A NOVEL CHANNEL OPTIMIZATION OF WIRELESS NETWORK

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Abstract: Mobile network is always dependent on wireless radio spectrum which is always a precious and costly. So optimization of channels is the only way to reduce the costing. But optimization is may decrease the performance so we have to check channels on some set parameters such as Raleigh Fading, Doppler spread Impulse response etc. Transmitting power of the base station, obstructing buildings in cells, height of the base station and location of base station etc will always create Doppler delays and attenuation. For this a drive test is performed in wireless network but implementation of wireless network is always a costly and a better option is to check performance in simulation by using data obtained in drive test.

Keywords: RF Optimization, Doppler delay, attenuation, Impulse response.

1. INTRODUCTION

As we all know every subscriber needs channel. So increasing subscriber base is always desired by the telecom companies but it also comes with more demand of channels so we have to optimize channel uses so that they can reduce channel cost per user. It can be done by many changing many parameters.

2. PERFORMANCE PARAMETERS

The following parameters are the main points on which a wireless network is judged

2.1 Call Initiations Success Ratio

When we call some mobile no it is searched by a page. Thus for a successful call it is very necessary that a page should be successfully received and replied by a mobile receiver. Since the process involve almost all the base stations of GSM/CDMA so it is very difficult to keep a tab on success of a page as it may be affected by any or many parameter.

2.2 Channel Assignment Success Ratio

After receiving a page successfully and identifying base station issue a command to MSE for either immediate assign or reject a channel as soon as MSE receives it demand it verifies the demand and assign a channel.

2.3 Random channel Access Success Ratio

It is used by a MSE to listen identify and assigning time slot to mobile just being called**.**

2.4 Transceiver Channel Assignment Success Ratio

It is a phenomenon if the MSE failed to response or response in time and call gets disconnected due to this.

2.5 Call Drop Rate

It is known as the call disconnection due to unavailability of channel.

2.6 Handover Success Ratio

This problem belongs to seamless handover of a mobile from on cell or MSE to another. it is very clear that by channel optimising channel use we can improve all these parameters. However in some cases we need reassigning of BSE but we have used only those parameters which can be changed only by software. For this experiment we have used MATLAB software and COST 207 model as base and varied its parameters.

3. PARAMETERS AFFECTING THESE PARAMETERS

3.1 Attenuation

It may caused by various reasons like rain, multipath scattering. The most widely used models used are HATA or Jakes. In this experiment we have used Jakes.

3.2 Frequency Response of environment

For different frequency band an atmosphere may react differently even every band allocated to subscriber may affected differently

3.3 Environment

A signal may pass through different type of environment like through a urban or hilly terrain or a mix of both. So the effect on the signal will be different.

4. RESULTS

For the frequency band 1800 and 64 QAM modulation we have found following results

