

Convolution of gaussian function with a MICR character "ON US" SYMBOL  
 Saved as MICRGAUC.MCD Nov. 29, 2003 Thomas D. Hayosh

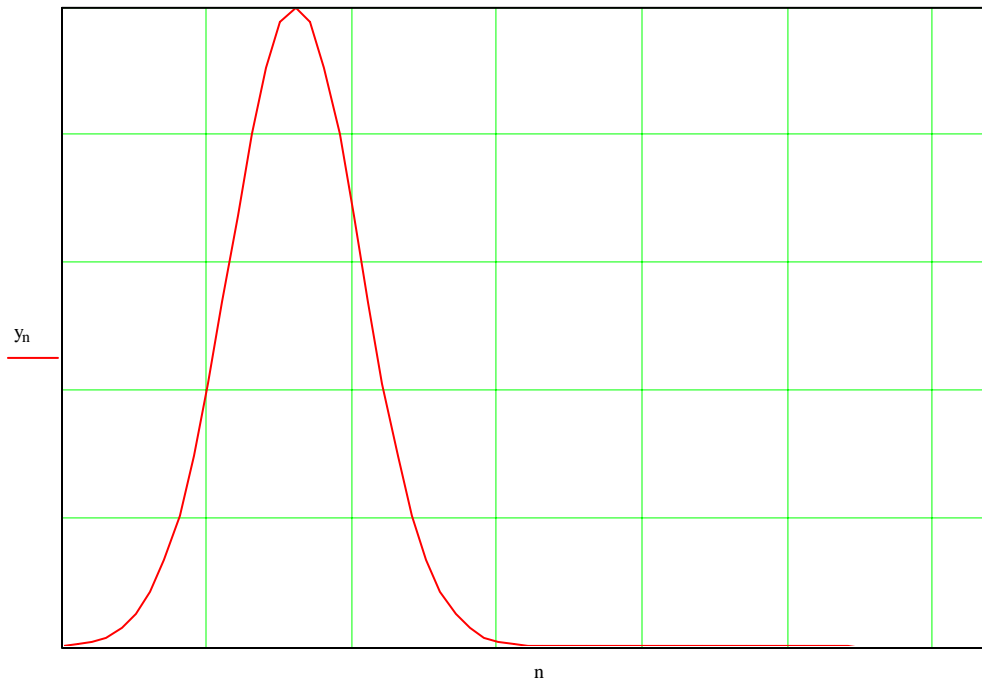
$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$

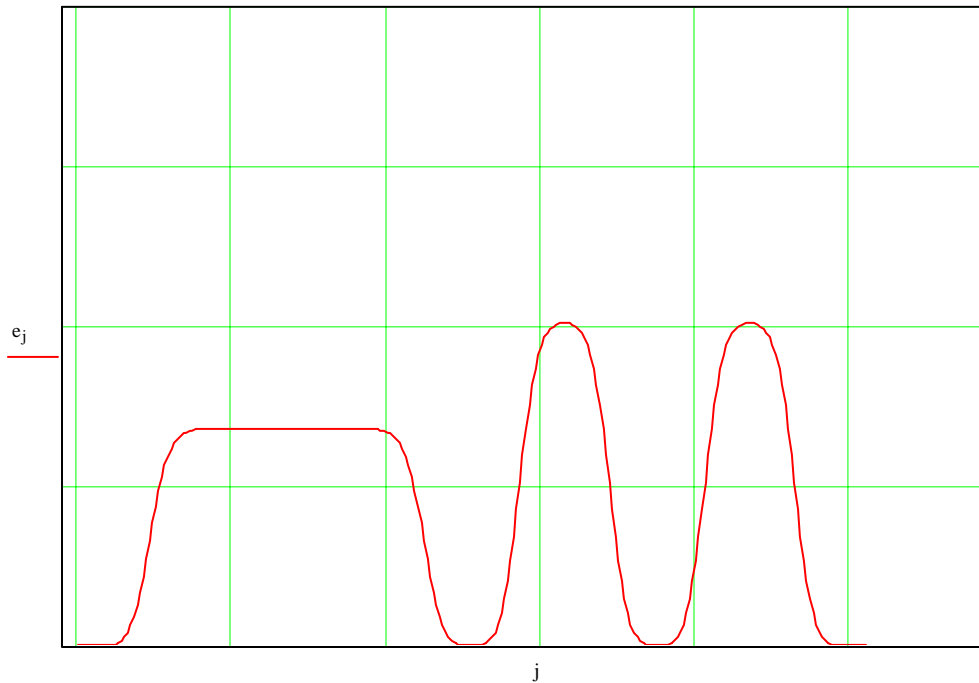


```

y0 = 0.0018
y1 = 0.0039
y33 = 7.9617 × 10-4
v := READPRN("OnUS_MIC.dat")
j := 0..255
yl := length(y)
vl := length(v)
n := 0..255
y_j := if(j < yl, y_j, 0)
v_j := if(j < vl, v_j, 0)
CONV(A, B) := 2 · ifft(fft(A) · fft(B))
c := CONV(y, v)
d_j := (Re(c_j)2 + Im(c_j)2).5
  
```

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The factor 1.01 adjusts for the highest peak.



$j := 0..511$

$e_l := \text{length}(e)$

$e_j := \text{if}(j < e_l, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"onus\_cvg.dat"} ) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

$EO_k := z_k \cdot FA_k \cdot FH_k$

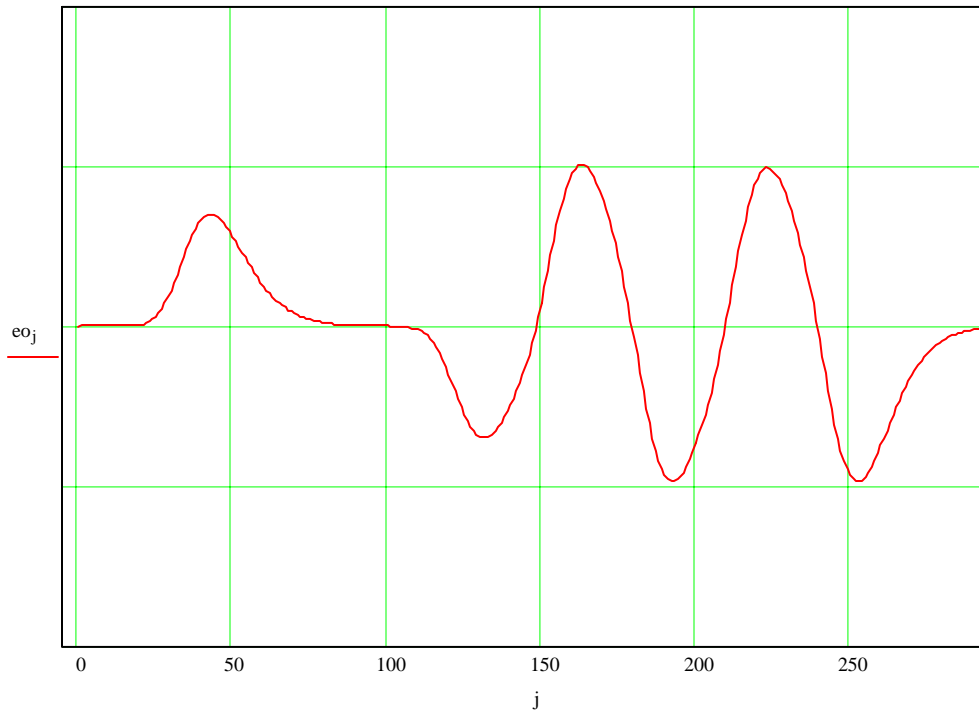
$f := \text{ifft}(EO)$

$$e_{o_j} := f_j \cdot \frac{1}{3.0668}$$

The factor 3.0668 is a normalizing factor.

$e_{p_j} := 100 \cdot e_{o_j}$

$$\frac{\max(f)}{1.01} = 3.0668$$



```
WRITEPRN("onus_pkg.dat" ) := ep  
Peak data from ep is
```

```
1st peak 69.55  
2nd peak -69.98  
3rd peak 101  
4th peak -97.27  
5th peak 98.92  
6th peak -97.3  
max(ep) = 100.9984
```

The first peak occurs at value # 44

Convolution of gaussian function with a MICR character CHARACTER "0"  
 Saved as MICRGAU0.MCD Nov.29, 2003 Thomas D. Hayosh

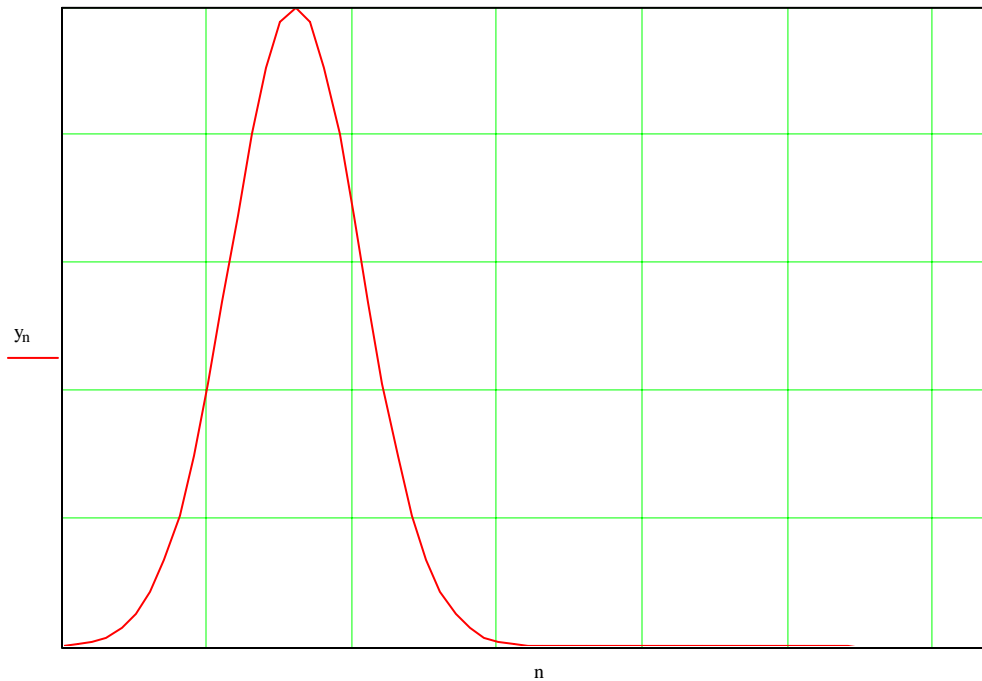
$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{e^{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}}$$



$$y_0 = 0.0018$$

$$y_1 = 0.0039$$

$$y_{33} = 7.9617 \times 10^{-4}$$

$$v := \text{READPRN}(\text{"zero\_MIC.dat"})$$

$$j := 0..255$$

$$y_l := \text{length}(y)$$

$$v_l := \text{length}(v)$$

$$n := 0..255$$

$$y_j := \text{if}(j < y_l, y_j, 0)$$

$$v_j := \text{if}(j < v_l, v_j, 0)$$

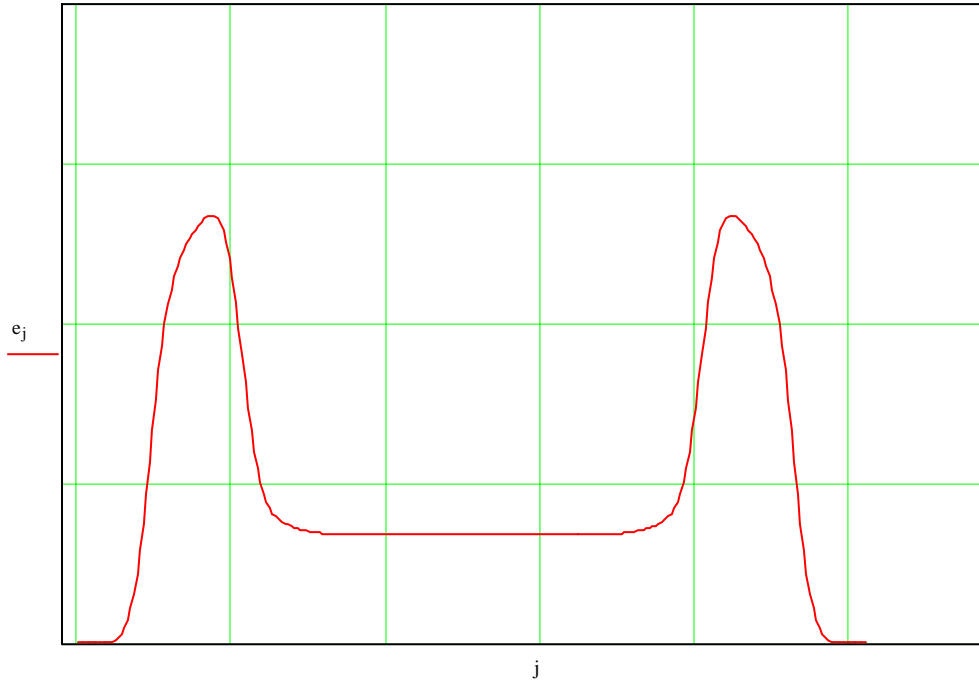
$$\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$$

$$c := \text{CONV}(y, v)$$

$$d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$$

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references all waveforms to the On-U's Symbol peak(s) 3 and 5.



