

CLAIMS**What is claimed is:**

1. A mobile cleaning module, comprising:
5 a chamber, wherein the chamber comprises a first opening and a second opening;
and
a lid to seal the first opening, wherein the lid comprises:
a dielectric plate;
a dielectric resonator coupled to the dielectric plate;
10 a monopole antenna positioned in a hole into the dielectric resonator; and
a conductive layer surrounding the dielectric resonator.
2. The mobile cleaning module of claim 1, wherein the second opening comprises a flange.
- 15 3. The mobile cleaning module of claim 2, wherein the flange is a KF40 flange or a KF50 flange.
4. The mobile cleaning module of claim 1, further comprising:
a port for introducing gas into the chamber.
- 20 5. The mobile cleaning module of claim 1, wherein the lid further comprises channels for flowing a coolant.
6. The mobile cleaning module of claim 1, wherein the monopole antenna is electrically
25 coupled to a solid state microwave source.
7. The mobile cleaning module of claim 1, wherein the lid further comprises:
a second dielectric resonator coupled to the dielectric plate; and
a second monopole antenna positioned in a hole in the second dielectric resonator.
- 30 8. The mobile cleaning module of claim 1, wherein the dielectric resonator is a discrete body from the dielectric plate.
9. The mobile cleaning module of claim 1, wherein the dielectric resonator and the
35 dielectric plate are a monolithic structure.

10. The mobile cleaning module of claim 1, wherein the conductive layer comprises a first conductive layer adjacent to the dielectric plate and a second conductive layer over the first conductive layer, wherein a coefficient of thermal expansion of the first conductive layer is smaller than a coefficient of thermal expansion of the second conductive layer.
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11. A mobile cleaning assembly, comprising:
- a cart;
 - a solid state electronics module on the cart, wherein the solid state electronics module is configured to generate microwave electromagnetic radiation;
 - 10 a processor on the cart and electrically coupled to the solid state electronics module; and
 - a plasma cleaning module, wherein the plasma cleaning module is electrically coupled to the solid state electronics module.
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12. The mobile cleaning assembly of claim 11, further comprising:
- a temperature controlled container on the cart and electrically coupled to the processor, wherein the temperature controlled container is configured to hold a heat transfer fluid, and wherein the plasma cleaning module is fluidically coupled to the temperature controlled container.
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13. The mobile cleaning assembly of claim 11, further comprising:
- a gas panel on the cart and electrically coupled to the processor, wherein the plasma cleaning module is fluidically coupled to the gas panel.
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14. The mobile cleaning assembly of claim 11, wherein power is supplied to the cart by a 120V or a 240V outlet.
15. The mobile cleaning assembly of claim 11, wherein the plasma cleaning module comprises:
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- a chamber, wherein the chamber comprises a first opening and a second opening; and
 - a lid to seal the first opening, wherein the lid comprises:
 - a dielectric plate;
 - a dielectric resonator coupled to the dielectric plate;

a monopole antenna positioned in a hole into the dielectric resonator; and
a conductive layer surrounding the dielectric resonator.

16. The mobile cleaning assembly of claim 15, wherein the second opening comprises a
5 flange.
17. A plasma processing tool, comprising:
a first chamber with a pedestal for supporting a substrate;
an exhaust line fluidically coupled to the first chamber, wherein the exhaust line
10 comprises:
a pump;
a main exhaust line between the first chamber and the pump;
a throttle valve positioned in the main exhaust line;
a cleaning line fluidically coupled to the main exhaust line;
15 a second chamber fluidically coupled to the cleaning line; and
a plasma source for generating a plasma in the second chamber.
18. The plasma processing tool of claim 17, wherein the second chamber is removably
coupled to the cleaning line.
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19. The plasma processing tool of claim 17, further comprising:
a first valve between the throttle valve and the pump; and
a second valve between the second chamber and the cleaning line.
- 25 20. The plasma processing tool of claim 19, further comprising:
a third valve between the first chamber and the throttle valve.