

## Operating Remarks: Chamber Coupler CC1000

The Chamber Coupler CC1000 has been designed to ignite and sustain a plasma at around 2.45 GHz over a capacitive coupling. It can be used in a low-pressure chamber using a magnetron or a solid-state generator. After ignition, the pressure in the chamber can be further reduced or even increased, directly influencing the expansion of the plasma in the chamber.

- Operating Frequency:     ▪ 2.45 GHz (optimized for operation with a magnetron).
- Operating Power:         ▪ Up to 1000 W pulsed power (max. 50 % duty cycle and 1 ms pulse).  
                                   ▪ Up to 500 W continuous wave.
- Features:                 ▪ The energy required for ignition is strongly dependent on the operating conditions (such as operating pressure and process gas) and the characteristics of the dielectric window (i.e. thickness and dielectric characteristics), and can go down to 200 W.  
                                   ▪ The energy transfer into the plasma after ignition can be improved by adjusting the distance between the coupler and the applicator.  
                                   ▪ 7/16 connector with the dimensions of 40 x 40 x 40 mm<sup>3</sup> (w/o connector).



Fig. 1: Plasma produced with the CC1000 in a glass cylinder at 10 mbar with argon using 250 W.

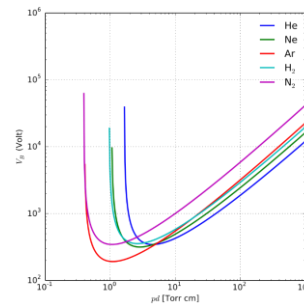
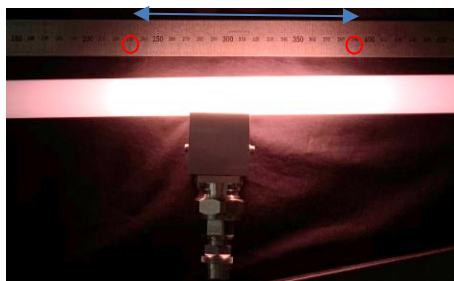


Fig. 2: The Paschen curves for various gases, showing pressure-distance levels with lower ignition voltages<sup>1</sup>

160 mm at  
30 W, 2.46 GHz  
with no distance



210 mm at  
30 W, 2.46 GHz  
with ~ 3 mm



Fig. 3: Improving the operational matching by increasing the distance between coupler and applicator for 30 W at 2.46 GHz using a fluorescent lamp (on left -1 dB matching at < 1 mm, whereas ~ 3 mm brings up -4 dB matching to the right side).

### Guaranty

The guaranty period is 1 years after delivery (does not cover wrong operation or improper usage).

### Safety

When not operating in a shielded area, always monitor the radiating power. A distance of 50 cm is generally sufficient to allow radiating fields to fall well below below critical levels.

### Contact

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<sup>1</sup> [https://en.wikipedia.org/wiki/Paschen's\\_law](https://en.wikipedia.org/wiki/Paschen's_law)