`j := 0..511`

`el := length(e)`

`e_j := if(j < el, e_j, 0)`

`max(e) = 1.3375`

`z := fft(e)`

`b := 39.81`

`WRITEPRN("zero_cvg.dat" ) := e`

`a := 17.29`

`i :=  $\sqrt{-1}$`

`k := 0..256`

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

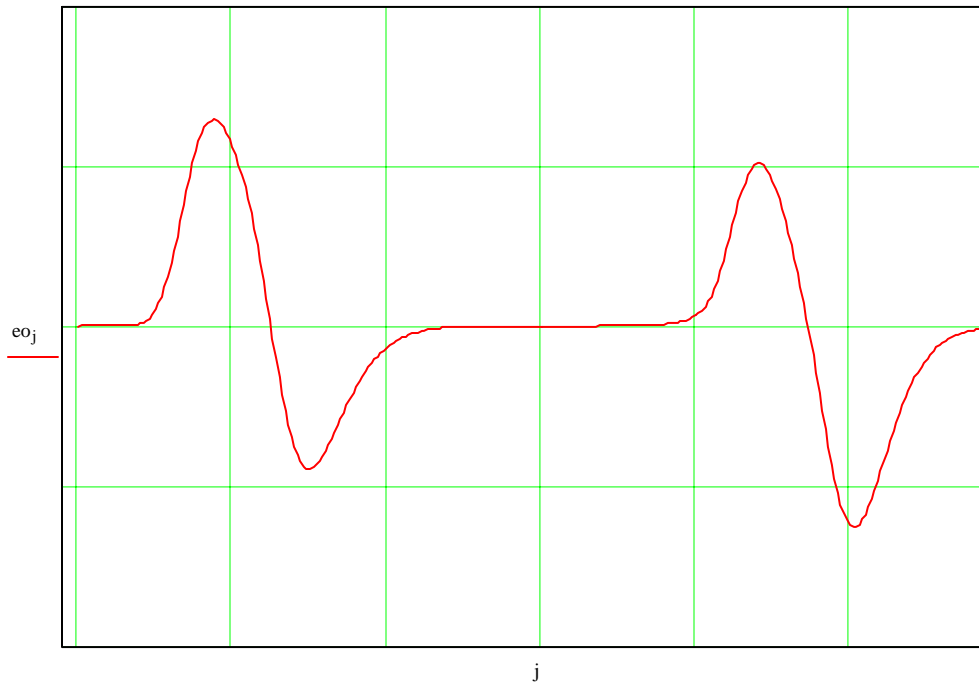
`EO_k := z_k \cdot FA_k \cdot FH_k`

`f := ifft(EO)`

$$eo_j := f_j \cdot \frac{1}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

`ep_j := 100 \cdot eo_j`



WRITEPRN("zero\_pkg.dat" ) := ep

Peak data is

1st peak 129.08

2nd peak -89.18

3rd peak 102.1

4th peak -125.5

5th peak

6th peak

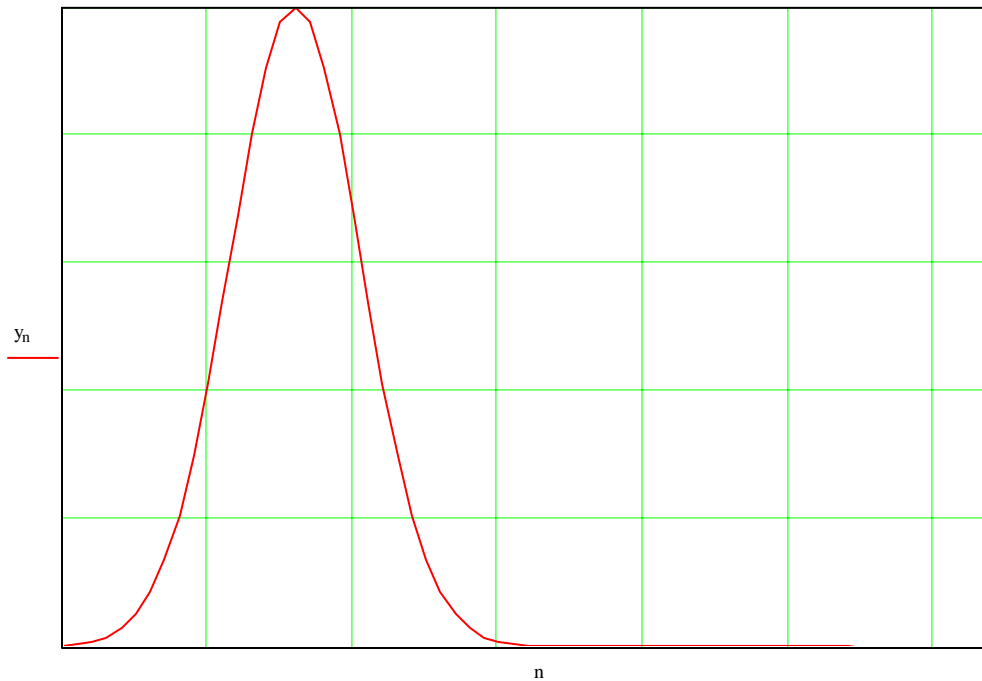
max(ep) = 129.0786

The first peak occurs at value # 45

Convolution of gaussian function with a MICR character CHARACTER "1"  
 Saved as MICRGAU1.MCD Nov. 29, 2003 Thomas D. Hayosh

$\sigma := 1.95 \cdot 10^{-3}$   
 $n := 0..64$   
 $K := 4.3333 \cdot 10^{-4}$   
 $k_n := (n - 16) \cdot K$   

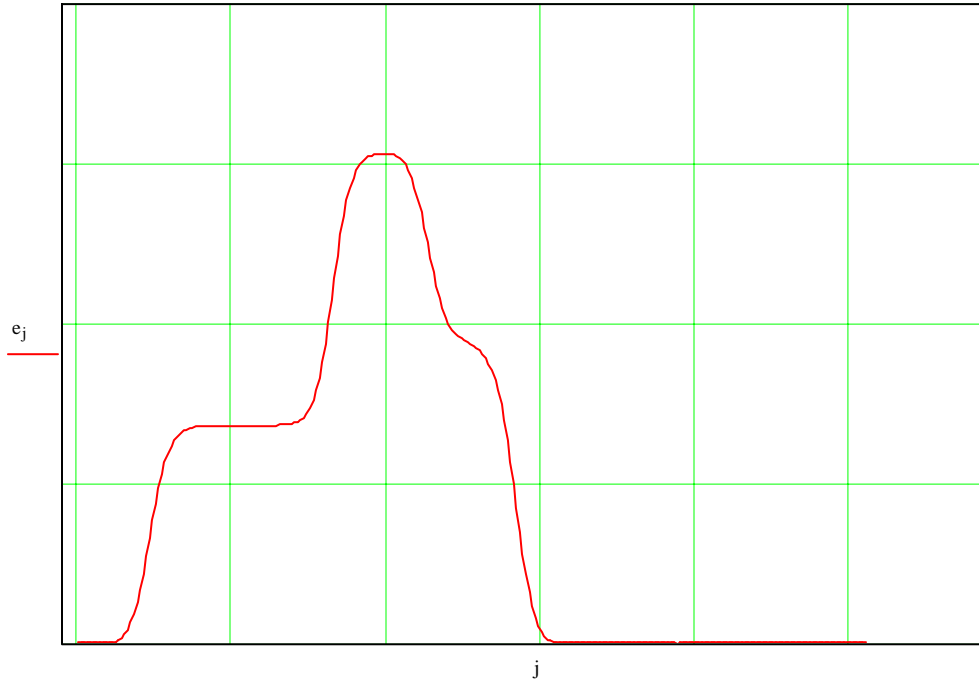
$$y_n := \frac{1}{e^{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}}$$



$y_0 = 0.0018$   
 $y_1 = 0.0039$   
 $y_{33} = 7.9617 \times 10^{-4}$   
 $v := \text{READPRN}(\text{"One\_MIC.dat"})$   
 $j := 0..255$   
 $y_l := \text{length}(y)$   
 $v_l := \text{length}(v)$   
 $n := 0..255$   
 $y_j := \text{if}(j < y_l, y_j, 0)$   
 $v_j := \text{if}(j < v_l, v_j, 0)$   
 $\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$   
 $c := \text{CONV}(y, v)$   
 $d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references the waveform to peak(s) 3 and 5 of the On-U's Symbol.



$j := 0..511$

$el := \text{length}(e)$

$e_j := \text{if}(j < el, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"one\_cvg.dat"} ) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

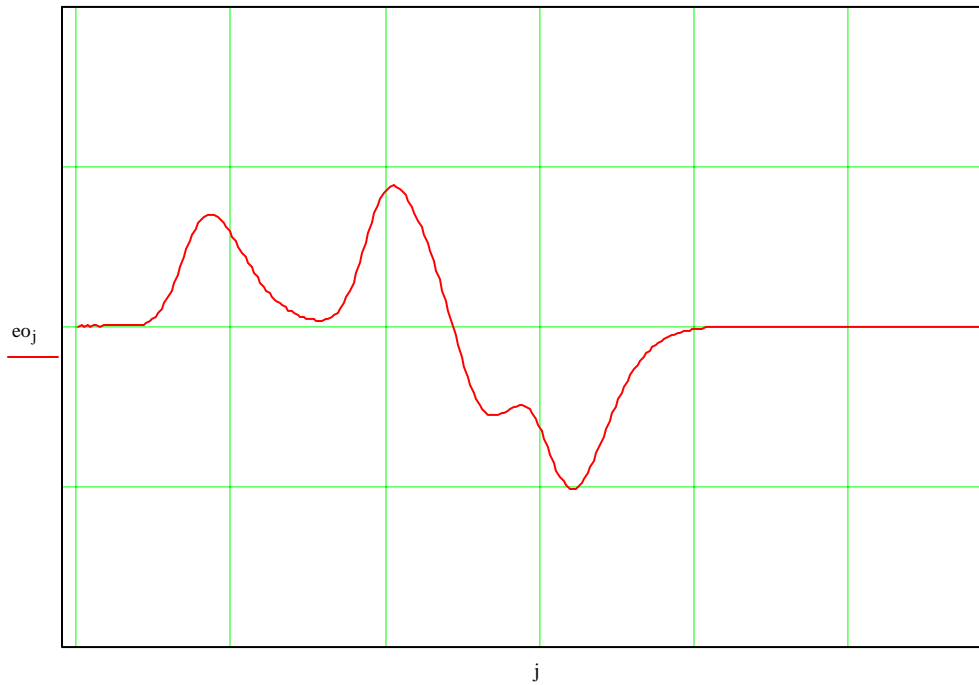
$EO_k := z_k \cdot FA_k \cdot FH_k$

$f := \text{ifft}(EO)$

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

$ep_j := 100 \cdot eo_j$



```
WRITEPRN("one_pkg.dat" ) := ep
```

Peak data is

1st peak 69.55

2nd peak 87.50

3rd peak -56.13

4th peak -101.9

5th peak

6th peak

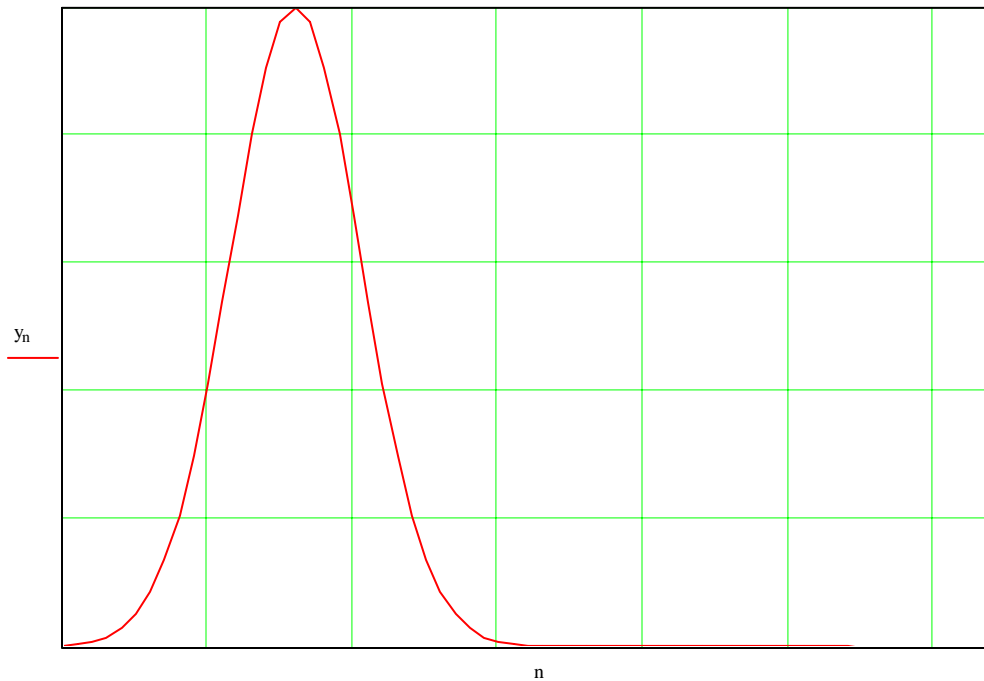
$\max(ep) = 87.5024$

The first peak occurs at value # 44

Convolution of gaussian function with a MICR character CHARACTER "2"  
 Saved as MICRGAU2.MCD Nov. 29, 2003 Thomas D. Hayosh

