SUMMARY, CONCLUSION AND SUGGESTION
6.0 Summary:

In this proposition both LPDA that are Log Periodic Toothed Planar Antenna (LPTPA) and Log Periodic Toothed Trapezoidal Antenna (LPTTA) have been formed. To begin with endeavor of the blueprint framework was to center the setup approach. Impelling system procedure of the LPDA’S was exhibited. The inspiration driving this step was to find the streams at the dipoles’ bases of the LPDA. To finish this basic coupling between the immediate segments of LPDA was inspected and redid despite authorization structure approach, then a methodology was created.

LPDA is a wide information exchange limit, multi-segment radio wire. It radiates particular repeat parts from differing plans of its segments. This behavior results in particular time delays in the supporting and wave going times, which particularly influences the repeat parts got at the same observation Point from these different game plans of transmitting segments. Low repeat fragments show all the more dissipating in light of the fact that they experience extra time deferments in the reinforcing and wave going times. The LPDA, as a wide exchange speed, multi-segment receiving wire, transmits different repeat parts from unmistakable courses of action of its segments. This behavior results in particular time delays in the reinforcing and wave going times, which particularly influences the repeat parts got at the same recognition Point from these different courses of action of radiating segments. In this proposition both LPDA that are Log Periodic Toothed Planar Antenna (LPTPA) and Log Periodic Toothed Trapezoidal Antenna (LPTTA) have been made. To begin with endeavor of the blueprint framework was to center the setup approach. Instigation system procedure of the LPDA’S was displayed. The inspiration driving this step was to find the streams at the dipoles’ bases of the LPDA. To finish this regular coupling between the immediate parts of LPDA was analyzed and modified despite consent system approach, then a methodology was delivered.

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6.1 Conclusion:-

Log Periodic Dipole Antenna was assembled using round and empty transmission lines and dipoles and on these barrel formed structures shared coupling tallies were made. Regardless, in the midst of the advancement process it was warning that it was outstandingly difficult to exhaust small opening on the transmission lines, for the dipoles. That is the reason it is essential to make usage of unprecedented exhausting techniques like electron blockading which are excessive. If the transmission lines and the dipoles are cut from a metallic sheet, that is to say they are rectangular precious stone, with little thickness, as opposed to barrel, the creation methodology can be basic and shabby, the era strategy can be straightforward and unobtrusive. Regardless, in this all mutual coupling calculations should be changed by new structure of the dipoles. In the setup change, the trademark impedance of the feeder line should be more conspicuous than 105.6 when round and empty transmission lines are used. The feeder impedance can be lower consequent to the transmission’s state lines is not round and empty and moreover they are less disposed to contact.
In this proposition, Radiation characteristics of planar toothed and moreover trapezoidal toothed log irregular receiving wires have been considered. Such sort of receiving wire when truly redesigned can find potential applications in correspondence, course, observation, broadcast and EM field estimations. These gathering contraptions can be used for long partition correspondence. The receiving wire has an essential structure. The amusement results shows that the proposed receiving wire has stable radiation outline in the repeat range from 1 to 5 Ghz. Log Periodic Antenna is a unimaginable choice for data exchanges. In this it is ordinary to drive substituting components with 180° (π radians) of stage movement from each other. This is typically done by interfacing singular components to rotating wires of an adjusted transmission line. The lengths and dispersing of the components of a log-intermittent receiving wire increment logarithmically from one end to the next. A data’s plot impedance as an element of logarithm of the excitation recurrence demonstrates an occasional variety. This receiving wire configuration is utilized where an extensive variety of recurrence is requi. The parameters of log-periodic radio wire are dismembered by using the thought of Isbell receiving wire. The tennaanalysis is done to work the radio wire at the operation repeat of 3GHz, and the band of operation is between 2GHz to 18GHZ (up to K-Band). The two arm log-incidental and four arm log-irregular antennas are arranged and imitated by using High Frequency Structured Simulator (HFSS) programming. The circuitous polarization is refined for the log-irregular receiving wire by using Cross Dipole Concept. The Near and Far Field traits (S11, VSWR and Radiation Patterns) are reenacted, which Shows the gathering device is working between 2GHz to 18GHz. The impedance organizing is given by 3-territory chebyshev impedance planning transformer. This receiving wire gives extraordinarily higher transmission limits, which is important for the higher data rates and gives fruitful channel limit. So these radio wires are pertinent for the MIMO applications like insurance, air space development, flexible correspondence devises and satellite particular devices.

