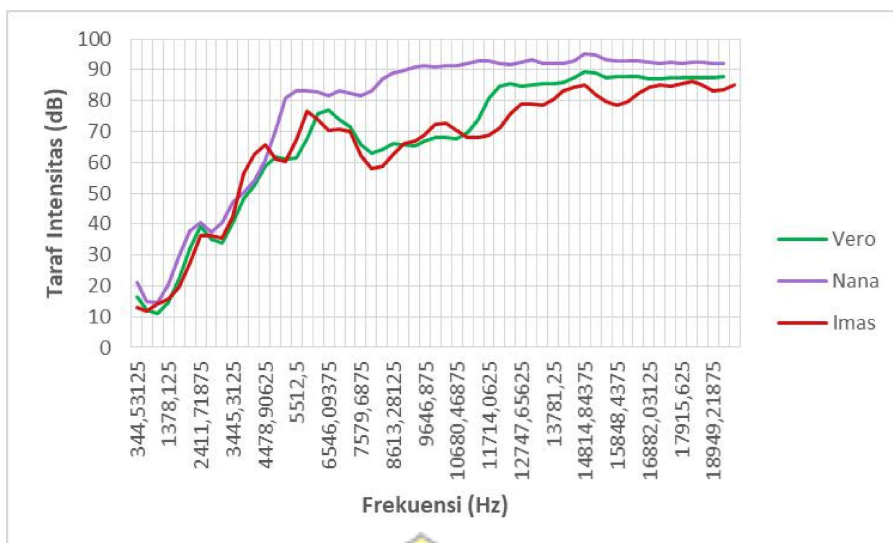
Gambar 24 Perintah suara kali “x” untuk laki-laki



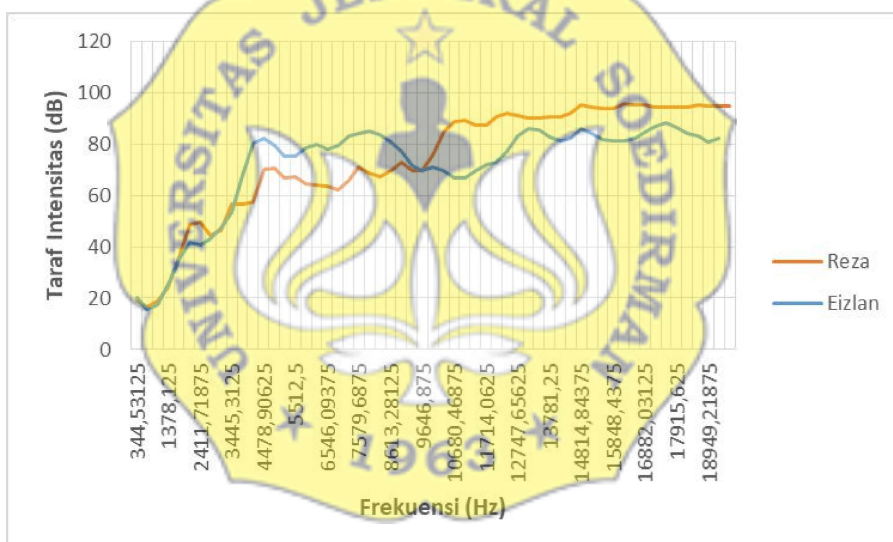
Gambar 25 Perintah suara sama dengan “=” untuk perempuan



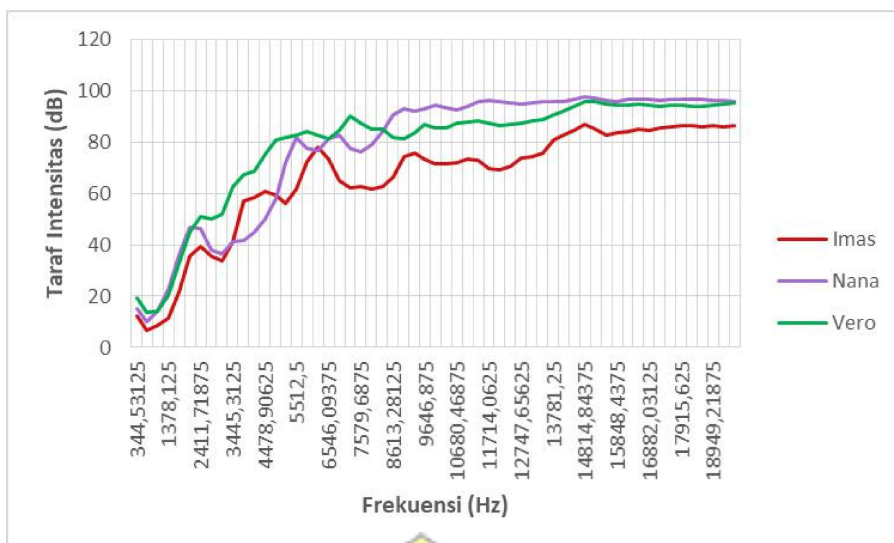
Gambar 26 Perintah suara sama dengan “=” untuk laki-laki