$\sigma := 1.95 \cdot 10^{-3}$   
 $n := 0..64$   
 $K := 4.3333 \cdot 10^{-4}$   
 $k_n := (n - 16) \cdot K$   

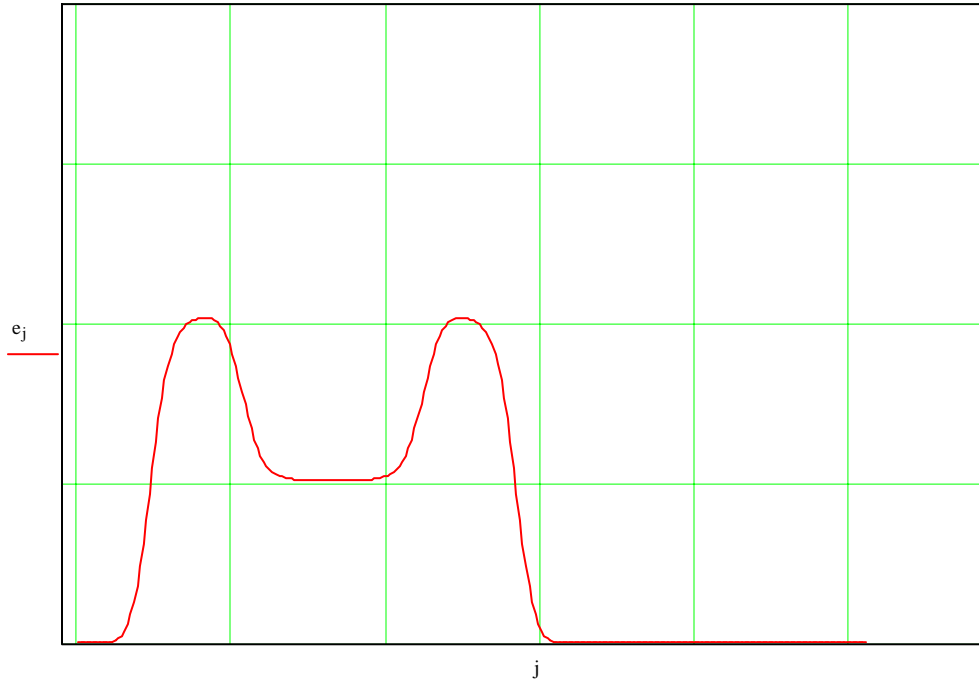
$$y_n := \frac{1}{e^{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}}$$



$y_0 = 0.0018$   
 $y_1 = 0.0039$   
 $y_{33} = 7.9617 \times 10^{-4}$   
 $v := \text{READPRN}(\text{"TWO\_MIC.dat"})$   
 $j := 0..255$   
 $y_l := \text{length}(y)$   
 $v_l := \text{length}(v)$   
 $n := 0..255$   
 $y_j := \text{if}(j < y_l, y_j, 0)$   
 $v_j := \text{if}(j < v_l, v_j, 0)$   
 $\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$   
 $c := \text{CONV}(y, v)$   
 $d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references the waveform to peak(s) 3 and 5 of the On-U's Symbol.



`j := 0..511`

`el := length(e)`

`e_j := if(j < el, e_j, 0)`

`z := fft(e)`

`b := 39.81`

`WRITEPRN("TWO_cvq.dat" ) := e`

`a := 17.29`

`i :=  $\sqrt{-1}$`

`k := 0..256`

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

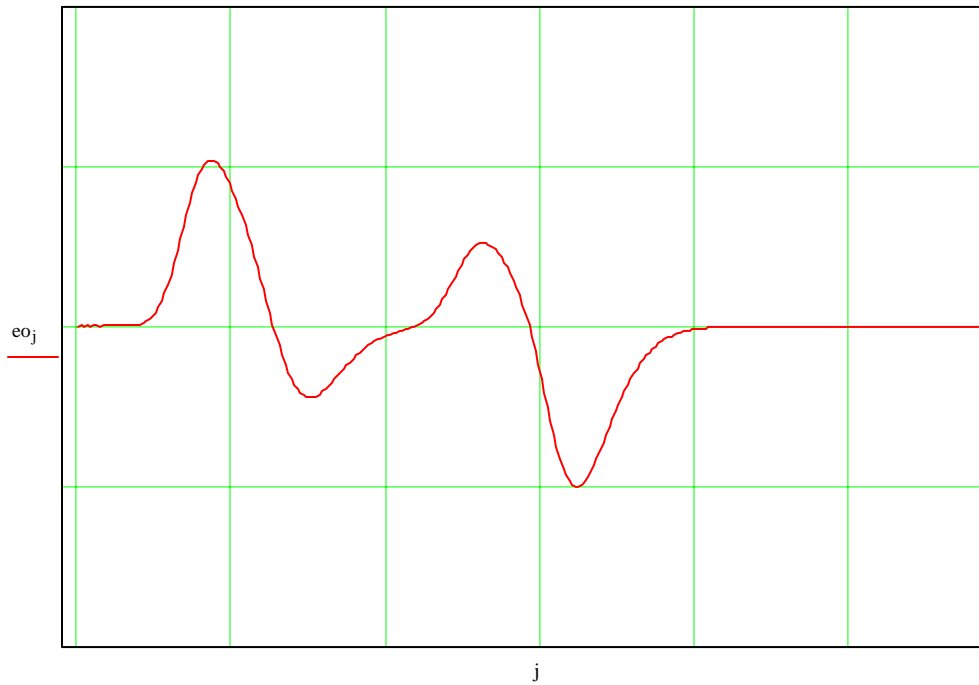
$$EO_k := z_k \cdot FA_k \cdot FH_k$$

`f := ifft(EO)`

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

`ep_j := 100 \cdot eo_j`



```
WRITEPRN("TWO_pkg.dat" ) := ep
```

Peak data is

1st peak 103.52

2nd peak -44.71

3rd peak 51.96

4th peak -100.7

5th peak

6th peak

$\max(ep) = 103.5226$

The first peak occurs at value # 44

Convolution of gaussian function with a MICR character CHARACTER "3"  
 Saved as MICRGAU3.MCD Nov. 29, 2003 Thomas D. Hayosh

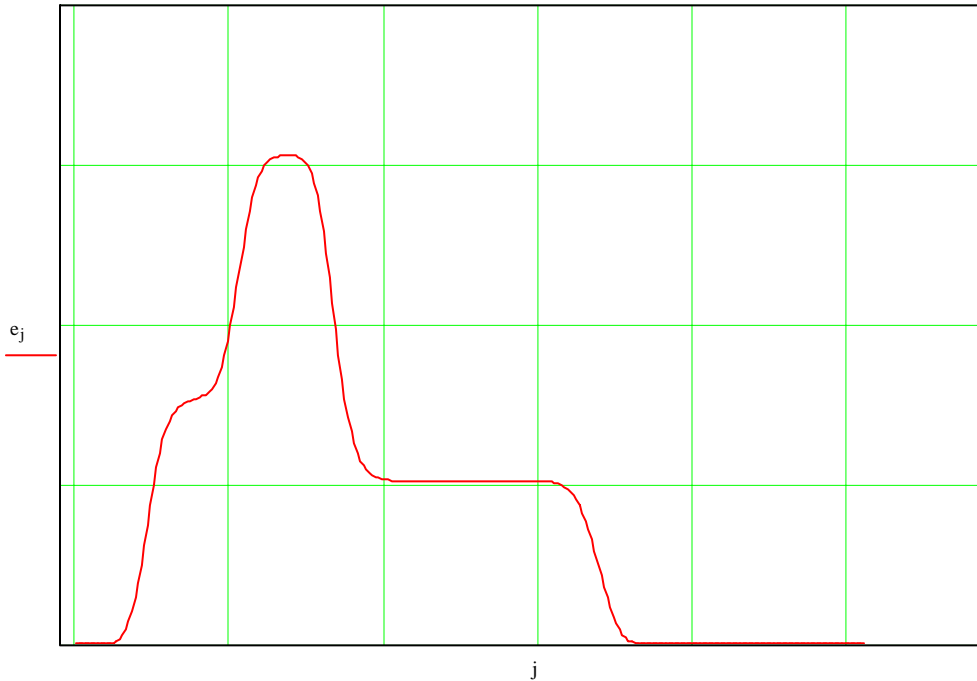
$\sigma := 1.95 \cdot 10^{-3}$   
 $n := 0..64$   
 $K := 4.3333 \cdot 10^{-4}$   
 $k_n := (n - 16) \cdot K$   

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$



$y_0 = 0.0018$   
 $y_1 = 0.0039$   
 $y_{33} = 7.9617 \times 10^{-4}$   
 $v := \text{READPRN}(\text{"THRE\_MIC.dat"})$   
 $j := 0..255$   
 $y_l := \text{length}(y)$   
 $v_l := \text{length}(v)$   
 $n := 0..255$   
 $y_j := \text{if}(j < y_l, y_j, 0)$   
 $v_j := \text{if}(j < v_l, v_j, 0)$   
 $\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$   
 $c := \text{CONV}(y, v)$   
 $d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$   
 $e_j := \frac{d_j}{251.07} \cdot 1.01$

The factor in the numerator references the waveform to peak(s) 3 and 5 of the On-Us symbol.



$j := 0..511$

$el := \text{length}(e)$

$e_j := \text{if}(j < el, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"THRE\_cvg.dat"}) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