HFSS is a world class full-wave electromagnetic (EM) field test framework. Constrained Element Method (FEM), flexible cross segment, and unbelievable
configuration are used to give an unparalleled execution and comprehension to most of the 3D EM issues. Parameters, for instance, S Parameters, Resonant Frequency, and Fields can be learned using Ansoft HFSS. The receiving wire can be planned for lower repeat range, for instance, 100MHZ-500MHZ, the VSWR is under 2, the expansion is more unmistakable than 7dBi, and the size is under 1.5m. Standard arrangement procedure should test on and on, make theoretical correction, change electrical parameters and in the long run get the pined for results. In any case, it takes a mass of time and resources. Streamlining diagram by HFSS amusement inspected in this paper saves the incomprehensible cost that routine procedure required.

The essential bit of the paper depicted the presentation of TL MTM stage shifters to redress the repeat diffusing associated with a LPDA gathering contraption. The repeat diffusing wonder was considered with an isolated Gaussian beat in light of the way that its repeat range, while being greatly wide band, had zero DC fragments. Since it exudes the isolated Gaussian beat with no repeat diffusing, a little dipole receiving wire was exhibited as the reference gathering contraption. The thought of a got signal’s consistency was familiar with measure the execution of a LPDA gathering mechanical assembly. This commitment (F D) Fig of authenticity was portrayed similarly as a likelihood measure between the got waveform radiated by the reference minor dipole and the LPDA gathering contraption under thought. It is Figd as the best estimation of the association between these two waveforms institutionalized by their energies. The dedication term, F D, was similarly familiar with oblige the π stage refinement joined with negative and positive estimations of the waveforms. The LPDA, as a wide transmission limit, multi-segment receiving wire, exudes particular repeat fragments from different courses of action of its segments. This behavior results in various time delays in the maintaining and wave going times, which particularly influences the repeat parts got at the same recognition point from these unmistakable plans of exuding segments. The low repeat sections experience extra time deferrals in both the sustaining and wave going times and, in this way, show the most repeat diffusing. Since the repeat scrambling is made by particular time
delays for assorted repeat fragments, we proposed the usage of left-gave and 126 right-gave stage shifters to give the stage change required to remove these deferrals for the resolation frequencies joined with the LPDA. In particular, it was exhibited that the lower frequencies required the most pay to finish high commitment values. As opposed to the run of the mill stage shifters which include a serial inductor and a shunt capacitor, which give a stage concede, the left gave arranged shifters are made out of a serial capacitor and a shunt inductor and produce a stage advance. Both of these stage shifters are of littler size and were joined with the LPDA gathering device without changing its log-infrequent geometry. What’s more, in light of the way that the parts’ greater part transmit basically along the endfire direction of the group, the heading of eagerness to upgrade the execution of the LPDA in delivering heartbeats is generally in this essential bar course. The item and reenactment mechanical assemblies used for this LPDA section of the paper included MATLAB and HFSS. Since HFSS is a repeat space, restricted segment procedure (FEM), Fourier changes were used to interface the repeat range reenactment instruments with the pined for time territory results, i.e., a high F D or F D Figd for the time zone waveforms under thought. The fundamental examination model got was a repeat space circuit model. Again, Fourier changes were required for the circuit model examination. The stage’s sufficiency congruities required to improve the yield’s steadiness waveforms was displayed by the perfect course of action whose present stage is an immediate limit of repeat and whose present degree proceeds as some time recently. For the perfect plan, the dedication is more than 97%. The stage shifter qualities are controlled by organizing the stages at the loud frequencies of the dipoles to those of the perfect course of action. In the wake of displaying these stage alteration, the consistency of the LPDA receiving wire was seemed, by all accounts, to be basically made progress. Despite the time range steadiness, the properties of the changed LPDA radio wire were also checked. It was exhibited that the landing loss of the adjusted LPDA was still under 10dB in the repeat extent of distraction. On the other hand, the increment was seemed to wind up just
insignificantly lower in the low repeat range. The lower expansion in this low repeat degree was made plans to be a result of the lower current sizes on the more drawn out radiation segments, an effect was 127 brought on by the stage shifters. Moreover, the stage shifters furthermore incited an alteration in a receiving wire’s rate cases joined with the individual radiators. These effects were seen to be associated with the way that the stage shifters were laid out especially for the predominant reverberating frequencies of the parts in the show. The present stage was changed as per be as close to the value associated with the perfect game plan. Regardless, for exchange frequencies, the present stage is truly far from the perfect game plan. These two absconds, the present amplitudes and the limited information transmission stage change, could be upgraded by applying DNG stage shifters. Both the left gave and right gave stage shifters cause extra assembling deferments, which in this way causes changes in the radio wire’s execution. With the DNG stage shifters, both the stage delay and the social affair deferrals can be made positive or negative and, along these lines, a better game plan over a more broad exchange velocity could be refined. Of course, the DNG stage shifter would require a dynamic speaker to overcome the resistance adversity. In any case, this is possible and is at this time under investigation. By switching the enhancer get, the general expansion of the adjusted LPDA could be improved further.

