**Technical Note**

TEM-cells: analysis of the field homogeneity

Bertrand Daout and Marc Sallin, montena technology, 1728 Rossens, Switzerland

1. Introduction

The cross section distribution of the electric field under the septum of the TEM cell is calculated and shown in the following paragraph, for the closed and open TEM cell of 3 GHz. The distribution will be about the same for the other type of TEM cells.

The distribution of the field along the cell is homogenous. The variation of the field is low in most of the area where the cell is flat.
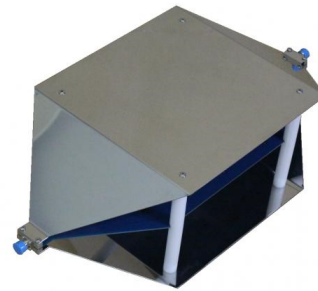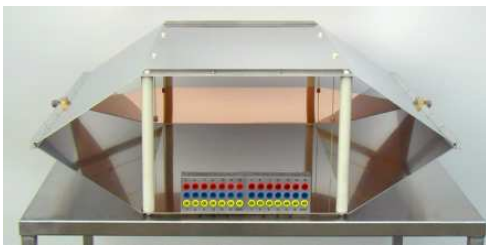
Example of open and closed TEM cells
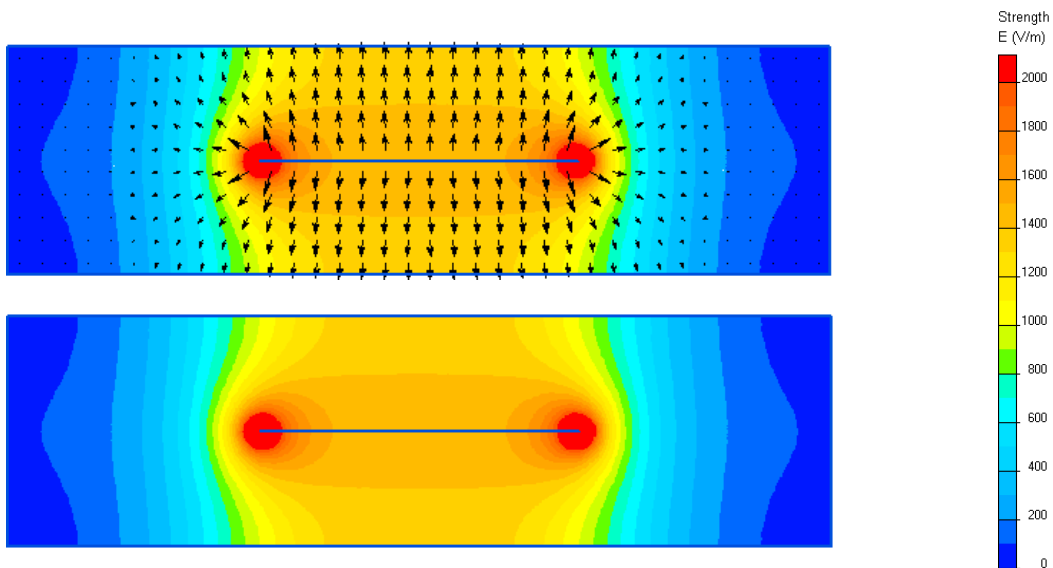
2. Closed TEM cell

Conditions:

Closed TEM cell 3 GHz (type TEM3000)
The power at the input of the cell is P_{in} = 25 W.
The corresponding voltage is 35 V on 50 Ω.
Field in the middle of the cell at h= 25 mm is E = 1.4 kV/m.
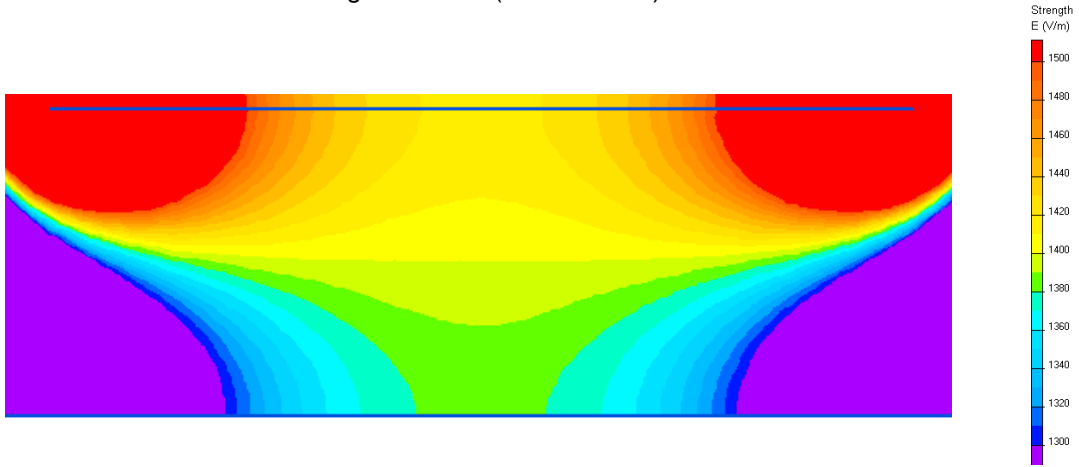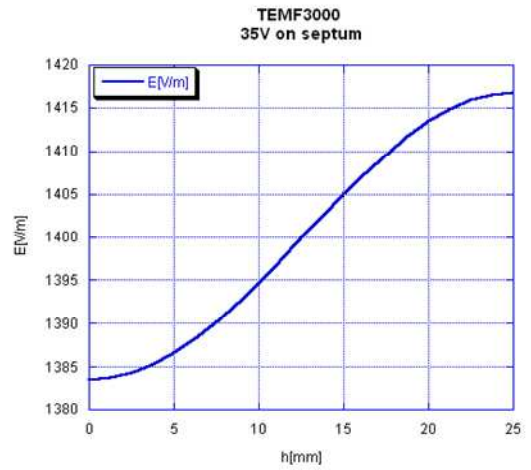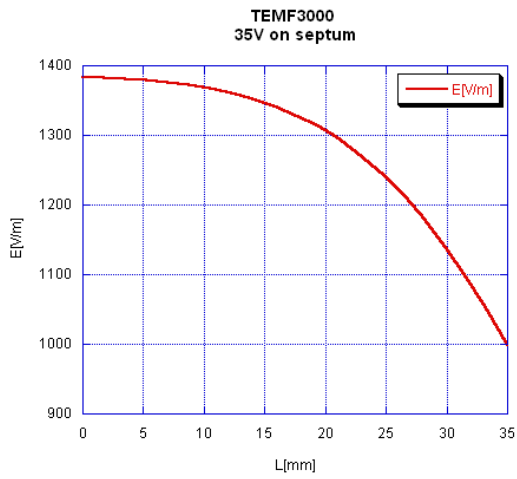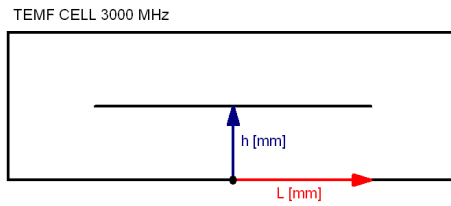Cell width: 180 mm / Cell height: 50 mm / Septum width: 70 mm
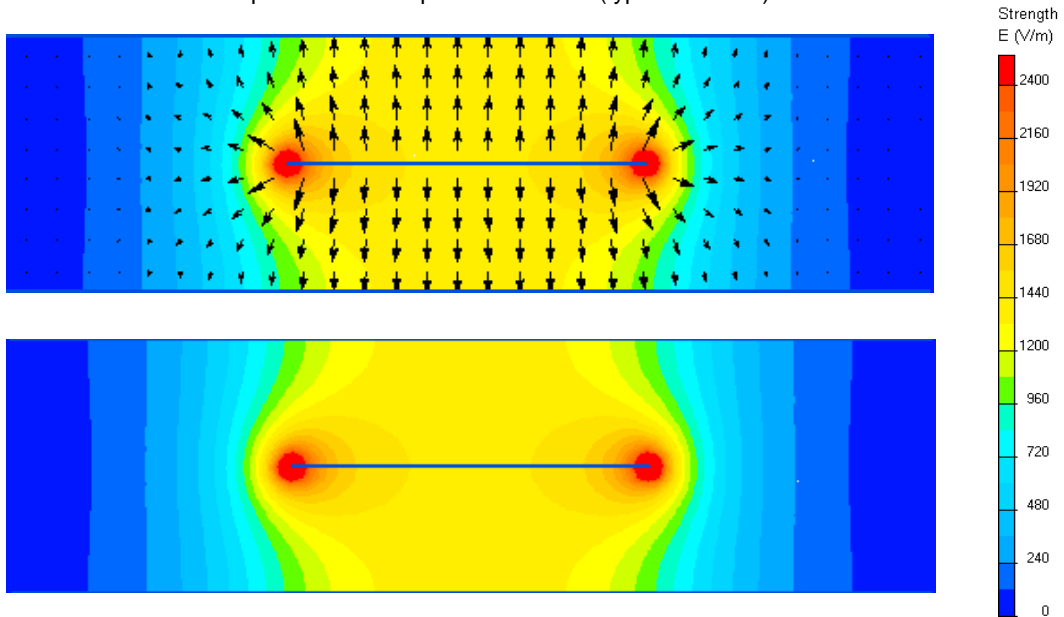
Sales Partner:

ABSOLUTE *EMC* Llc.
Covering sales in North America
United States, Mexico, & Canada

absolute-emc.com
Phone:703-774-7505
info@absolute-emc.com

1/3

A detailed view of the field is given below (narrow scale):

Strength
E (V/m)

1500
1480
1460
1440
1420
1400
1380
1360
1340
1320
1300

The variation of the field along the width L and the height h are given in the following graphics.

TEMF CELL 3000 MHz

h [mm]

L [mm]

TEMF3000
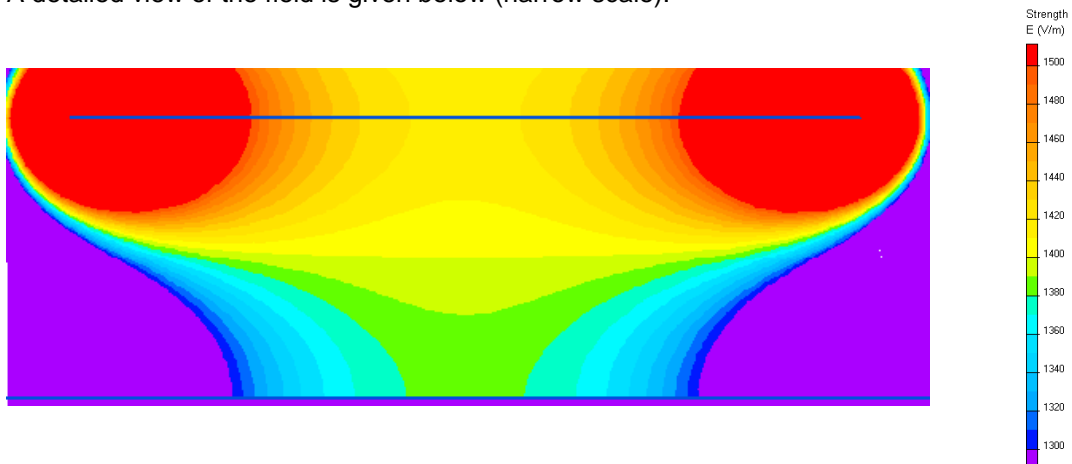35V on septum

TEMF3000
35V on septum

3. Open TEM cell

The calculations are repeated for the open TEM 3 GHz (type TEM3000) under the same condition as above.

Remark: the scale is not exactly the same as for the closed TEM cell.

A detailed view of the field is given below (narrow scale):

Conclusions: the results are very similar to those obtained with the closed TEM cell.

Sales Partner:

ABSOLUTE *EMC* Llc.
Covering sales in North America
United States, Mexico, & Canada

absolute-emc.com
Phone:703-774-7505
info@absolute-emc.com