Global Scientific JOURNALS
GSJ: Volume 12, Issue 5, May 2024, Online: ISSN 2320-9186
www.globalscientificjournal.com

TCAS

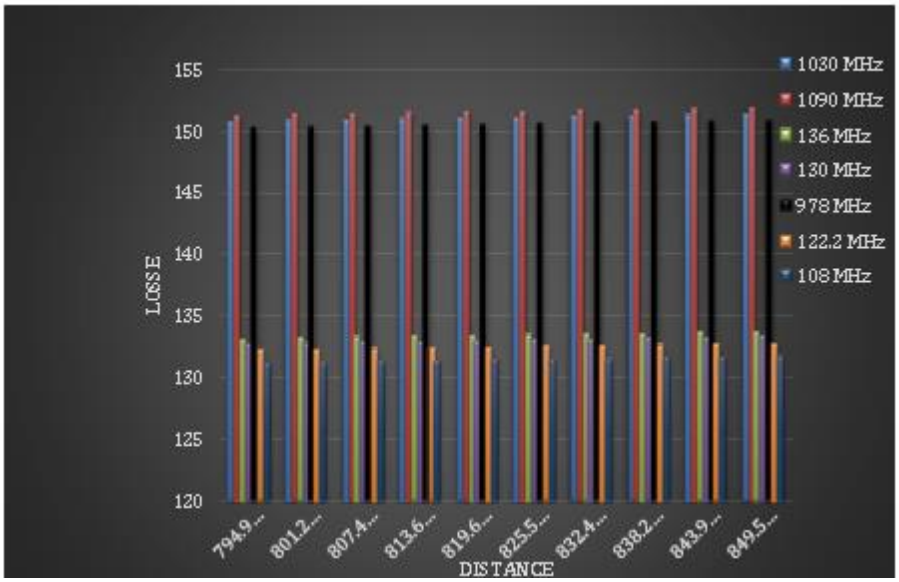
Mammadov Vali

The importance role of TCAS is not secret to anyone. TCAS has a lot of advantages, and it effects a improvement of aviation industry.The main drawback of this system is determined that it isconnected with frequency. And that is why, the main aim of work was to evaluate frequency of TCAS and focus on the improvement. In the first chapter these issues were became clear.

In order to reach the goal, the next tasks were to go through out with technical characteristics of radio channel based on transponder. Investigation of these cases lead us to analyses propagation of waves. Firstly, we find out that for assessment of frequency we have to continue with losses. The principle of losses is natural, if antenna propagate the signal there has to be a certain number of losses in db. And it is considered a disadvantage because if we want to get better result there has to be a low loss. That is why, to evaluate the frequency we need take into account loss. The loss was our main key point. And that is why calculation of losses method is used to evaluate TCAS frequency. These were the theoretical part of project.

To calculate losses between transmitter and receiver we needed to get result for distance of line of sight. So, the first task before calculation of losses was to get results for distance. To calculate of distance between transmitter and receiver, we find out that calculate from first antenna to horizon and second calculate distance from receiver antenna to horizon was compulsory. After that we needed to collect them to get full distance. To get a good work, we took a FL between 300 and 400 and that is why we had 11 stations. Because of fact that in every flight level can be aircrafts we calculated distance between each station in respect of remains. After that we calculate the losses between these stations for frequencies. The main method of get conclusion we took not only frequencies of TCAS. There were also the empty frequencies and also occupied frequencies.

Compare results with each other gave us opportunity to understand the result of work and get aconclusion. In the section of graphs all result for each distance were there and in each graph had a result of every frequency. So, this graph showed us the results clearly. And finally, according to the result the hypothesis of work is proven. All results showed that to get betterresults we need to use short frequencies. And also, about distance the high of antenna is important. As we can see, the frequencies of TCAS (1030,1090 MHz) are highest than other (108,122.2,136,130,978 MHz). So, using these frequencies for TCAS is not advised because they are higher, however there are a lot of empty frequencies, for example we took there of them in calculation part, shorter than frequencies of TCAS. The beneficial side of this work is to understand how we can get improvement about operating TCAS system in these days. The main technical parameter of radio channel is frequency and we evaluate these to understand how we can get improvement. If the improvement is compulsory for this system as we showed that it is, we need to use short frequencies to operate TCAS. The benefit of this work will lead the aviation industry more safety progress.


155
150
145
140
135
130
125
120
LOSSE
1030 MHz
1090 MHz
136 MHz
130 MHz
978 MHz
122.2 MHz
108 MHz
794.9...
801.2...
807.4...
813.6...
819.6...
825.5...
832.4...
838.2...
843.9...
849.5...
DISTANCE

© GSJ