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INVESTIGATION OF RADIATION POWER OF PENTAGONALMICROSTRIP ANTENNA IN COMPLEX PLASMA ENVIRONMENT.

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ABSTRACT

Comlex or dusty plasmas are plasma containing solid or liquid particles (dust) wich are charged. A complex plasma is a plasma containing micrometer (10^{-6}) to nanometer(10^{-9}) Sized particles Suspended in it Radiated power of Pentagonal microstrip Antenna is Slightly affected by dusty plasma environment .

This is according to the fact that the presence of dust particles in plasma cause the attenuation of radiated power. The average radiation intensity is equal to the total power radiated by the antenna divided by 4π. Dust is ubiquitous in the cosmos, occurring in interstellar, cirumstellar, interplanetary,Circumplametary, interplanetary , circumplanetary, and cometary environments. This study reveals that the sensitivity of pentagonal microstrip antenna in complex plasma Environment lower than Simple Environment .

INTRODUCTION

Deepli investigation we get effect of complex plasma environment on the radiation power of pentagonal microstrip Antenna. it has been found that radiation power depents heavily on plasma frequency and frequency of operation. It is found that in high performance

aircraft. spacecraft satellite and missile application. In addition to this recently the microstrip Antenna are utilized in mobile,radio and wireless communication. Dust plasma interactions in the complex plasma environment are observed by the delection of dust that is accelerated in the solar wind and by the detection of ions and neutrals that are released from the dust.

The parameters of complex plasma cover an extremety wide range, certain fundamertal concepts are common and may have application to may of these environment, There are various force that can act on the charged dust component. As radiation pressure force, drag due to relative motion between dust and plasma or gas etc...

Theoretical consideration

To obtain the radiated power of pentagonal microstrip antennas in complex plasma environment has been utilized in corrent communication system. we discuss the radiated power intensity, efficiency, effective radiated power (ERP).The radiation patterns of pentagonal microstrip antennas in complex plasma environment obtained with defferent plasma parameters (as plasma thickness, maximum electron density n_0 ,and collision frequency V_{en}.) Antennas pattern for the complex plasma environment with different thickness, no-10^{16} m^{-3} and V=5GH_Z if the antenna on the satellite radiated equally in all direction a typical transmitter output power on the satellite would be some what above 3000 watts. This is hardly practical, but then it signal in all direction necessary.

A. Radiated power intensity.

$P(w)=e.s.A.T_eA4$

Where, e, is the emissivity.

T_e , is the temperature in kelvine.

S, is Stefan- Boltzmann constant

$=5.6703\times10^{-8}w/m^2k^4$.

The antenna power pattern in a given direction is defined as the power radiated from an antenna per unit sold angle. The radiation intensity is a far field parameter which can be obtained by simply multiplying the radiation power density by the squre distance.The radiated power per unit are of pentagonal microstrip antenna in complex plasma environment is the place energy density multiplied by c/4.

B. Radiation Efficiency:- The radiation efficiency of environment is defined is

$$REP = \frac{\text{useful power output in antenna}}{\text{Total input power}} = Pr/Pr+Pp.$$

Where Pr is radiated power of pentagonal microstrip antenna in complex plasma environment and Pp is radiated power in complex plasma environment.

In other word:-pentagonal microstrip antenna efficiency is the ratio of power radiated (Prad) by the antenna to the power suppield (Ps) to the antenna. An ideal antenna has 100% antenna efficiency ie, it transmits all the power fed to it. But in the real word, a good antenna radiated power only 50% to 60% of power supplied to it.

Pentagonal microstrip antenna efficiency =Prad/Ps%.

C. EQUIVELENT radiated power or effective radiated power (ERP).

Effective radiated power of a transmitter (WITH antenna, transmission line duplexers etc) is the power that would be necessary at the input terminals of a reference half- wave dipole antenna in order to produce that same maximum field intensity.

ERP is usually calculated by multiplying the measured transmitter output power by the specified antenna system gain relative to a half-wave dipole, in the direction ofinterest.

The effective radiated power (ERP) of transmitters operating on the channels listedin 22.531 must not exceed the limits in this section.

(a) Channel width≤25KHz.868.600-868.700MHz
Effective radiated power ≤10m W ERP.

(b)channel with≤350KHz.863.000-865.00MHz

Effective radiated power≤ 25 mW ERP.

(C) channel width 10KHz.450.175 MHz Effective

radiated power≤2W ERP.

CONCLUSION

IN this article, The examination OF radiated power of pentagonal microstrip antenna in complex plasma environment. reveals that the presence of such plasma media enhances the radiation power of antenna to a significant value. It is also observed that the given medium has more significant effect on directivity of the antenna. than Radiation power. it may therefore be concluded that there is significant change in the magnitude of radiation field intensity in complex plasma medium for free space.

The efficiency of the antennas more accurately. Than the previous contributions . based on the results of this paper the maximum efficiency is achieved in complex plasma Environment. effective radiated power is equal to the input power to the antenna multiplied by the gain of the antenna .The sum of all power radiated by an antenna connected to a transmitter. Total Radiated power is closely related to theefficiency of the antenna.

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