

## **CHAPTER ONE : INTRODUCTION**

### **1.1. BACKGROUND :**

The research focus on the new approach to management of the radio spectrum, which is intended to promote innovation and competition in the provision of wireless services across the Country. It committed to continue the implementation of a more dynamic and market oriented approach, through the inter-related projects of spectrum pricing, spectrum trading and liberalisation.

My decisions in respect of the interest I have for suggesting fees for licences granted under the Wireless Telegraphy Act 2003, (“wireless telegraphy licences”) by exercising its powers under sections 1 and 2(2) of the Wireless Telegraphy Act 1998 (the “1998 Act”). It follows an earlier consultation on Spectrum Pricing. In that consultation, I proposed to continue the use of AIP where appropriate in setting annual fees for wireless telegraphy licences as well as for amending the methodology for determining AIP. In particular, proposed to update the level of fees for certain licence classes (including those where AIP is not appropriate and for also new types of radio use). In addition, the consultation held a broader discussion on longer term applications of pricing to some licence classes (primarily for broadcasting and business radio).

As explained in paragraph above, NCC has powers under section 1 of the 2003 Act to prescribe by regulations

fees payable for wireless telegraphy licences on their issue, or subsequently at such times during the term of the licences as may be prescribed therein. Those powers also enable NCC to prescribe in regulations that licensees shall pay to NCC such fees (whether on the issue of the licence or subsequently) as NCC may in the particular case determine.

Current regulations therefore contain provisions both as to specific fees for certain wireless telegraphy licence classes and as to other licence charges that may be decided in the particular case.

## **1.2. PROBLEM :**

### **a. Economic approach to using Administered Incentive Price ( AIP )**

As mentioned above,NCC has the general duty to promote the efficient use of spectrum under the 2003 Act. AIP is an important mechanism for fulfilling this duty. This is because AIP signals to spectrum users the value of the spectrum resource that they are currently using or could potentially make use of. Ensuring that users pay AIP for their spectrum creates the proper incentive for users to only use spectrum that they value as highly as any other potential user. This implies that those users to whom spectrum is worth less than AIP will not have the incentive to use this spectrum. Hence, AIP can promote the efficient use of spectrum by

creating incentives that ultimately lead to the allocation of spectrum to those who value it the most.

**b. Implementation issues**

Two general implementation issues were identified in the Spectrum Pricing in relation to the introduction of spectrum trading. The first concerns payment dates, whereby licensees can adjust their payment dates in line with other licences, and whereby payments may be spread over the year for certain large licences (where the fee is over #100,000). The second concerns mechanisms for facilitating partitioning of tradable licences, and the calculation of fees for licences that have been partitioned in geography, frequency or time.

**c. Imbalance of spectrum valuations**

An imbalance between spectrum valuations for public wireless networks and other competing mobile radio services, such as PAMR and CBS. That business radio fees are set too high, affecting the ability of these services to compete with the public wireless network sector. According to these respondents, it would be unfair to raise the fees for competing mobile radio services whilst maintaining licence fees for cellular networks.

**d. Removal of fee modifiers**

There was strong support for the phased removal of the fee modifiers “choice and diversity” factor and the “step-in”

arrangements applying to Common Base Station and Public Access Mobile Radio licences. Such a removal is considered appropriate in a market which some correspondents now believe to be mature. It was also felt that the removal of these modifiers, when the grounds for them no longer exist, would support the proposed simplification of the PBR and PAMR sectors.

**e. Sharing factor**

Many termed the sharing factor as ‘unpredictable’. The factor lacks transparency as it depends on licence details of other operators at sharing sites – information most operators do not have access to. Equally, assignment methods would need to be updated to enable operators to make an informed decision on whether they wish their new links to share spectrum or not.

**1.3. OBJECTIVES :**

The broad goals and objectives associated with spectrum pricing are:

- Covering the costs of spectrum management activity borne by the spectrum management authority or regulators;

- Ensuring the efficient use of the spectrum management resource by ensuring sufficient incentives are in place;
- Maximizing the economic benefits to the country obtained from use of the spectrum resource;
- Ensuring that users benefiting from the use of the spectrum resource pay for the cost of using spectrum;
- Providing revenue to the government or to the spectrum regulator.
- The unit price and rate applicable to the pricing formula as stated in the second schedule is subject to review by the Commission from time to time. All such charges regarding unit price and rate will affect only new requests for Frequency Spectrum and renewal of expired Licences, or reinstatement of revoked licences.