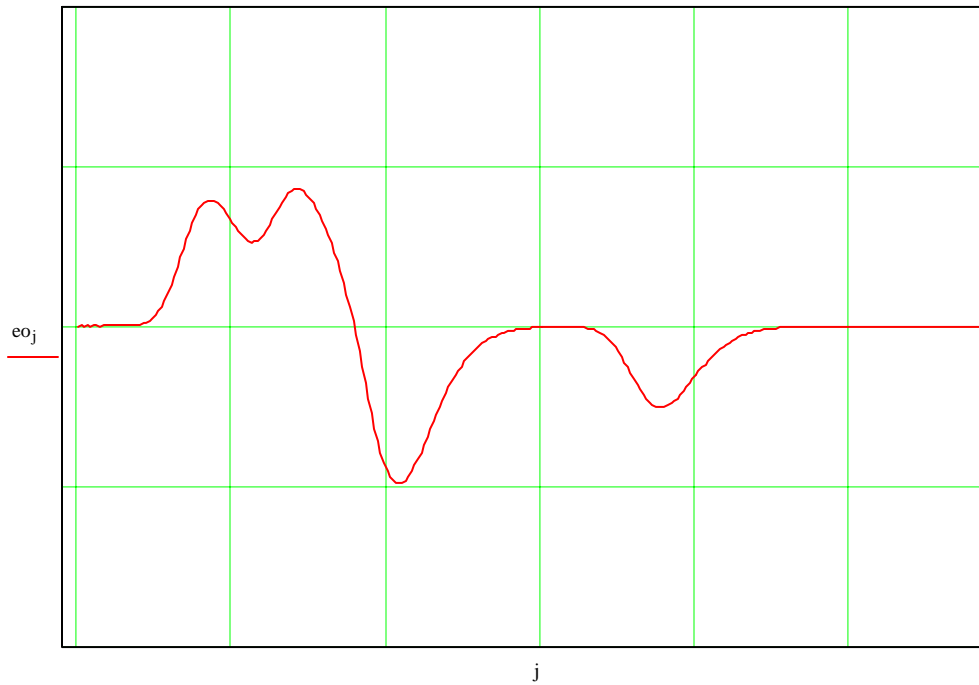
$EO_k := z_k \cdot FA_k \cdot FH_k$

$f := \text{ifft}(EO)$

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

$ep_j := 100 \cdot eo_j$



```
WRITEPRN("THRE_pkg.dat") := ep
```

Peak data is

1st peak 78.55

2nd peak 85.52

3rd peak -98.75

4th peak -51.07

5th peak

6th peak

$\max(ep) = 85.5227$

The first peak occurs at value # 44

$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$

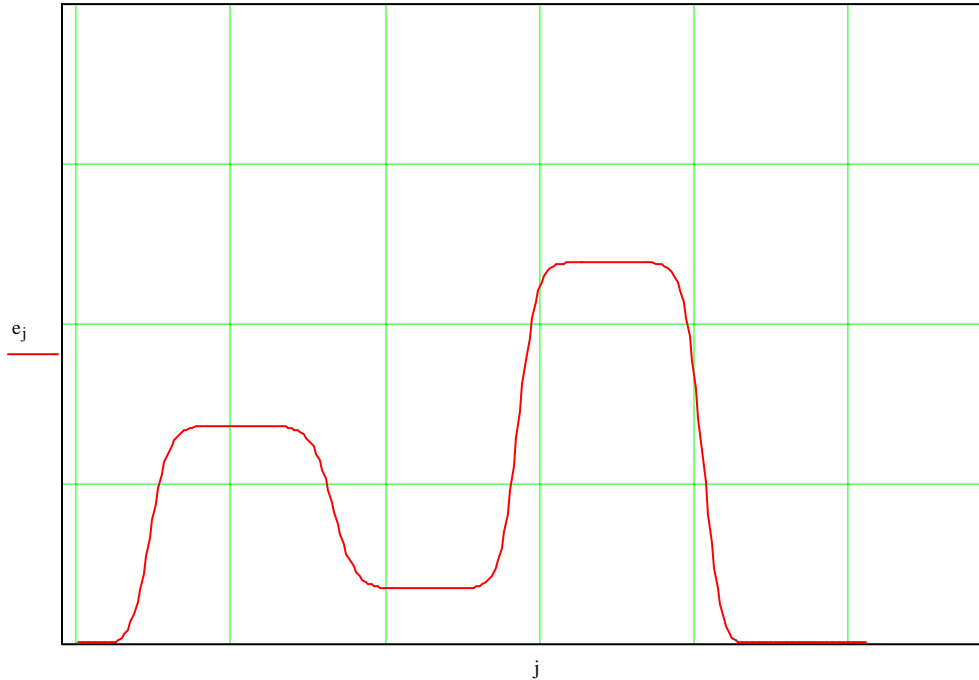


```

y0 = 0.0018
y1 = 0.0039
y33 = 7.9617 × 10-4
v := READPRN("four_MIC.dat")
j := 0..255
yl := length(y)
vl := length(v)
n := 0..255
y_j := if(j < yl, y_j, 0)
v_j := if(j < vl, v_j, 0)
CONV(A, B) := 2 · ifft(fft(A) · fft(B))
c := CONV(y, v)
d_j := (Re(c_j)2 + Im(c_j)2).5
    
```

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references peak(s) 3 and 5 of the On-U's Symbol.



`j := 0..511`

`el := length(e)`

`e_j := if(j < el, e_j, 0)`

`z := fft(e)`

`b := 39.81`

`WRITEPRN("four_cvg.dat" ) := e`

`a := 17.29`

`i := √-1`

`k := 0..256`

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

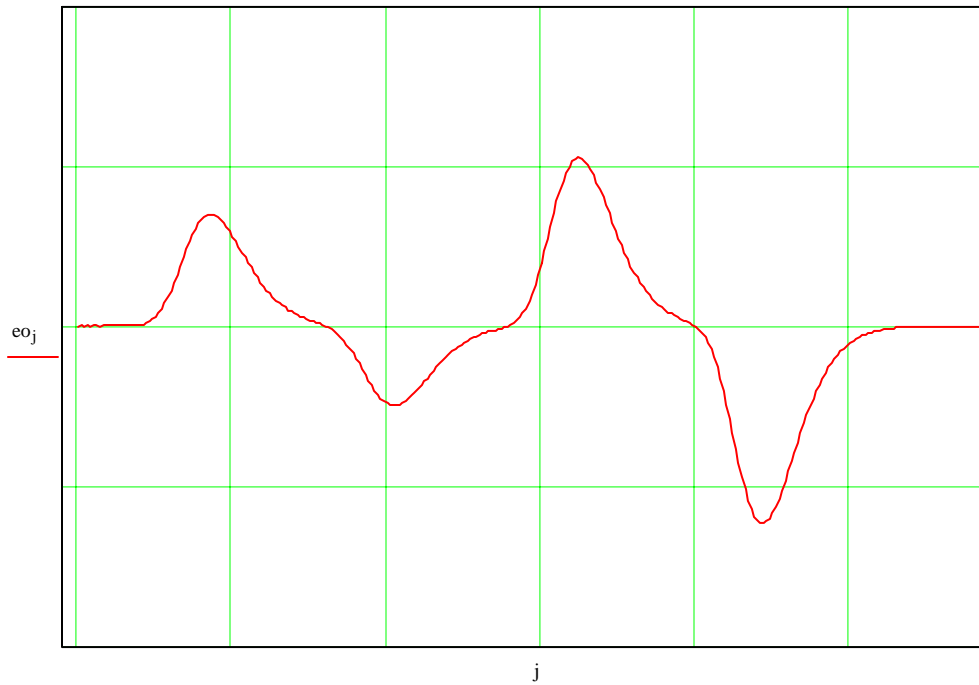
`EO_k := z_k \cdot FA_k \cdot FH_k`

`f := ifft(EO)`

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

`ep_j := 100 \cdot eo_j`



WRITEPRN("four\_pkg.dat" ) := ep

Peak data is

1st peak 69.55

2nd peak -49.66

3rd peak 105.3

4th peak -123.4

5th peak

6th peak

max(ep) = 105.2822

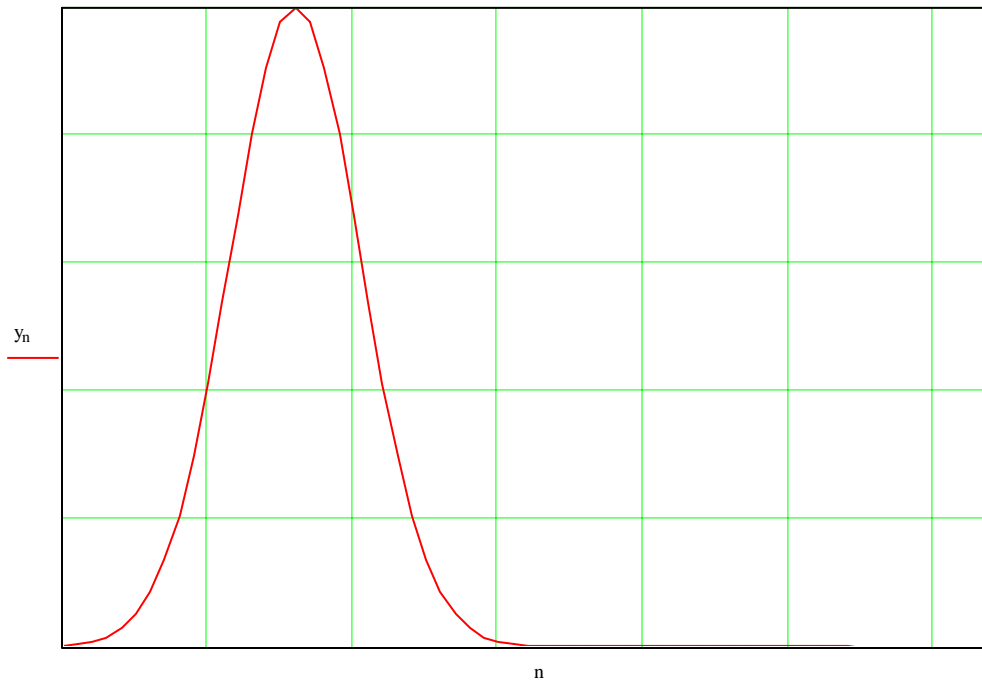
The first peak occurs at value # 44

Convolution of gaussian function with a MICR character CHARACTER "5"  
 Saved as MICRGAU5.MCD Nov. 29, 2003 Thomas D. Hayosh

```

σ := 1.95·10-3
n := 0..64
K := 4.3333·10-4
kn := (n - 16)·K
yn :=  $\frac{1}{e^{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}}$ 

```



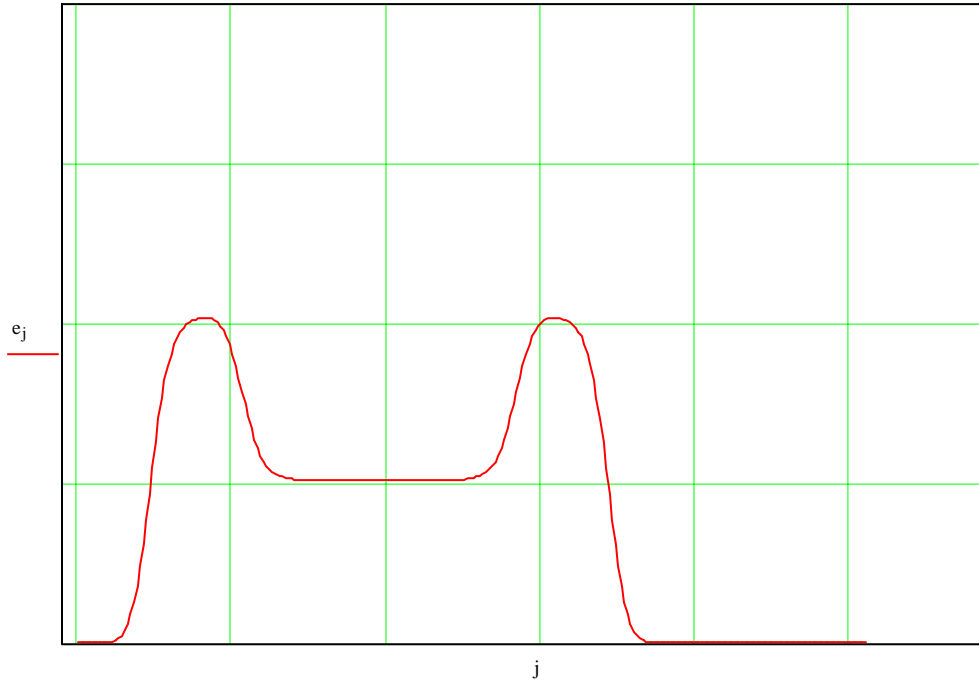
```

y0 = 0.0018
y1 = 0.0039
y33 = 7.9617 × 10-4
v := READPRN("Five_MIC.dat")
j := 0..255
yl := length(y)
vl := length(v)
n := 0..255
yj := if(j < yl, yj, 0)
vj := if(j < vl, vj, 0)
CONV(A, B) := 2·ifft(fft(A)·fft(B))
c := CONV(y, v)
dj := (Re(cj)2 + Im(cj)2).5

```

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references peak(s) 3 and 5 of the On-Us Symbol.



`j := 0..511`

`el := length(e)`

`e_j := if(j < el, e_j, 0)`

`z := fft(e)`

`b := 39.81`

`WRITEPRN("Five_cvg.dat" ) := e`

`a := 17.29`

`i :=  $\sqrt{-1}$`

`k := 0..256`

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

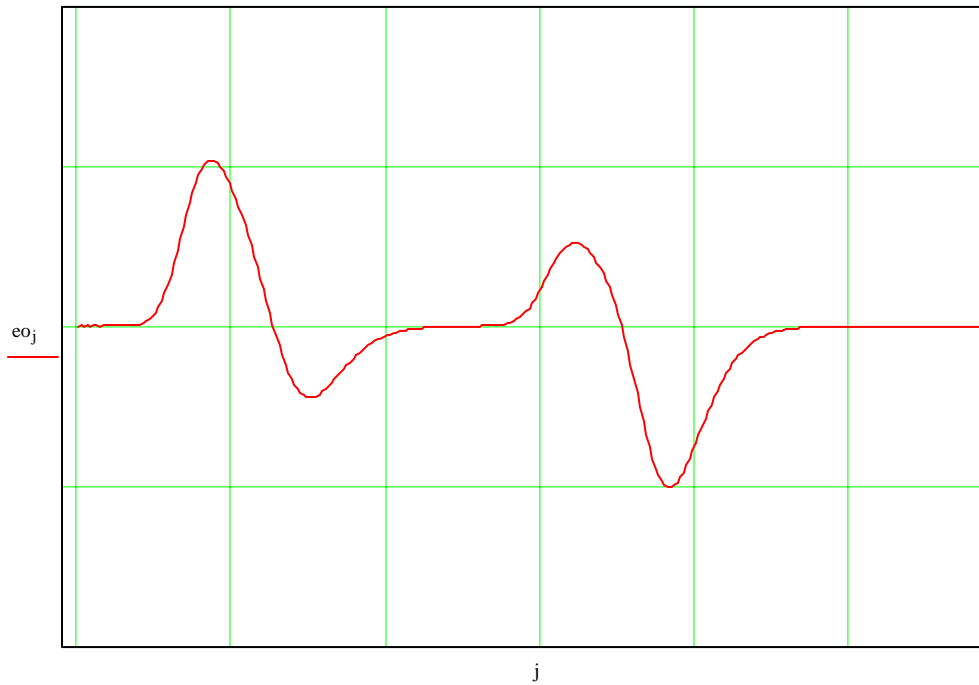
`EO_k := z_k \cdot FA_k \cdot FH_k`

`f := ifft(EO)`

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

`ep_j := 100 \cdot eo_j`



WRITEPRN("Five\_pkg.dat" ) := ep

Peak data is:

1st peak 103.52

2nd peak -44.71

3rd peak 52.01

4th peak -100.7

5th peak

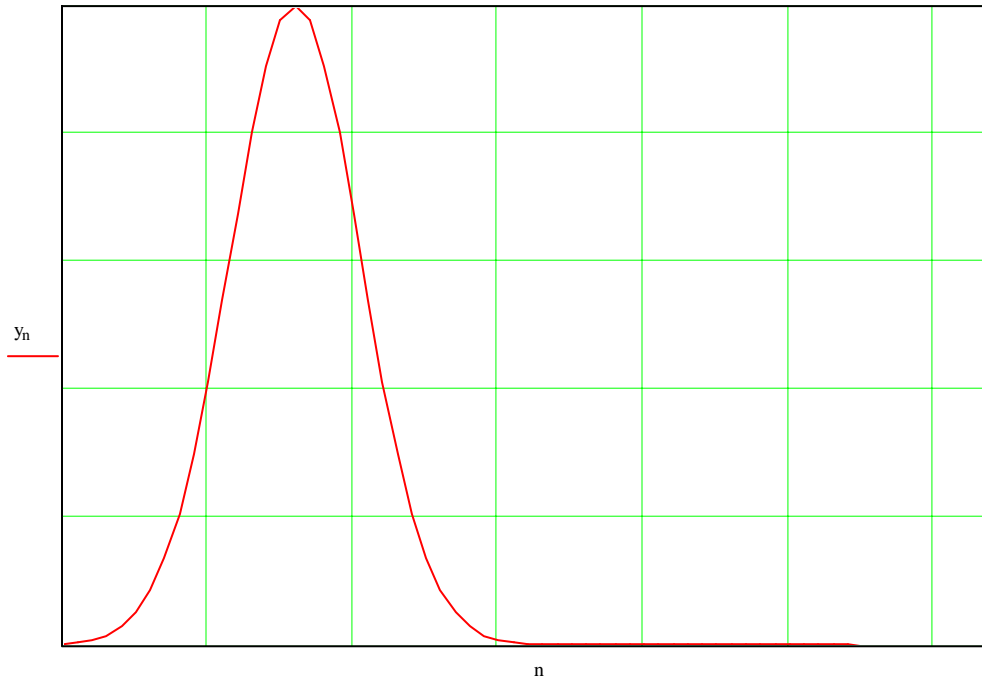
6th peak

max(ep) = 103.5226

The first peak occurs at value # 44

```

σ := 1.95·10-3
n := 0..64
K := 4.3333·10-4
kn := (n - 16)·K
yn :=  $\frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$ 
    
```

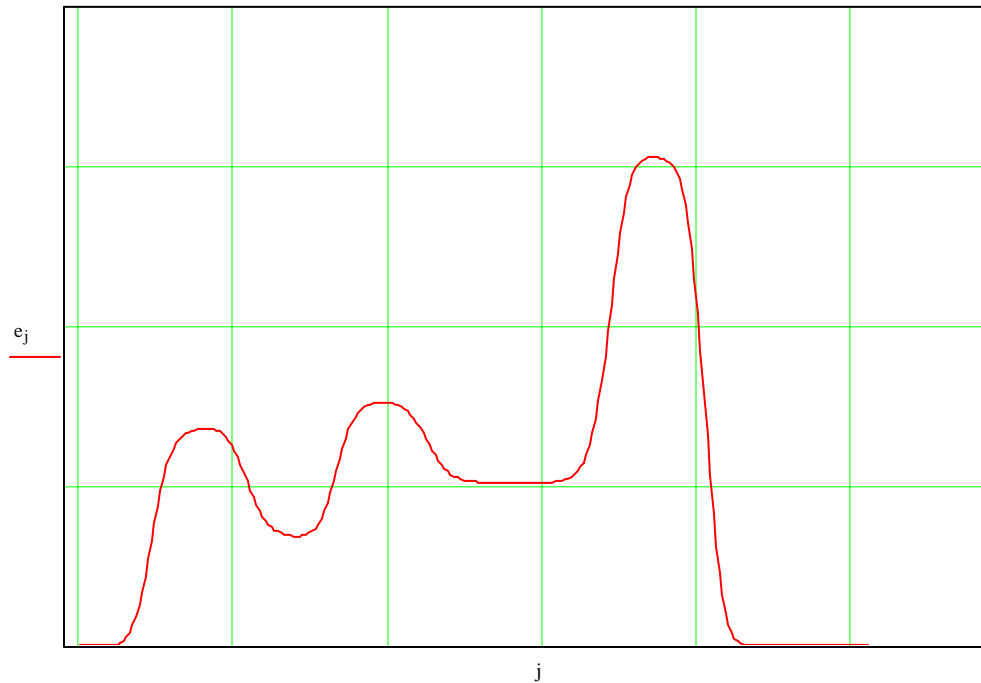


```

y0 = 0.0018
y1 = 0.0039
y33 = 7.9617 × 10-4
v := READPRN("Six_MIC.dat")
j := 0..255
yl := length(y)
vl := length(v)
n := 0..255
yj := if(j < yl, yj, 0)
vj := if(j < vl, vj, 0)
CONV(A, B) := 2·ifft(fft(A)·fft(B))
c := CONV(y, v)
dj := (Re(cj)2 + Im(cj)2).5
    
```

The numerator factor references peak(s) 3 and 5 of the On-Us Symbol.

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$



j := 0..511

e1 := length(e)

e\_j := if(j < e1, e\_j, 0)

z := fft(e)

b := 39.81

WRITEPRN("Six\_cvg.dat") := e

a := 17.29

i :=  $\sqrt{-1}$

k := 0..256

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

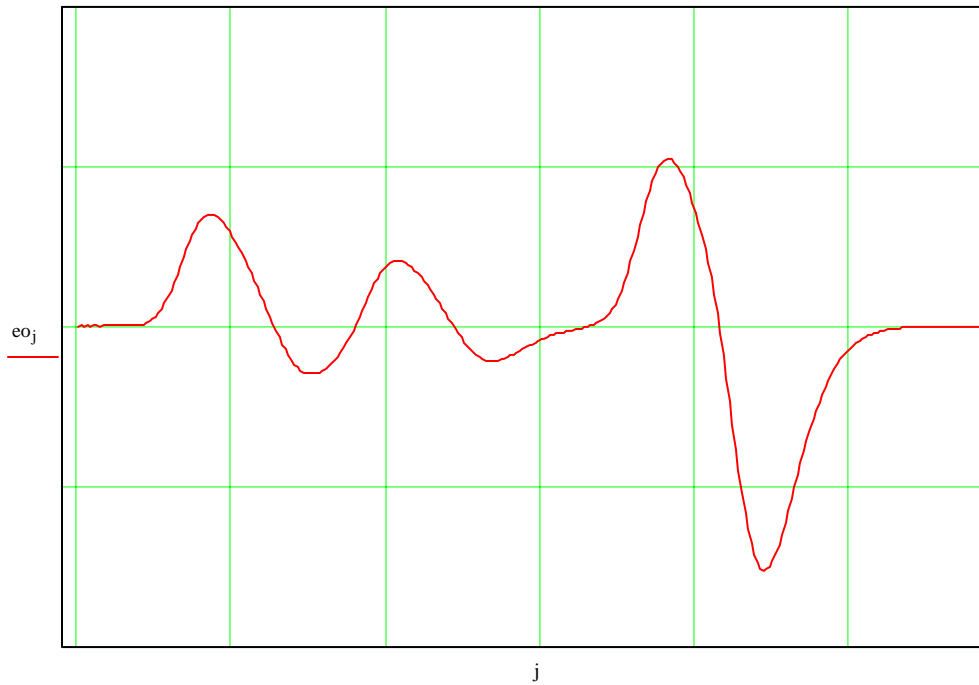
EO\_k := z\_k \cdot FA\_k \cdot FH\_k

f := ifft(EO)

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

ep\_j := 100 \cdot eo\_j



WRITEPRN("Six\_pkg.dat") := ep

Peak data is:

1st peak 69.55

2nd peak -29.92

3rd peak 40.57

4th peak -21.86

5th peak 104.3

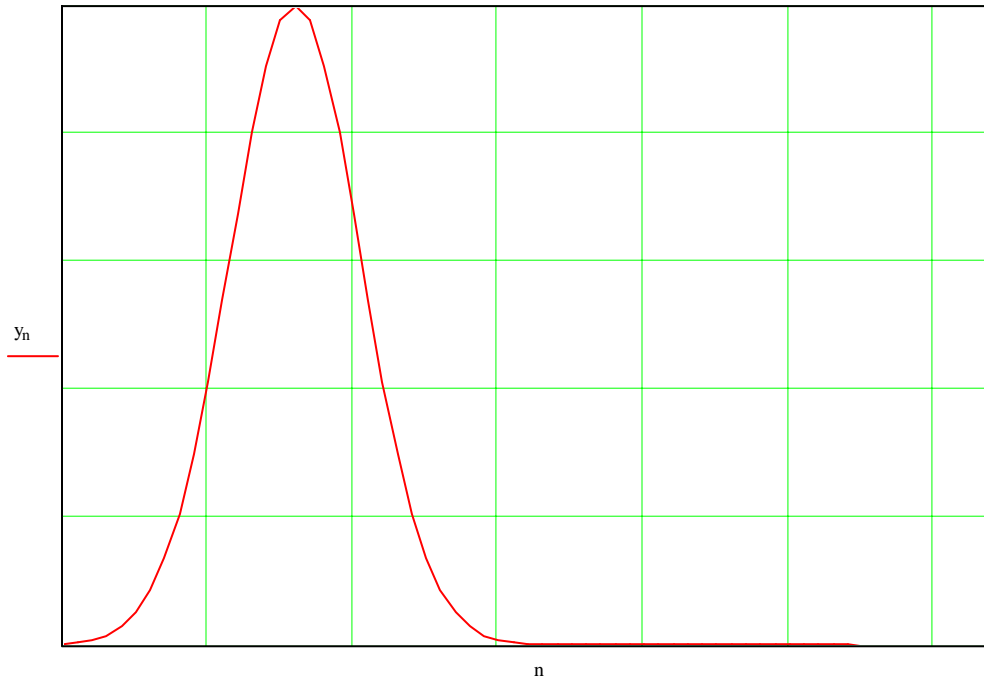
6th peak -152.7

max(ep) = 104.2644

The first peak occurs at value # 44

```

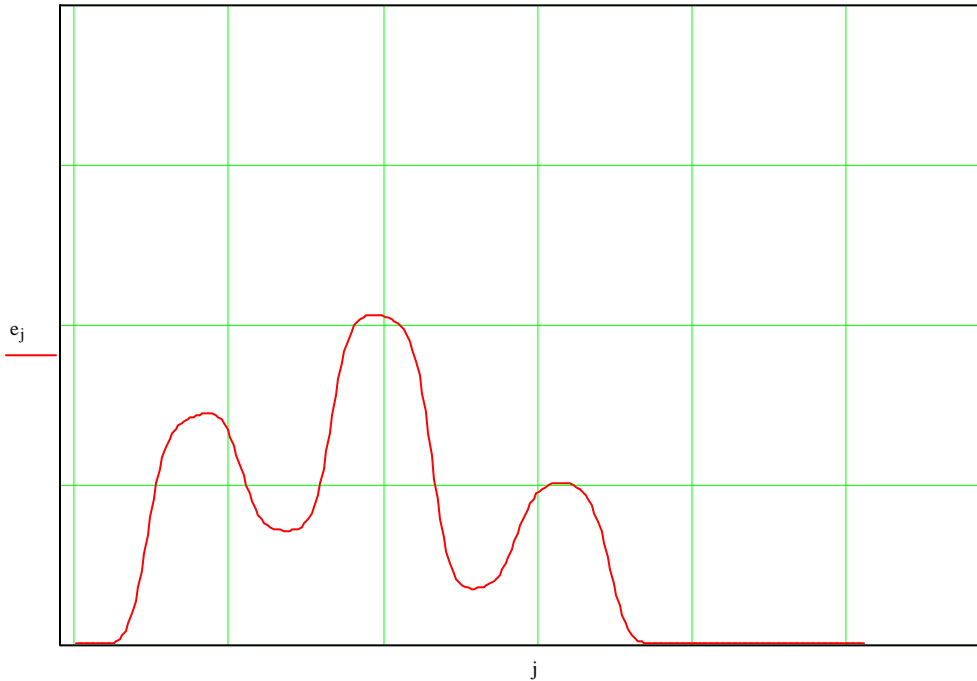
σ := 1.95·10-3
n := 0..64
K := 4.3333·10-4
kn := (n - 16)·K
yn :=  $\frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$ 
    
```



```

y0 = 0.0018
y1 = 0.0039
y33 = 7.9617 × 10-4
v := READPRN("Sev_MIC.dat" )
j := 0..255
yl := length(y)
vl := length(v)
n := 0..255
yj := if(j < yl, yj, 0)
vj := if(j < vl, vj, 0)
CONV(A, B) := 2·ifft(fft(A)·fft(B))
c := CONV(y, v)
dj := (Re(cj)2 + Im(cj)2).5
ej :=  $\frac{d_j}{251.07} \cdot 1.01$ 
    
```

The numerator factor references peak(s) 3 and 5 of the On-Us Symbol.