Particular sorts of receiving wires are being used as a piece of various sorts of usages. Direct polarization is most by and large used for most radio trades applications. Vertical polarization is frequently used for versatile radio trades. This is in light of the fact that various receiving wires have omni-directional radiation cases suggests gathering device exude reliably in all headings and there is no convincing motivation to re-orientate the radio wire as all things considered happens in versatile radio exchanges as much of the time the vehicle moves. For other radio correspondence applications, the polarization is routinely managed by the RF receiving wire thoughts. It is definitely not hard to mount broad multi part radio wire groups in a level plane than a vertical plane. This is because the RF gathering device segments are right
indicate the vertical tower of the post on which they are mounted and along these lines there is less electrical and physical impedance between the level parts of the receiving wire. This truth be told chooses the standard polarization generally speaking.

There are execution contrasts amidst level and vertical polarization in a couple of uses. For example vertical polarization has been completed in medium wave broadcast stations in light of the way that ground wave multiplication over the earth is favoured using vertical polarization over level polarization. For satellite radio exchanges, as a rule we use round polarization in light of the way that circuitous polarization gives better response to the extent inciting and it in like manner overcomes the obscurring effect made by the modification in the satellite’s presentation.

In study we find that rectangular and H-shaped microstrip radio wires alongwith five segment log incidental microstrip gathering mechanical assembly have been considered through diversion using Ansoft High Frequency Structure Simulator (HFSS) and their landing disaster differentiated and each other. It has been seen from the study that five part H-formed patch log discontinuous microstrip receiving wire gives more broad information transmission (ten times) in examination to rectangular microstrip radio wire. The propagation results have exhibited that H-shaped microstrip radio wire made diminishment in size and higher information exchange limit (9.5%) in examination to rectangular microstrip gathering contraption (3.5%) for the same resounding repeat. The log infrequent receiving wire gives very nearly omni-directional illustration with sensible expansion which can be suitable for application in remote correspondence. Two sections of microstrip gathering mechanical assemblies have been inspected. The essential perspective is the framework of basic rectangular microstrip radio wire and the second is the setup of space cut H-shaped microstrip receiving wire. A fundamental microstrip line sort feed segment with quarter wavelength Long Branch line used to enabled patch. The major concern is to focus on the exchange rate change of the microstrip gathering device. Rectangular
microstrip receiving wire and H-shaped microstrip radio wire have been arranged and copied using high repeat structure test framework (HFSS). H-framed microstrip gathering mechanical assembly made diminishment in size and higher transmission limit (9.5%) in examination to rectangular microstrip radio wire (3.5%)