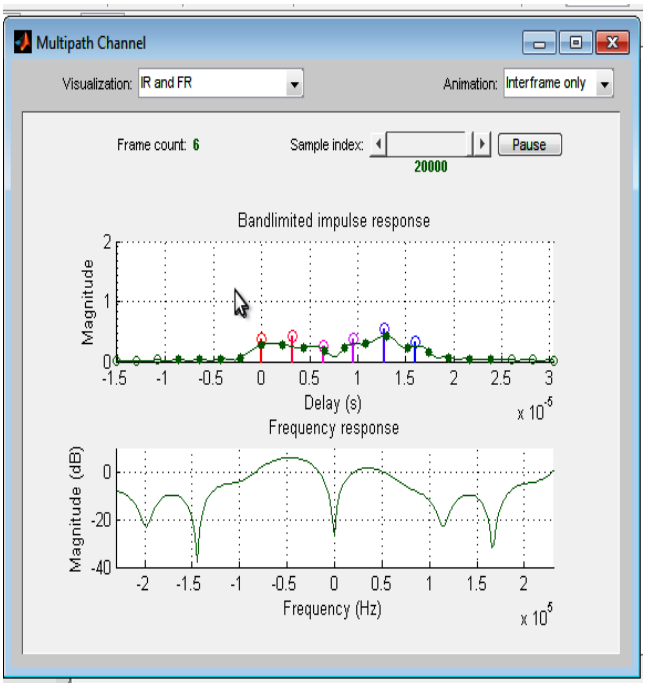

Figure 1

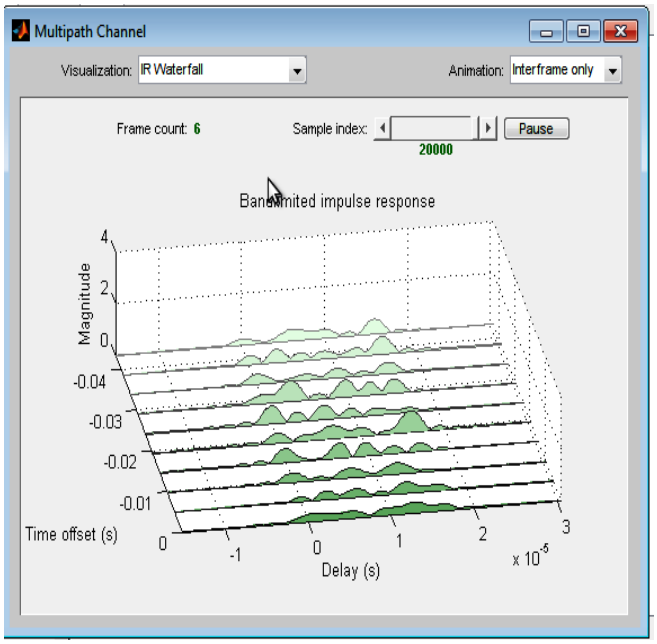

Figure 2

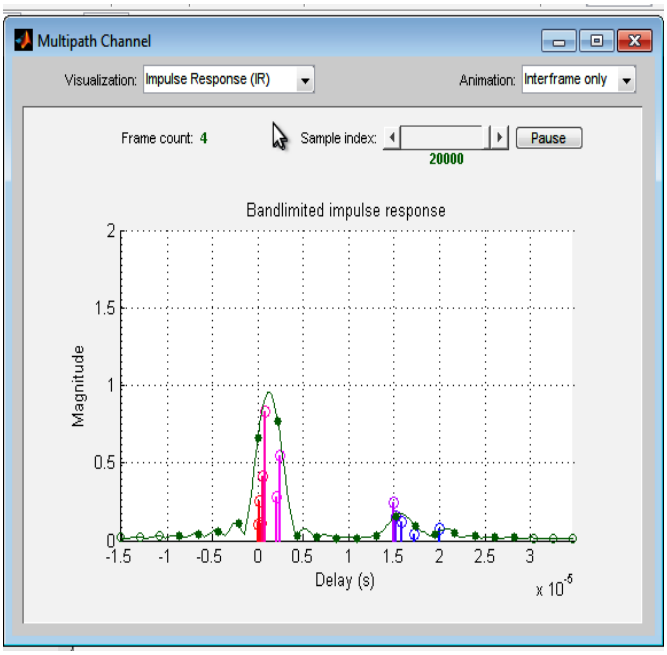

Figure 3

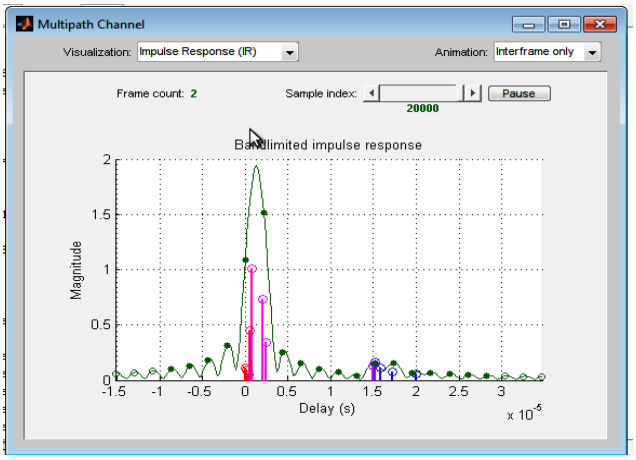

Figure 4

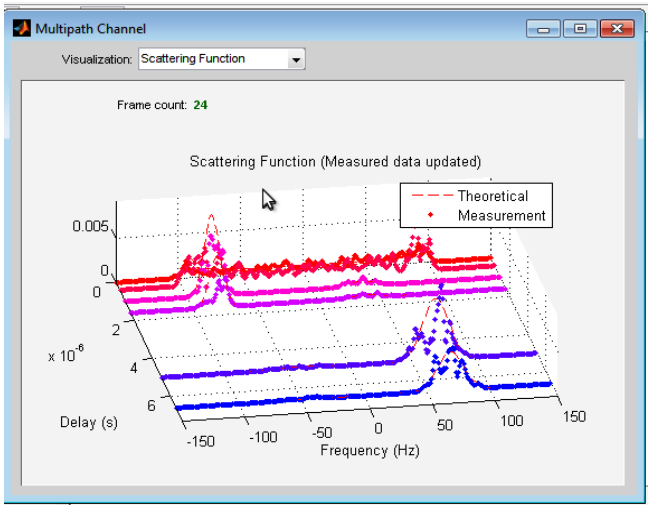

Figure 5

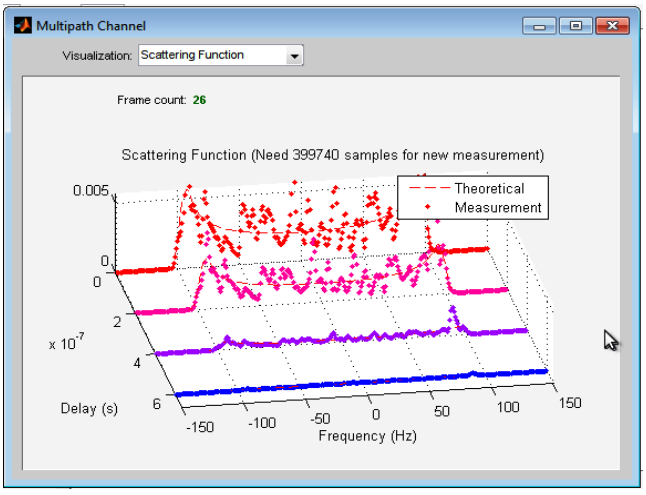

Figure 6

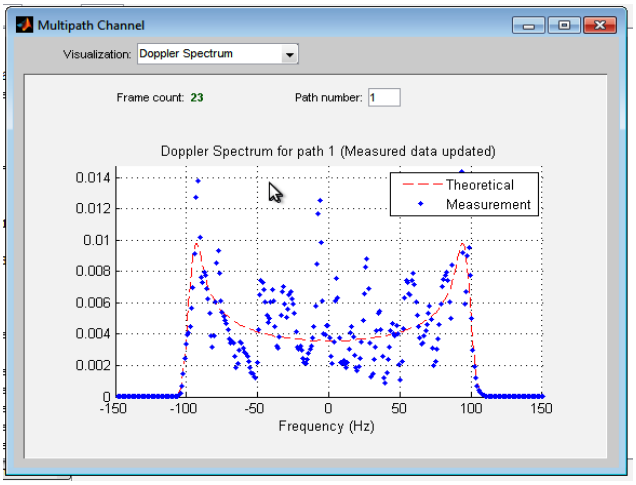

Figure 7

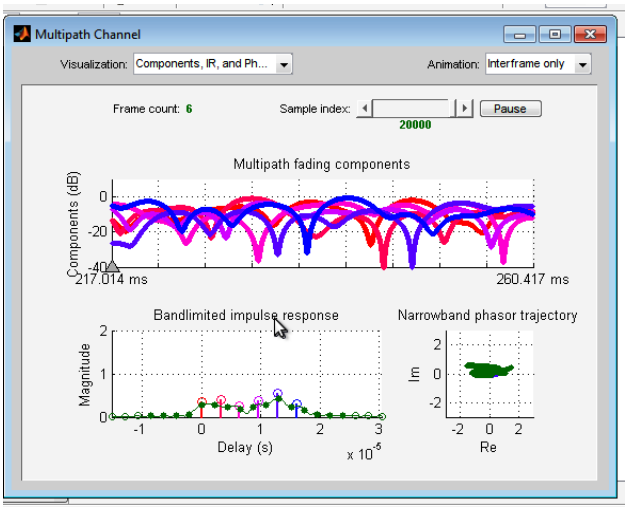

Figure 8

From different graphs obtained it is very clear that the response was very to the ideal leaving some small portions which may be accommodated.

FUTURE SCOPE

In future when many other levels of modulation and frequency bands will be used this model will be quit helpful to determine the response of system and to optimize it.

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