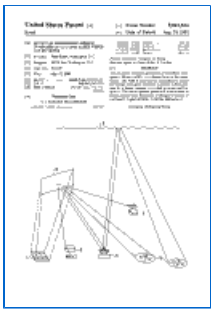
Artificial ionospheric mirror composed of a plasma layer which can be tilted Pete



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This invention relates to generation of a Artificial Ionospheric Mirror (AIM), or a plasma layer in the atmosphere. The AIM is used like the ionosphere to reflect RF energy over great distances. A tiltable AIM is created by a heater antenna controlled in phase and frequency. The heater antenna...

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U.S. Classification
342/367; 342/372

International Classification
H04B 700; H01Q 322

Citations

Patent Number	Title	Issue date
3445844	(unknown)	May 1969
4253190	Communications system using a mirror kept in outer space by electromagnetic radiation pressure	Feb 24, 1981
4686605	Method and apparatus for altering a region in the earth's atmosphere, ionosphere, and/or magnetosphere	Aug 11, 1987
4712155	Method and apparatus for creating an artificial electron cyclotron heating region of plasma	Dec 8, 1987
4817495	Defense system for discriminating between objects in space	Apr 4, 1989

Referenced by

Patent Number	Title	Issue date
5747720	Tactical laser weapon system for handling munitions	May 5, 1998

Claims

What is claimed is:

1. A method for generating an AIM, comprising the steps of:

(a) creating avalanche ionization in the atmosphere using a heater antenna;
(b) refocusing said heater antenna to alter the altitude of said avalanche ionization by frequency shifting said heater antenna; and
(c) scanning said heater antenna to paint an avalanche ionization layer.

2. A method for generating an AIM as claimed in claim 1 wherein said heater antenna is focused in the near field.

3. An apparatus for generating an AIM comprising:

(a) a phased array heater antenna which is focused at an altitude to cause an avalanche ionization area to be created in the atmosphere;
(b) means for controlling frequency of individual radiators of said phased array heater antenna to refocus said altitude of said avalanche ionization area; and
(c) means for controlling phase of the individual radiators to scan said phased array heater antenna.

4. An apparatus for generating an AIM as claimed in claim 3 wherein said phased array heater antenna is focused to cause said avalanche ionization area to be substantially a line.

5. An apparatus for generating an AIM as claimed in claim 4 wherein said means for controlling phase moves said line substantially at a constant altitude and said means for controlling frequency moves said line to different altitudes.

6. An apparatus for generating an AIM as claimed in claim 4 wherein said phased array heater antenna is a rectangular array and said line is formed parallel to a long dimension of said rectangular array.

7. An apparatus for generating an AIM as claimed in claim 3 wherein said phased array heater antenna is focused to cause said avalanche ionization area to be substantially a point.

8. An apparatus for generating an AIM as claimed in claim 7 wherein said means for controlling the phase moves said point substantially at the same altitude and said means for controlling frequency moves said point to different altitudes.

9. An apparatus for generating an AIM as claimed in claim 3 wherein said phased array heater antenna is focused in the near field.

10. A method of generating an AIM comprising the steps of:

(a) focusing a phased array heater antenna at an altitude to cause an avalanche ionization area to be created in the atmosphere;
(b) controlling the frequency of individual radiators of said phased array heater antenna to refocus said altitude of said