

```
subroutine lattice_time_2dtm
!***** lattice widths *****
dl=2.0d-3
dy=dl
dz=dl
!***** number of cells in pml (ncpml) *****
ncpml=8 ! number of cell in pml
tcpml=ncpml*dl ! thickness of pml
!***** sinusoidal frequency *****
freq=2.45d9 ! Hz
```

```
subroutine j_source_2dtm
do j=yi(1),yi(8)-1 ! for z propagation
k=zi(2)+2
id=id_ey(j,k)
ey(j,k)=ey(j,k) &
-(dt/eps(id))/(1+(sig(id)*dt/(2.0d0*eps(id)))) &
*(-2.0d0)/sqrt(mu0/eps0)/dz & ! J [A/m2]
*dsin(2.0d0*pi*freq*(time-dt/2.0d0))
end do
```

```
subroutine media_coeff_2dtm
! id=0 vacume
eps(0)=eps0
sig(0)=0.0d0
mu(0)=mu0
! id=1 pec,pmc (no define, see <e-field> or <h-field> )

! rectangular media
mys=yi(1)
mye=yi(8)
mzs=nint((zi(1)+zi(8))/2.0)-nint(2.0d-3/dz)
mze=nint((zi(1)+zi(8))/2.0)+nint(2.0d-3/dz)
call rectangular_media_1

! rectangular media
mys=nint((yi(1)+yi(8))/2.0)-nint(120.0d-3/dy)
mye=nint((yi(1)+yi(8))/2.0)+nint(120.0d-3/dy)
mzs=nint((zi(1)+zi(8))/2.0)-nint(2.0d-3/dz)
mze=nint((zi(1)+zi(8))/2.0)+nint(2.0d-3/dz)
call rectangular_media
```