#### **1.4. METHODOLOGY :**

Obtain data from 2 (two) countries one develop and the other least develop having similar problem with Nigeria, with regard to frequency spectrum pricing. There after the analisys would be conducted which at the end of the day will give possible solution to Nigerian Situation.

**1.5. THESIS STRUCTURE :**

Chapter 1: Introduction

1.6. Background..... 1  
1.7. Problem .....2  
1.8. Objectives .....4  
1.9. Methodology.....5

Chapter 2 : Theoretical Basis

2.1. Condition of telecommunication in  
Nigeria..... 10  
2.2. Scope ..... 17  
2.3. Licensing Area..... 19  
2.4. Frequency Spectrum Licenses  
and Permits ..... 19  
2.5. Pricing Policy .....21  
2.6. Pricing Formula .....25

Chapter 3 : System Design

3.1 Background - Indonesian Case .....31  
3.2 Frequency spectrum fees and pricing  
regulations .....34  
3.3 Problem .....35  
3.4 How to design the formula .....38  
3.5 Purpose of the review .....39  
3.6 Criteria for good spectrum pricing.....40  
3.7 The existing formula.....42  
3.8 Benchmark Study Of Other Countries....52

3.9	Parameters Influencing the Spectrum	
	Pricing.....	56
3.9.1	Determination of Par. Value	
	Freq.Util.(FUV .....	58
3.9.2	Determination of Frequency	
	Index .....	59
3.9.3	Determination of Index Frequency	
	Range.....	60
3.9.4	Determination of Parameters of Freq.	
	Formula (URC).....	60
3.9.5	The propose/outcome Formula	
	(FUP).....	61
Chapter Four 4: Completing the proposed Formula		
4.1	Chronolog FUP Parameters.....	62
4.2	Formula Testing Process .....	63
4.3	Proposed Test Formula FUP .....	64
4.4	Proposed Range Index (R) .....	70
4.5	Proposed Frequency Index Graph .....	71
4.6	Proposed Frequency Index (I) .....	75
4.7	Proposed Frequency Index Graph .....	76
4.8	Value Calculation Assumption URC	
	Frequency National Coverage Organiser .....	78
4.9	Simulation Results Calculations FUP National	
	Coverage Organiser.....	79
4.10	Value of URC Frequency Calculation	
	Assumption Local Coverage .....	79

4.11 Simulation Results Calculation FUP Local Coverage .....	80
4.12 Analysis of Calculation Results FUP to National Area .....	81
4.13 Comparison Graph FUP Proposed Against Existing FUP .....	82
4.14 Analysis Calculation Results for Local Area ..	82
4.15 Existing FUP Local Operators .....	83
4.16 Comparison of Proposed FUP .....	84
4.17 Comparison Graph FUP Proposed Against Existing FUP .....	85
4.18 Value Calculation Adjustment for Local Coverage .....	86
4.19 Local Coverage FUP after Adjustment .....	87
4.20 Comparison Graph FUP Local Coverage has been Proposed adjusted .....	87
4.21 Comparison FUP of Gross Revenue Annual Increase .....	88
4.22 FUP Proposed Scope Transitional National Organizer .....	90
4.23 FUP Proposed Transitional Local Coverage .....	91
4.24 Projection FUP First 5 years phase II of the National Coverage .....	94
4.25 Projection FUP 5 years of the First phase II Local Coverage .....	95
4.26 Implementation Mechanism Proposed Formula FUP .....	96



4.27 Economic Level of Population .....	96
4.28 Application Software for FUP Calculation ....	97
4.29 Suggested Parameters .....	101
4.30 Input Processing .....	102
4.31 Output Formula .....	102
<b>Chapter 5 : Conclusion and Suggestion</b>	
5.1 Conclusion .....	104
5.2 Suggestion .....	106
References .....	109