In study we moreover watch that A Ultra Wide Band Microstrip Yagi radio wire is shown. Numerical multiplication and measured outcomes of our setup show more than (-20 to -40) dB return adversity at the gatherings of (0.85, 2.4, 3.5, 4.5 and 5.2) GHz and VSWR under 1.7 at these frequencies. Finally a production to the last layout has been executed, and a short time later an estimation performed to differentiate the real results and those emulated. Measured return disaster and VSWR of this gathering contraption are acquainted with affirm the eventual outcomes of reenactment so it give (0.85, 2.4, 2.75, 3.6, 4.2 and 5.3) GHz for the planned return hardship results and the radio wire VSWR ≤ 1.5 at (2.4, 3.5, 4.5 and 5.2) GHz. With the quick progress of remote development recently, distinctive remote systems, for instance, GSM, WCDMA/UMTS, Bluetooth, WLANs, and GPS have been exceptionally joined into the PDAs, and remembering the final objective to fulfill the RF structure essentials using the different repeat band, receiving wire advancement is required to wideband qualities. On the other hand, various current remote correspondence structures, for instance, radar, course, satellite, and flexible applications use the indirect empowered (CP) radiation outline. The charming purposes of enthusiasm of the CP receiving wire are existed as takes after. Firstly, since the CP gathering contraptions send and get in all planes, it is strong for the reflection and osmosis of the radio sign. In the multi-way obscuring channel environment, the CP radio wire overcomes out of stage issue which can achieve dead-spots, reduced throughput, diminished general system execution. Besides. Also further changes ought to be conceivable by using radio wire substrates with higher dielectric constants in order to lessen the size an extensive band wide column indirect polarization scaled down scale strip receiving wire. The radio wire’s outline is essential and easy to fabricate differentiated and conventional little scale strip
receiving wire, the radiation bar is extended obviously. Further research on circularly hypnotized wideband littler scale strip receiving wire is required as it gives the best execution and general change of gathering mechanical assembly parameters.

The framework of square littler scale strip patch receiving wire with working repeat 2.6 GHz suitable for s band application using inset sustenance supporting strategy has been done using HFSS programming. The execution parameters were proficient with expansion 11.5 dB and column width 40 degrees in E-plane and 26 degrees in H-plane for patch gathering device. The proposed receiving wire involves a singular patch for single working repeat. In future two patches will be stacked and spaces will be familiar with work in two working repeat to finish high get and incredible return hardship. Receiving wires are basic segments of any remote correspondence systems. There are a couple kind of receiving wire are available they are wire radio wire, log infrequent gathering device, voyaging wave radio wire, scaled down scale strip gathering mechanical assembly, opening gathering contraption, reflector radio wire. The wire gathering contraption contains a couple radio wire they are short dipole receiving wire, dipole receiving wire, half wave dipole, broadband dipole, monopole receiving wire and circle radio wire. Notwithstanding this receiving wire, in this endeavor littler scale strip radio wire is made with repeat out of 2.6GHZ.Micro strip gathering contraption contains 2 radio wires they are rectangular scaled down scale strip (patch) receiving wire and planar changed F gathering device Micro strip or settle radio wires are becoming logically accommodating in light of the fact that they can be printed clearly onto a circuit board. Little scale strip gathering mechanical assemblies are ending up being to a great degree no matter how you look at it within the phone market. Patch receiving wires are insignificant exertion, have a position of wellbeing and are adequately fabricated. Littler scale strip gathering mechanical assemblies discover various applications as they are low profile, light weight, like surface and shabby to manufacture using printed-circuit advancement. For an alter, the length L of the segment is ordinarily the $L<\lambda g/2$ (where $\lambda g$ is the associate wavelength on the substrate).
Thicker substrates with lower dielectric steady give better adequacy and greater exchange speed yet to the burden of greater part estimate. Thin substrates with higher dielectric constants lead to more diminutive segment sizes, minimize coupling, yet are less compelling and have respectably humbler transmission limit. Littler scale strip patch gathering devices have acknowledged duplicated use in various circularly entranced applications due to their position of wellbeing and significant radiation qualities. In the latest decade, the headway of bleeding edge remote structures has incited extended examination on littler scale strip radiators, with particular thought paid to upgrading execution and downsizing. Diverged from a round patch for a given repeat the square geometry is tinier in size. In current correspondence system requires low profile, light weight, high get, and direct structure radio wires to give surety steadfast quality, convenience, and high adequacy characteristics. In light of the vicinity of improvement being produced of simplicity, less weight, significantly strong, irrelevant profile receiving wires for remote devices, it speaks to another test for the framework of gathering mechanical assembly in remote correspondences. This paper presents layout and reenactment of a square little scale strip patch bunch gathering device at 2.6 GHz for remote exchanges that gives a radiation plan along a wide purpose of bar and finishes an OK get. The straggling leftovers of the paper has been confined into Fiveparts. Section 1 delineates graph of receiving wire. Range 2 depicts a graph of the Micro strip patch gathering mechanical assembly. Range 3 describes design considered antenna. Section 4 delineates propagation results. Region 5 describes the conclusion and future work independently.