$j := 0..511$

$el := \text{length}(e)$

$e_j := \text{if}(j < el, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"Sev\_cvg.dat"} ) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

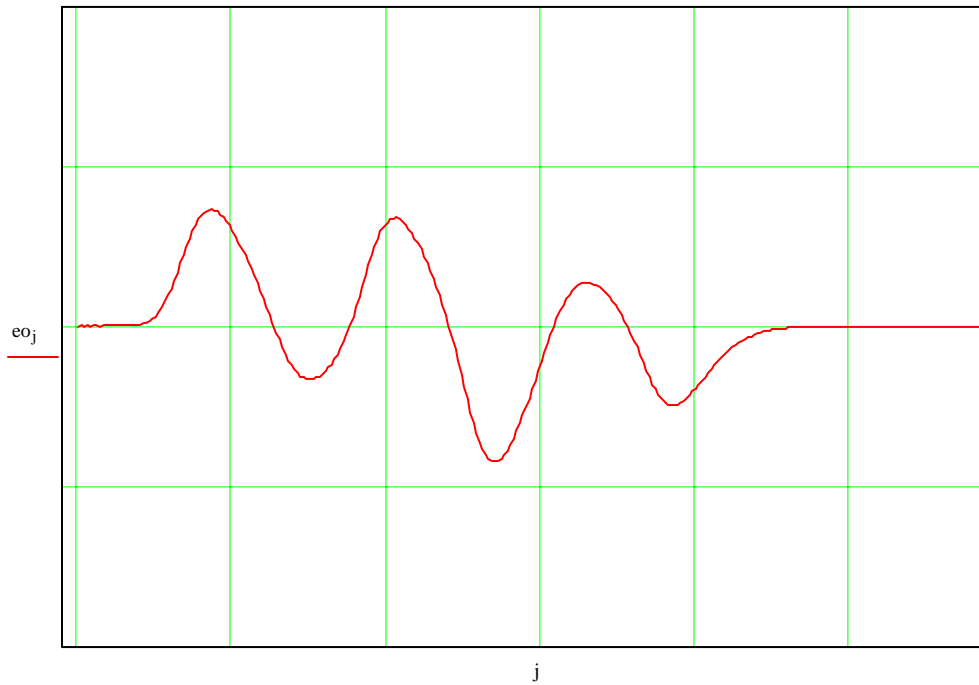
$EO_k := z_k \cdot FA_k \cdot FH_k$

$f := \text{ifft}(EO)$

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

$ep_j := 100 \cdot eo_j$



WRITEPRN("Sev\_pkg.dat" ) := ep

Peak data is:

1st peak 72.67

2nd peak -33.33

3rd peak 67.52

4th peak -84.81

5th peak 27.01

6th peak -49.58

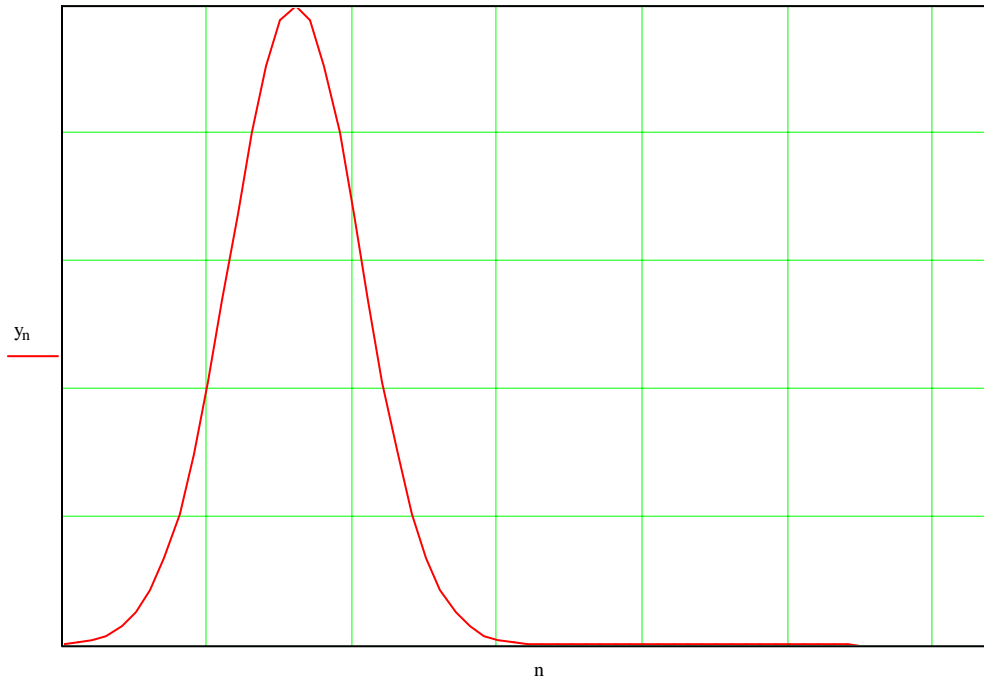
max(ep) = 72.669

The first peak occurs at value # 44

Convolution of gaussian function with a MICR character CHARACTER "8" Saved as  
 MICRGAU8.MCD Nov. 30, 2003 Thomas D. Hayosh

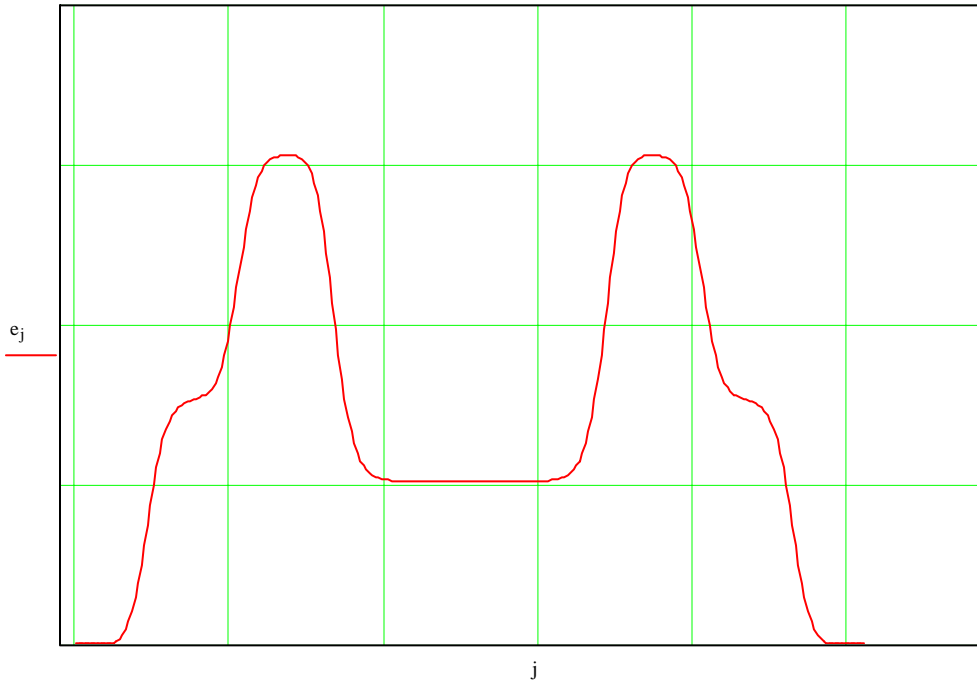
$\sigma := 1.95 \cdot 10^{-3}$   
 $n := 0..64$   
 $K := 4.3333 \cdot 10^{-4}$   
 $k_n := (n - 16) \cdot K$   

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$



$y_0 = 0.0018$   
 $y_1 = 0.0039$   
 $y_{33} = 7.9617 \times 10^{-4}$   
 $v := \text{READPRN}(\text{"Eigh\_MIC.dat"})$   
 $j := 0..255$   
 $y_l := \text{length}(y)$   
 $v_l := \text{length}(v)$   
 $n := 0..255$   
 $y_j := \text{if}(j < y_l, y_j, 0)$   
 $v_j := \text{if}(j < v_l, v_j, 0)$   
 $\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$   
 $c := \text{CONV}(y, v)$   
 $d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$   
 $e_j := \frac{d_j}{251.07} \cdot 1.01$

The numerator factor references peak(s) 3 and 5 of the On-U's Symbol.



$j := 0..511$

$e_l := \text{length}(e)$

$e_j := \text{if}(j < e_l, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"Eigh\_cvg.dat"}) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

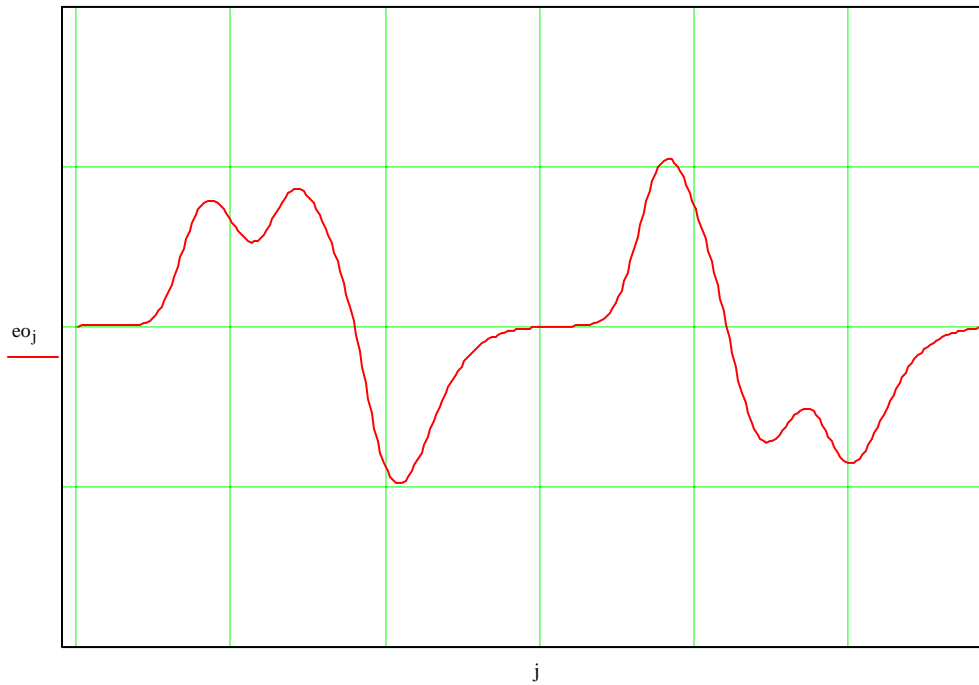
$EO_k := z_k \cdot FA_k \cdot FH_k$

$f := \text{ifft}(EO)$

$eo_j := f_j \cdot \frac{1.0}{3.0668}$

The factor 3.0668 is taken from the on-us symbol  
\_and normalizes all char/symbols to it.

$ep_j := 100 \cdot eo_j$



```
WRITEPRN("Eigh_pkg.dat" ) := ep
```

Peak data is:

1st peak 78.55

2nd peak 85.52

3rd peak -98.75

4th peak 104.3

5th peak -72.71

6th peak -85.67

$\max(ep) = 104.3348$

The first peak is at value # 44

Convolution of gaussian function with a MICR character CHARACTER "9" Saved as MICRGAU9.MCD Nov. 30, 2003 Thomas D. Hayosh

$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$



$$y_1 = 0.0039$$

$$y_0 = 0.0018$$

$$y_{33} = 7.9617 \times 10^{-4}$$

v := READPRN("Nine\_MIC.dat")

$$j := 0..255$$

$$y_l := \text{length}(y)$$

$$v_l := \text{length}(v)$$

$$n := 0..255$$

$$y_j := \text{if}(j < y_l, y_j, 0)$$

$$v_j := \text{if}(j < v_l, v_j, 0)$$

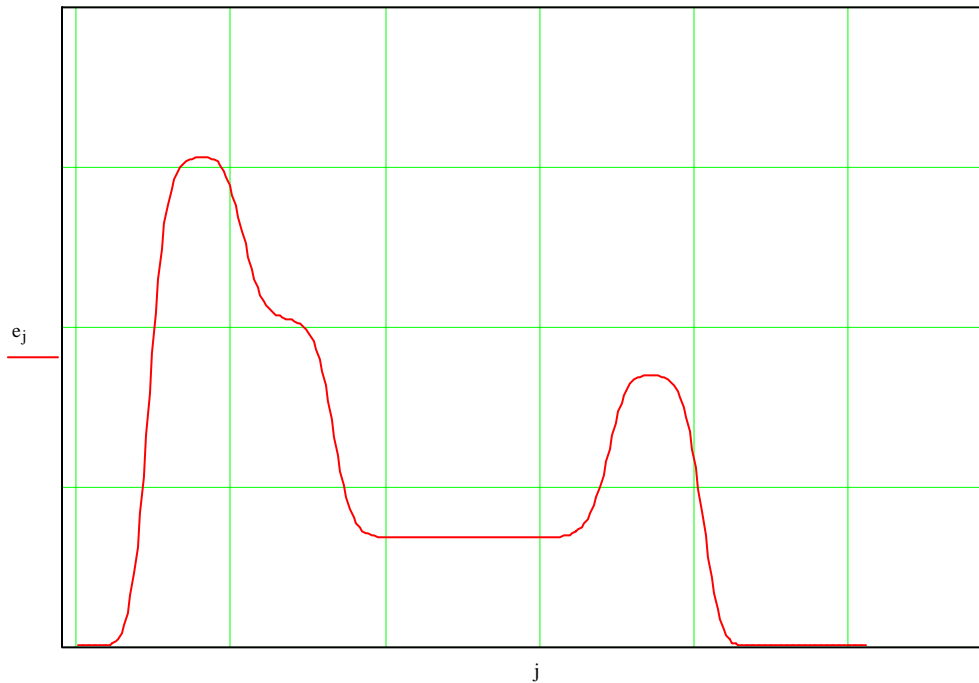
$$\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$$

$$c := \text{CONV}(y, v)$$

$$d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$$

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references peak(s) 3 and 5 of the On-Us Symbol.



