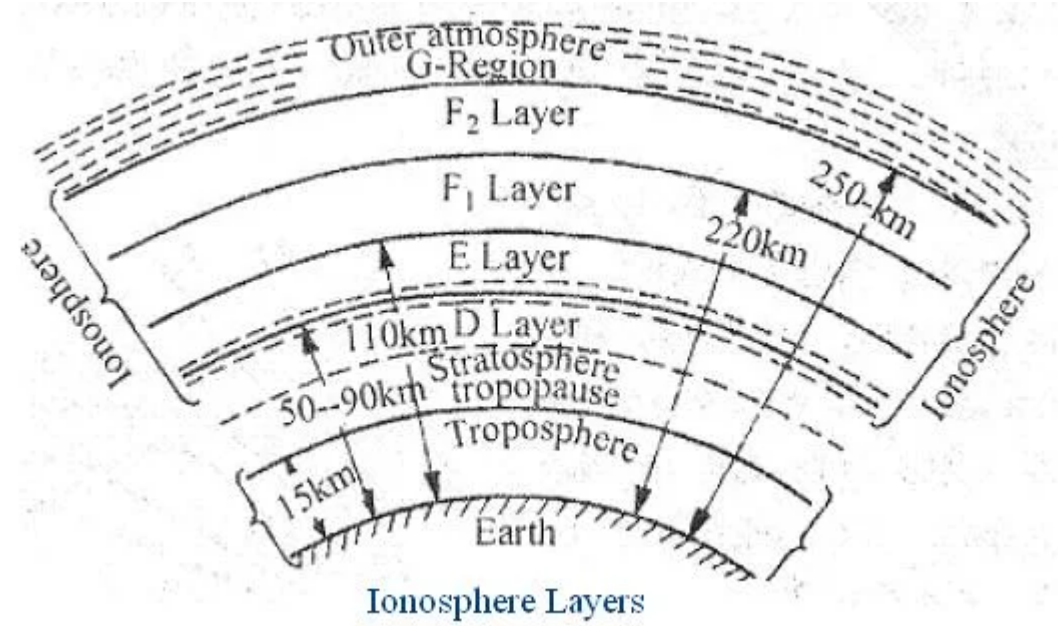


Difference Between Ionospheric Layers D, E, F, F1, F2

This page describes **Ionospheric layers D, E, F, F1 and F2**. It mentions difference between ionospheric layers D, E, F, F1 and F2 w.r.t. features or charactestics.

As we know radio frequency waves propagate through the medium above the earth. Figure-1 depicts structure above the earth. As shown it consists of layers in the order troposphere, stratosphere and ionosphere. The troposphere is just above the surface of earth and ranges upto about 15 Km. The stratosphere ranges upto about 90 Km above the earth. This stratosphere layer absorbs large part of sun radiation.



The abroption of sun radiant energy heats up the atmosphere. Moreover it generates ionization in the form of free electrons as well as positive & negative ions. This layer is known as **ionosphere**.

Various kinds of radiation such as UV radiation, α, β, cosmic rays and meteors are involved at this layer and will have different physical properties at different heights of the atmosphere.

D Layer

- This layer lies between 50 and 90 Km heights above the Earth.
- It attenuates HF radio waves during day time.
- This layer ionization is largely absent during

E Layer

- This layer lies above D layer and will have maximum density upto 110 Km.
- It is governed by UV light from the sun.
- At night it tends to decay uniformly with time.
- It is formed without any cause. Often it occurs in cloud forms and varying in size. Its occurrence is unpredictable.
- It may be observed both in the day and night times.

F layer exists above E layer. It is divided into F1 layer and F2 layer.

F1 Layer Part Of F Layer

- This layer lies above E layer and will have maximum density upto 220 Km.
- Its behaviour is similar to E region which obeys Chapman's law.
- Critical frequency of this layer ranges from 5 MHz to 7 MHz (noon time).
- Electron density varies from 2×10^5 to 4.5×10^5
- Most of the HF waves penetrate through F1 layer while some of them get reflected.
- It has more absorption capability of HF waves.
- Its density is lower in winter compare to summer.

F2 Layer Part Of F Layer

- This layer lies above F1 layer and will have maximum density upto 250 Km.
- It is located at height between 250 Km to 400 Km.
- Critical frequency of this layer ranges from 5 MHz to 12 MHz. It is more at low altitude stations.
- Electron density varies from 3×10^5 to 2×10^6
- F2 layer gets formed due to ionization of UV, x-rays and other radiations.
- It does not obey Chapman's law
- It is most important reflecting layer for high frequency radio waves.
- Ionization at F2 layer gets affected due to magnetic field of earth, atmosphere and other geomagnetic disturbances.

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- [Difference Between SC-FDMA And OFDM](#)
- [Difference Between SISO And MIMO](#)
- [Difference Between TDD And FDD](#)
- [Difference Between 802.11 Standards Viz,11-A,11-B,11-G And 11-N](#)
- [OFDM Vs OFDMA](#)
- [CDMA Vs GSM](#)
- [Bluetooth Vs Zigbee](#)
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- [Microcontroller Vs Microprocessor](#)
- [FDM Vs TDM](#)
- [Wimax Vs Lte](#)
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