The setup, creation and depiction of a rectangular patch end-fire show radio wire were presented. The gathering device was created and redesigned using eight elements of half-wavelength and a width 0.12λ in FR-4 substrate. Measured results exhibited end-fire operation with a conscious most great expansion of 6.9 dBi finally fire direction. The proposed receiving wire can be used for multi-band applications that require a radiation plan finally fire heading. Regardless of the way that the examination finished its destinations,
the antenna has a trademark imprisonment in its perfect structure. To be particular, if the end-fire bunch is restricted to work in tolerating mode, detuning may happen should changes in climatic or ventilates make. Additional testing, for instance, the Over-the-air testing, could be guided with a particular final objective to correctly measure the receiving wire’s execution in biological conditions. Besides, in the radiation outline estimation, the working repeat was limited to work at a lone repeat. By measuring additional radiation plans at each of the frequencies showed up in Fig 2(c), the results could give additional data to support the radio wire’s general capability; where the portion of the power supplied to the receiving wire, including any reflection mishap, is truly transmitted by the gathering mechanical assembly.

The examination of vacillation was fundamentally associated in logical estimations. Use parameter estimation and hypothesis testing to deal with the unlimited volumes of data. The degree which each imperative variable effect the trial’s delayed consequence is gotten. In this work, the repeat of 2.0GHz. The delayed consequences of rEPhi are known as test spotlights on the essential parts of the principal H plane inside 3dB column width. The test targets are affected by two variables, independently: under the 3dB column width degrees (0 changes every two degrees) and the turn detachment from top of the nourishment line of the radio wire to the origin of bearings. The state of parts is known as the level. In the entertainment, the pole width and the qualities of x turn from start of the course to vertex of the nourishment line of the receiving wire change. Besides, a test’s delayed consequence is gotten in the mix of two components. It is two-consider the examination of variance without repetition.

6.2 Suggestions:-

Log-Periodic Dipole Antenna (LPDA) is a basic broadband receiving wire, in light of its non-repeat subordinate trademark. In any case, the physical size is constrained to the longest oscillator dipole with the most decreased deafening repeat, which is totally immense and obliges its application. The cure of this issue is to reduce gathering contraption size. Right when such sorts of
gathering devices are properly streamlined can find applications in correspondence, course, perception, and broadcast and EM field estimations. So in future work we can diminish the gathering mechanical assembly’s measure in order to make it more littler, strong for long partition correspondence within a predefined repeat range i.e 1-5GHz.

Future Scope and Limitations of Research Work

Future Scope

The proposed antenna can be implemented for commercial purposes with minor modifications in its construction. Different modifications can be done in size and shape of the antenna through which the bandwidth can be extended beyond 5 GHz. The length of elements and spacing between elements is the major constraints in order to do the fabrication of the antenna. To overcome this and to attain higher gain the beam width of the antenna can be reduced. As we know if the beam width decreases the Directivity and Gain increases and vice-versa and that is why we need to compromise on any one parameter. By the optimization of geometry it is possible is feasible to attain LPDA with good performance from point of view of gain, bandwidth, beam width etc. If the optimization of the antenna is being done by controlling $\tau$ i.e. scale factor, $\sigma$ i.e. spacing factor and $\alpha$ i.e. subtended then higher gain, wider polarization or input impedance bandwidth can be achieved.

With the fast development of technology in this area, the design of antenna is under rapid progress. There is a plenty of room for the improvement of antenna design as the requirement for wireless communication system has been increased. The following points must be considered for the possible future directions for the work as mentioned in this thesis.

1) The antenna should be compact in size and shape and that is why it is essential to explore new techniques in order to reduce the size of antenna.

2) The design of the antenna is the major constraint in order to implement this antenna in practical applications.

3) The most promising entrant is matamaterial. Reason being it can reduce the antenna size greatly in theory.

4) In most of the narrow beam applications, current matamaterial antennas have been implemented.