$j := 0..511$

$el := \text{length}(e)$

$e_j := \text{if}(j < el, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"Nine\_cvg.dat"}) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

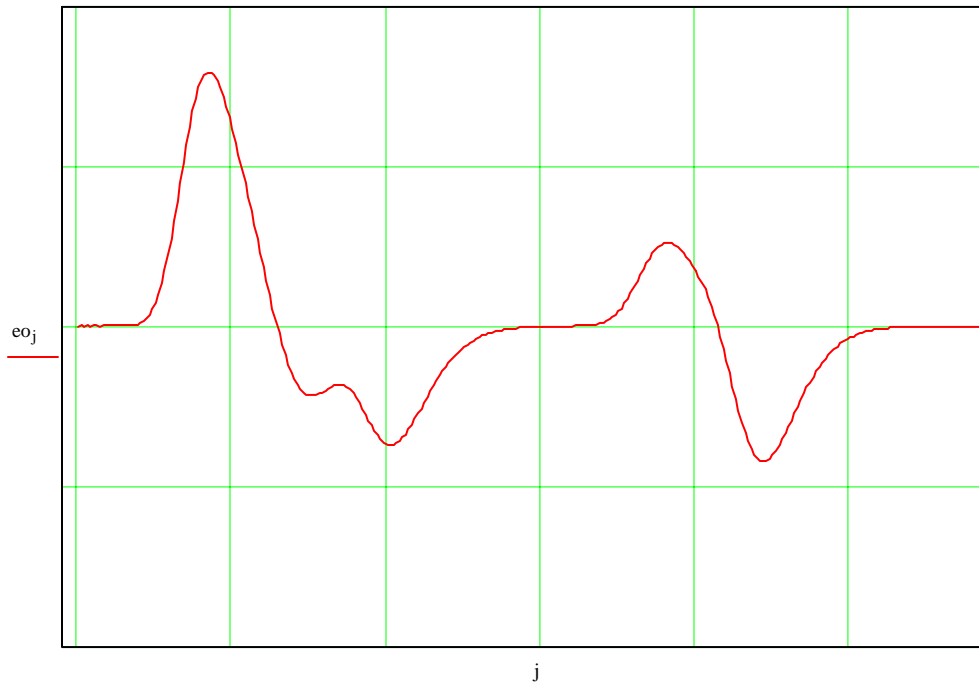
$EO_k := z_k \cdot FA_k \cdot FH_k$

$f := \text{ifft}(EO)$

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

$ep_j := 100 \cdot eo_j$



WRITEPRN("Nine\_pkg.dat" ) := ep

Peak data is:

1st peak 158.69

2nd peak -43.35

3rd peak -74.37

4th peak 52.10

5th peak -84.46

6th peak

max(ep) = 158.6887

The first peak is at value # 43

Convolution of gaussian function with a MICR character "RT" SYMBOL  
 MICRGAUA.MCD Nov. 30, 2003 Thomas D. Hayosh

Saved as

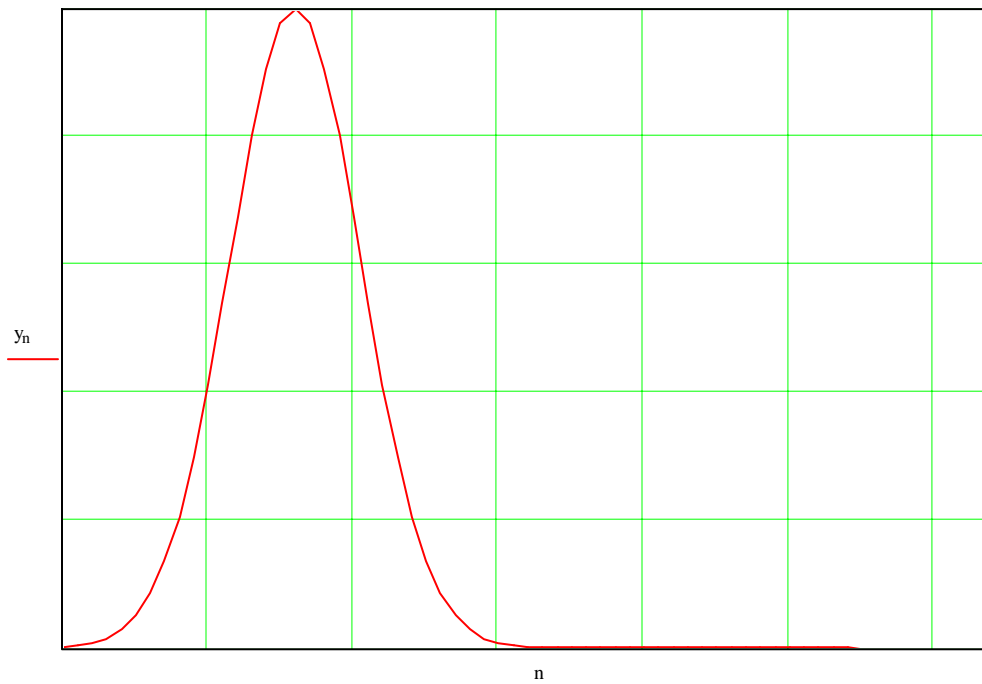
$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$



$$y_0 = 0.0018$$

$$y_1 = 0.0039$$

$$y_{33} = 7.9617 \times 10^{-4}$$

v := READPRN("RT\_MIC.dat")

$$j := 0..255$$

$$y_l := \text{length}(y)$$

$$v_l := \text{length}(v)$$

$$n := 0..255$$

$$y_j := \text{if}(j < y_l, y_j, 0)$$

$$v_j := \text{if}(j < v_l, v_j, 0)$$

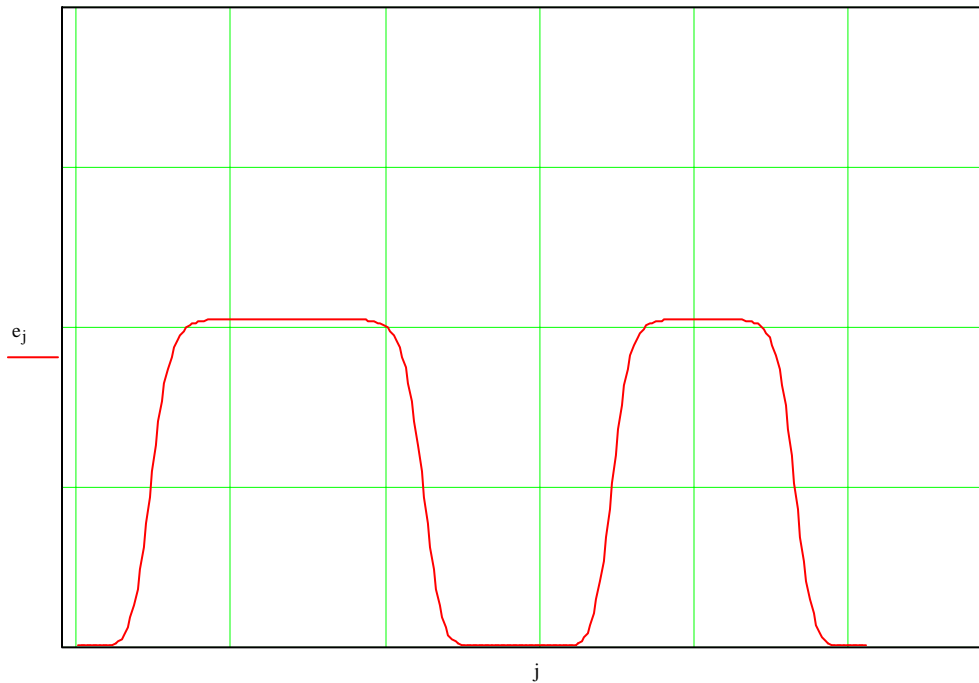
$$\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$$

$$c := \text{CONV}(y, v)$$

$$d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$$

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references peak(s) 3 and 5 of the On-U's Symbol.



$j := 0..511$

$el := \text{length}(e)$

$e_j := \text{if}(j < el, e_j, 0)$

$z := \text{fft}(e)$

$b := 39.81$

$\text{WRITEPRN}(\text{"RT\_cvg.dat"}) := e$

$a := 17.29$

$i := \sqrt{-1}$

$k := 0..256$

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

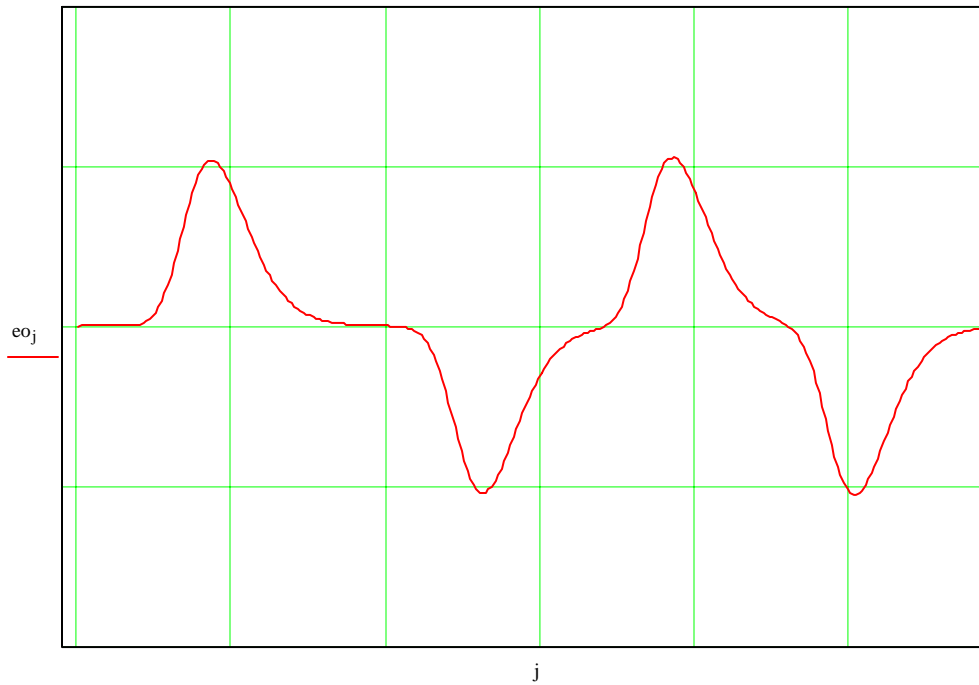
$EO_k := z_k \cdot FA_k \cdot FH_k$

$f := \text{ifft}(EO)$

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

$ep_j := 100 \cdot eo_j$



WRITEPRN("RT\_pkg.dat" ) := ep

Peak data is:

1st peak 103.5

2nd peak -104.4

3rd peak 105.1

4th peak -105.5

5th peak

6th peak

$\max(ep) = 105.0705$

The first peak occurs at value # 44

$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$

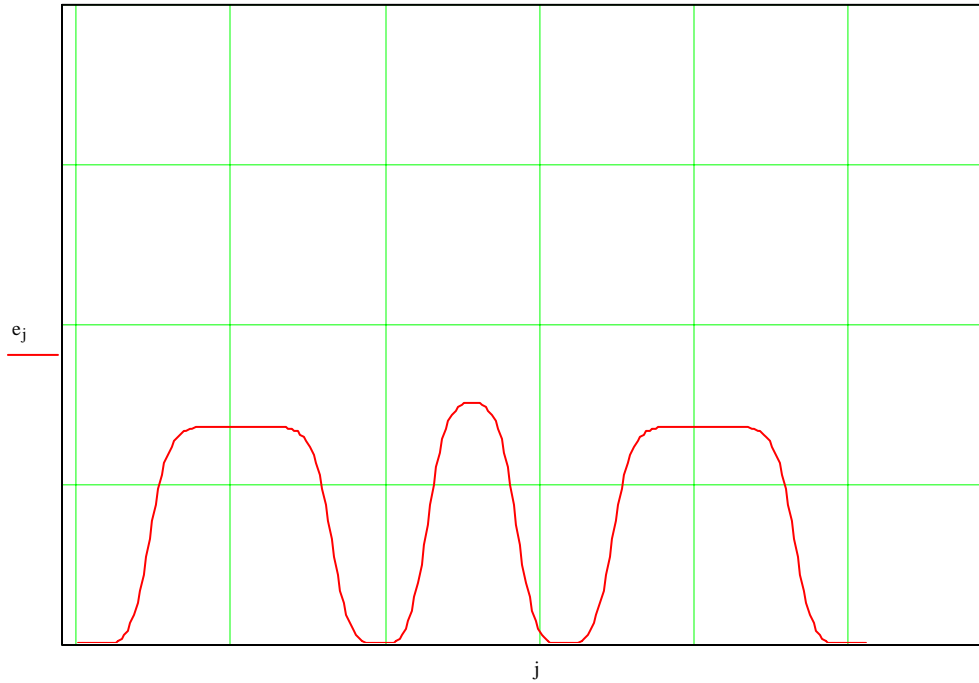


```

y0 = 0.0018
y1 = 0.0039
y33 = 7.9617 × 10-4
v := READPRN("Amou_MIC.dat")
j := 0..255
yl := length(y)
vl := length(v)
n := 0..255
y_j := if(j < yl, y_j, 0)
v_j := if(j < vl, v_j, 0)
CONV(A, B) := 2 · ifft(fft(A) · fft(B))
c := CONV(y, v)
d_j := (Re(c_j)2 + Im(c_j)2).5
    
```

The numerator factor references peak(s) 3 and 5 of the On-Us Symbol.