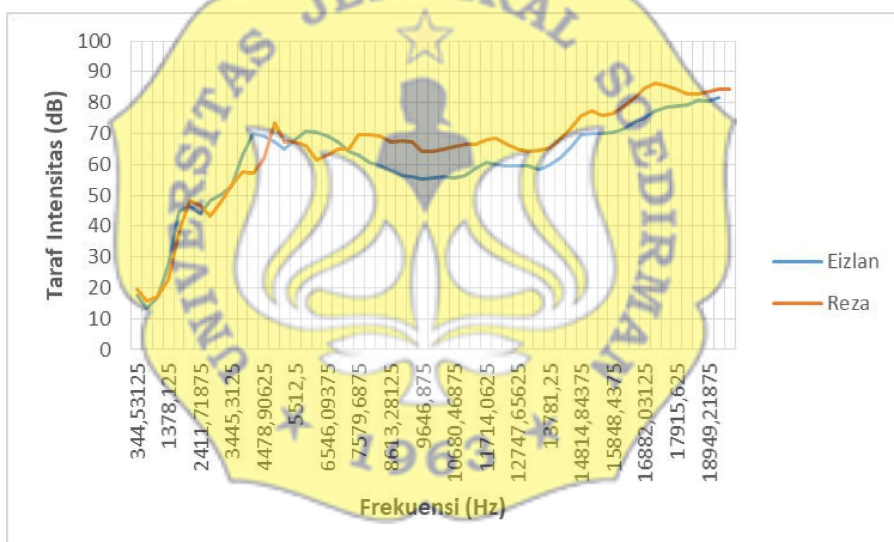
Gambar 27 Perintah suara “:” untuk perempuan



Gambar 28 Perintah suara “:” untuk laki-laki

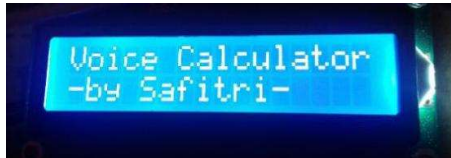


Gambar 29 Perintah clear clear untuk perempuan

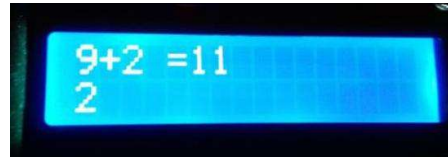


Gambar 30 Perintah suara clear untuk laki-laki

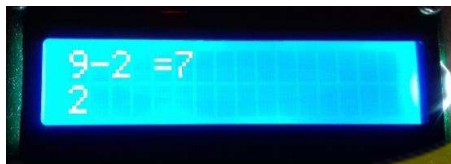
### LAMPIRAN 3 : Pengujian Kalkulator



**Gambar 1** Tampilan awal kalkulator



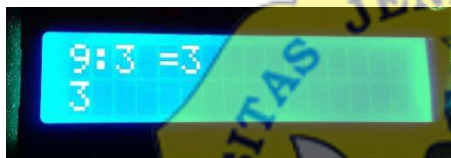
**Gambar 2** Operasi  $9+2=$



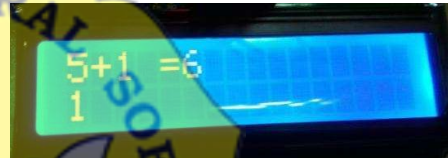
**Gambar 3** Operasi  $9-2=$



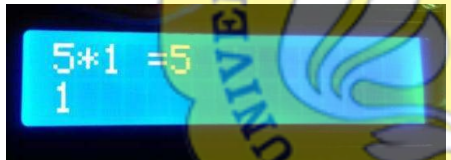
**Gambar 4** Operasi  $9*2=$



**Gambar 5** Operasi  $9:3=$



**Gambar 6** Operasi  $5+1=$



**Gambar 7** Operasi  $5*1=$



**Gambar 13** Operasi  $8+4=$



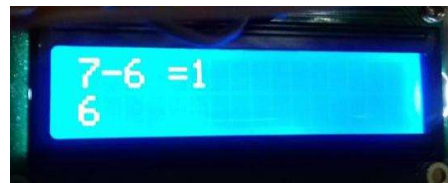
**Gambar 9** Operasi  $7+6=$



**Gambar 8** Operasi  $5:1=$



**Gambar 11** Operasi  $7*6=$



**Gambar 10** Operasi  $7-6=$





## RIWAYAT HIDUP

<b>Nama</b>	:	Safitri	
<b>TTL</b>	:	Banjarnegara, 30 Januari 1996	
<b>NIM</b>	:	K1C015044	
<b>Jenis Kelamin</b>	:	Perempuan	
<b>Agama</b>	:	Islam	
<b>Golongan Darah</b>	:	AB	
<b>No. Telp/HP</b>	:	085647881927	
<b>Email</b>	:	<a href="mailto:safsafitri44@gmail.com">safsafitri44@gmail.com</a>	
<b>Alamat</b>	:	Winong RT 03 RW 04 Kecamatan Bawang Kabupaten Banjarnegara, Jawa Tengah	

### PENDIDIKAN FORMAL

Tahun Lulus	Pendidikan
2007	SD Negeri 1 Winong
2010	SMP Negeri 1 Bawang
2013	SMA Negeri 1 Banjarnegara
2019	S1 Fisika Universitas Jenderal Soedirman

### PENGALAMAN ORGANISASI

Tahun	Jabatan
2016-2017	Staff Departemen Pers dan Media Himpunan Mahasiswa Fisika (HIMAFI Unsoed)
2017-2018	Staff Divisi Informasi Komunitas Elnst Jurusan Fisika FMIPA Unsoed