5) In near future, this technique will be available for wideband operation.
6) There is a strong requirement of low noise amplifier for UWB receiver.

7) In near future the integration of antenna with low noise amplifier may be investigated.

8) There are certain radio systems like software defined radio and cognitive radio systems which influence the design of an antenna and particularly reconfigurable antenna design.

9) In near future it is essential to minimize the impact of these factors on antenna designing.

10) The antenna should be flexible in size so that it can be implemented as per our requirement.

Future Works:

RF MEMS Switches:-

The radio wires considered in this work use simply electronic trading executed with PIN diodes. Radio repeat micro-electromechanical systems (RF MEMS) switches are littler than anticipated devices that use a mechanical improvement to finish either a short out or an open circuit in a transmission line. They can give an alter nearby to these solid state switches, as they show certain central focuses, such more diminutive 155 size, low inter-modulation things, high disconnection and low insertion hardship, over the PIN diodes considered in this work. Using a framework like that used to show the diodes, RF MEMS devices can be joined into the gathering contraption’s arrangement. Optimization like that finished using the PIN diode switches can be executed for this circumstance in like manner, and incredible reconfigurability can be obtained. While the advantages of RF MEMS contraptions over the solid state device have been inspected above, they have certain drawbacks when limited to solid state devices, for instance, moderate trading pace, low power dealing with, incitation voltage, steadfast quality and packaging. Despite the weight said above, RF MEMS contraptions have certain qualities that make them a charming plausibility for future work.

Receiving Wire Feed Technique:-

For the application under the idea, the receiving wire is required to transmit a right hand round polarization. For this desire, four sustenance centers for
each patch are required. This sustenance configuration, especially for the twofold band receiving wire, is however not too clear, since there is a need to pass the nourishment joins through the L2 patch (see Chapter 3). It is thusly charming to arrange another reinforcing system that simplifies the whole nourishment part. This is trying extent where our gathering device could be advanced.

**Reconfigurable Array:**

For our proposed arrangement, a reconfigurable receiving wire includes a transmitting element enveloped by a switch-stacked parasitic ring. The reconfigurability is traversed the use of two different ring configurations. In light of current circumstances, it is possible to have a bunch whose sample can be reconfigured through the use of a parasitic ring 156 enveloping the entire show. The parasitic ring can incorporate another level of adaptability to the bunch’s design. This investigation subject is deﬁnitely a great degree urging domain left to be explored. Receiving wire with Excellent Axial Ratio It is found in the midst of our study that the radio wire that demonstrates a phenomenal crucial extent trademark could be gotten. By adding an in number parasitic ring to the transmitting patch mounted on the to some degree grounded substrate, an extraordinary center extent (∗ 3 dB) is secured for 0± ∗ μ ∗ 100±. This is for the most part to a great degree difﬁcult to fulfill. A circularly entranced microstrip receiving wire commonly yields a better than average center extent for 0± ∗ μ ∗ 50±. Before long the center extent ends up being all the more horrendous particularly when the stature point (μ) approaches the endre bearing. This issue could be controlled by adding the parasitic ring to the patch antenna. Around the horizon area, the patch gathering mechanical assembly segment mounted on a ˇnite substrate normally transmits an Eμ part more grounded than an Eα fragment. In spite of what may be normal, the parasitic solid ring without any other person’s info transmits the Eα section more grounded than the Eμ portion. By joining these ˇeld parts, both vertical and horizontal portions have practically the same quality along the horizon. This could achieve an average center point extent, giving a ﬁtting relative stage.
Limitations of Research Work

There are certain areas which need improvement which are given below:

- There is a need of comparison between experimental and theoretical patterns of the antenna.
- Although we have simulated LPDA antenna still there is a need of comparison between simulated and practical results.
- The simulation of antenna using other software like IE3D, Sonnet, AWR and MATLAB could not be made.
- We only emphasis on HFSS i.e. High Frequency Structure Simulator which is the major constraint of the research work.
- Also the design of such type of antenna is more complex than conventional antenna and different software need to be studied in order to design such type of antenna and comparison needs to be done in order to compare the simulation result after implementing different software.
- As some antennas are quite sophisticated and the choice of the material for their design is the prime concern. This in turn limits the focus in the designing of antennas which are easier to design.