1

$1,2$

th

GILDAS
SOFTWARE

$w_{\mathrm{E}} = 1$

$$w_{\mathrm{T}} = t \times f_{\mathrm{res}} / T_{\mathrm{sys}}^2$$

t

f_{res}

T_{sys}

$w_{\mathrm{S}} = 10^{-6}/\sigma^2$

σ

10^{-6}

$\mathrm{s.MHz/K^2}$

$$w_{\mathrm{T,psw}} = w_{\mathrm{T,wsw}} = w_{\mathrm{T,ufsw}} = w_{\mathrm{T,ffsw}} = w_{\mathrm{T}},$$

ω_{T}

$\sqrt{2}$

$$w_{\mathrm{T,ffsw}} = 2 \times w_{\mathrm{T}}$$

N

$$w_{\mathrm{out}} = \sum_{N} w_{\mathrm{in}}$$

$$T_{\mathrm{sys,out}} = w_T^{-1}(w_{\mathrm{out}}, f_{\mathrm{res,out}}, t_{\mathrm{out}})$$

$$w_{\mathrm{T,out}} = \sum_{N} w_{\mathrm{T,ffsw}} = N \times 2 \times t_{\mathrm{in}} \times f_{\mathrm{res}} / T_{\mathrm{sys,in}}^{2} = 2 \times t_{\mathrm{out}} \times f_{\mathrm{res}} / T_{\mathrm{sys,in}}^{2}$$

$$T_{\mathrm{sys,out}} = \frac{T_{\mathrm{sys,in}}}{\sqrt{2}}$$

w_T^{-1}

$$w_{\mathrm{T,ffsw}}^{-1} = \frac{1}{2} \times w_{\mathrm{T}}^{-1}$$

w_T^{-1}

w_{T}^{-1}

$\omega_{\mathrm{T,psw}}$

$t_{\mathrm{in}} \times f_{\mathrm{res}} / T^2_{\mathrm{sys,in}}$

$\omega_{\mathrm{T,ffsw}}$

$$2 \times t_{\mathrm{in}} \times f_{\mathrm{res}} / T_{\mathrm{sys,in}}^{2}$$

$w_{\mathrm{T,mix}}$

$t_{\mathrm{out}} \times f_{\mathrm{res}} / T_{\mathrm{sys,mix}}^{2}$

$$t_{\mathrm{out}} = 2 \times t_{\mathrm{in}}$$

$$w_{\mathrm{T,mix}} = w_{\mathrm{T,psw}} + w_{\mathrm{T,ffsw}}$$

$$T_{\mathrm{sys,mix}} = \sqrt{\frac{t_{\mathrm{out}} \times f_{\mathrm{res}}}{w_{\mathrm{T,psw}} + w_{\mathrm{T,ffsw}}}} = \sqrt{\frac{2 \times t_{\mathrm{in}}}{3 \times t_{\mathrm{in}} / T_{\mathrm{sys,in}}^2}} = T_{\mathrm{sys,in}} \times \sqrt{\frac{2}{3}}$$

$$\sigma = T_{\mathrm{sys}} / \sqrt{t \times f_{\mathrm{res}}}$$

$\sqrt{14/5}$

$\sqrt{3}$

3.5%

1

2

$$f_{res}$$