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$



j := 0..511

el := length(e)

e\_j := if(j < el, e\_j, 0)

z := fft(e)

b := 39.81

WRITEPRN("Amou\_cvg.dat" ) := e

a := 17.29

i :=  $\sqrt{-1}$

k := 0..256

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

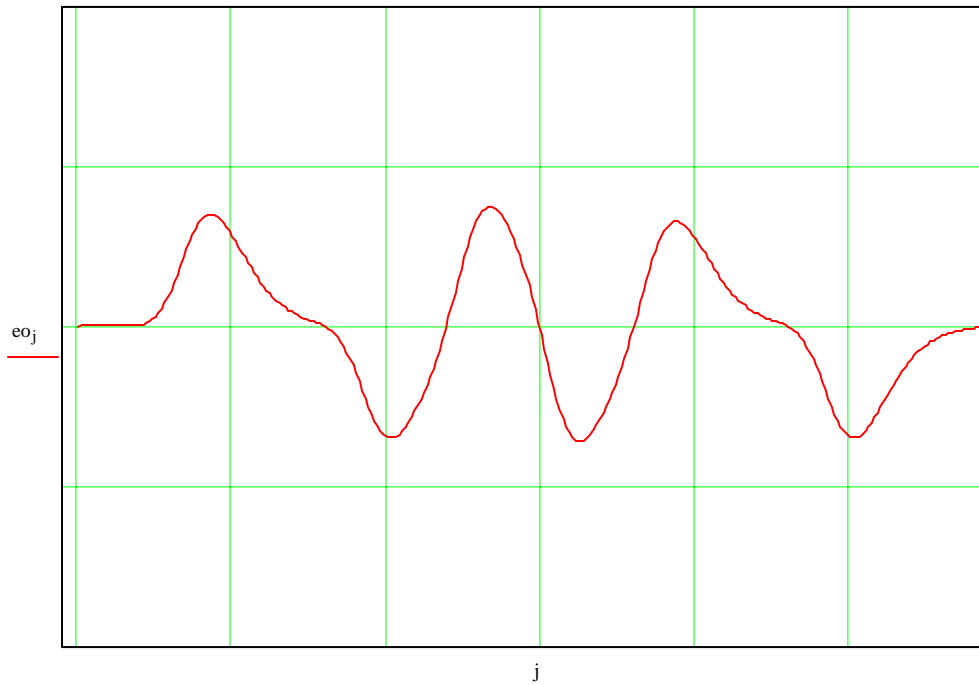
EO\_k := z\_k \cdot FA\_k \cdot FH\_k

f := ifft(EO)

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

ep\_j := 100 \cdot eo\_j



```
WRITEPRN("Amou_pkg.dat" ) := ep
```

Peak data is:

1st peak 69.55

2nd peak -69.91

3rd peak 74.32

4th peak -72.26

5th peak 65.31

6th peak -69.91

max(ep) = 74.3237

The first peak occurs at value # 44

Convolution of gaussian function with a MICR character "DASH" SYMBOL Saved as MICRGAUD.MCD Nov. 30, 2003 Thomas D. Hayosh

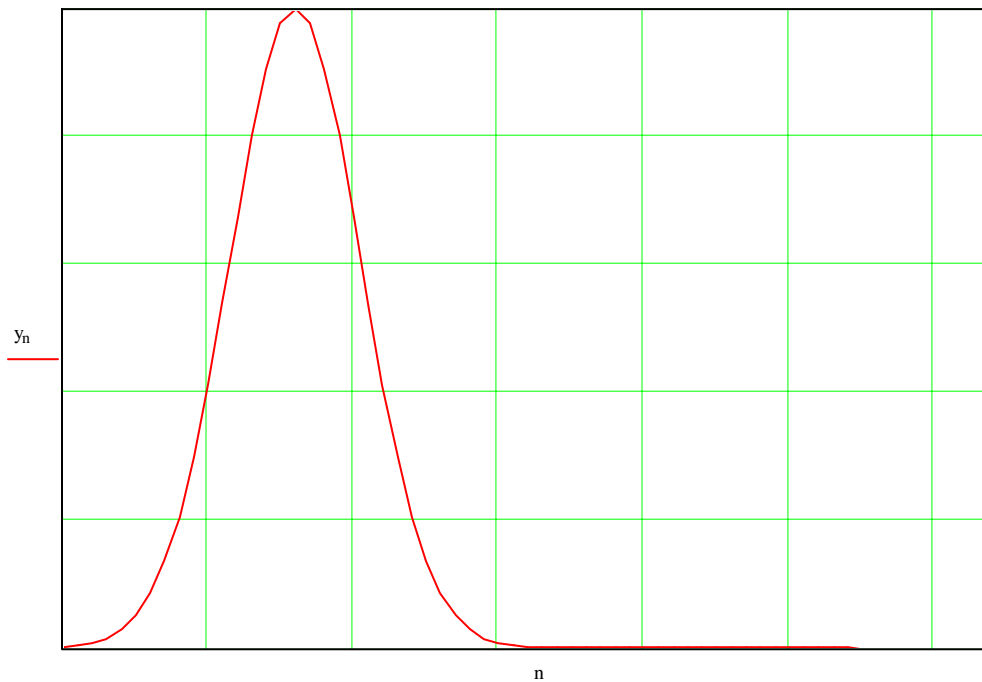
$$\sigma := 1.95 \cdot 10^{-3}$$

$$n := 0..64$$

$$K := 4.3333 \cdot 10^{-4}$$

$$k_n := (n - 16) \cdot K$$

$$y_n := \frac{1}{\frac{1}{2} \frac{(k_n)^2}{\sigma^2}} e^{-\frac{1}{2} \frac{(k_n)^2}{\sigma^2}}$$



$$y_0 = 0.0018$$

$$y_1 = 0.0039$$

$$y_{33} = 7.9617 \times 10^{-4}$$

v := READPRN "Dash\_MIC.dat" )

$$j := 0..255$$

$$y_l := \text{length}(y)$$

$$v_l := \text{length}(v)$$

$$n := 0..255$$

$$y_j := \text{if}(j < y_l, y_j, 0)$$

$$v_j := \text{if}(j < v_l, v_j, 0)$$

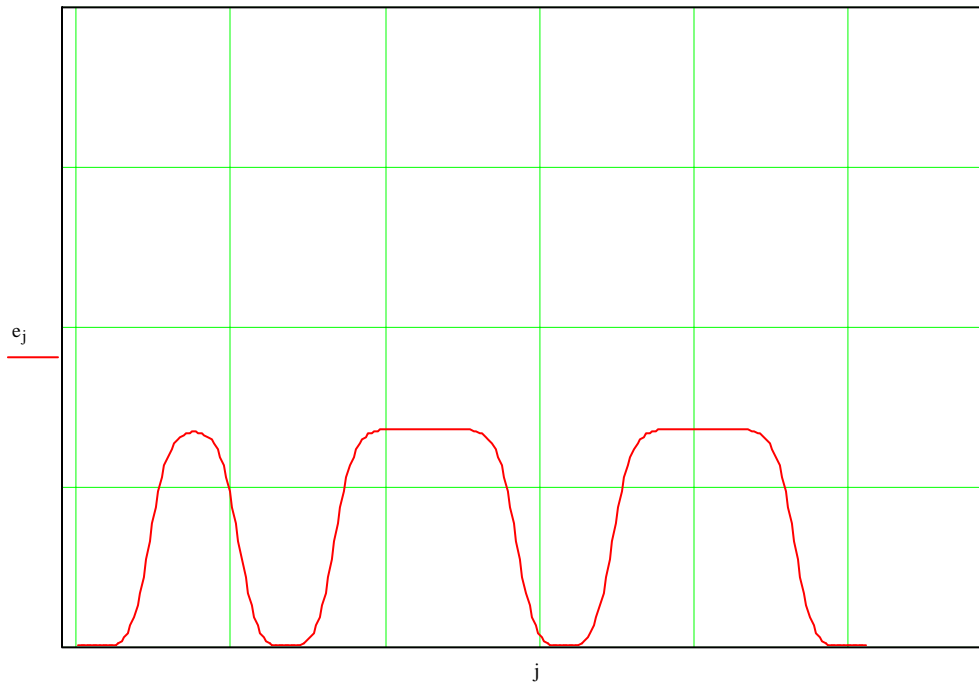
$$\text{CONV}(A, B) := 2 \cdot \text{ifft}(\overrightarrow{\text{fft}(A) \cdot \text{fft}(B)})$$

$$c := \text{CONV}(y, v)$$

$$d_j := (\text{Re}(c_j)^2 + \text{Im}(c_j)^2)^{.5}$$

$$e_j := \frac{d_j}{251.07} \cdot 1.01$$

The numerator factor references peaks 3 and 5 of the On-Us Symbol.



`j := 0..511`

`el := length(e)`

`e_j := if(j < el, e_j, 0)`

`z := fft(e)`

`b := 39.81`

`WRITEPRN("Dash_cvg.dat" ) := e`

`a := 17.29`

`i :=  $\sqrt{-1}$`

`k := 0..256`

$$FA_k := \left( \frac{a}{-i \cdot k + a} \right)^4$$

$$FH_k := -i \cdot k \cdot \left[ \frac{b^2}{(-i \cdot k + b)^2} \right]$$

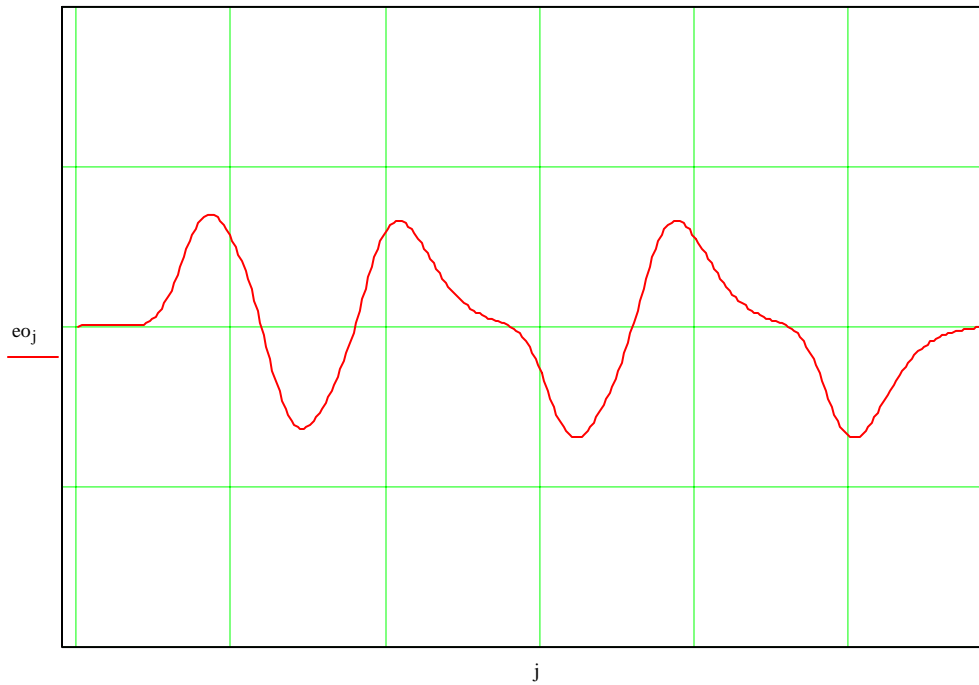
`EO_k := z_k \cdot FA_k \cdot FH_k`

`f := ifft(EO)`

$$eo_j := f_j \cdot \frac{1.0}{3.0668}$$

The factor 3.0668 is taken from the on-us symbol and normalizes all char/symbols to it.

`ep_j := 100 \cdot eo_j`



WRITEPRN("Dash\_pkg.dat" ) := ep

Peak data is:

1st peak 69.35

2nd peak -63.89

3rd peak 65.78

4th peak -69.91

5th peak 65.72

6th peak -69.91

max(ep) = 69.3453

The first peak occurs at value # 44