Policy Towards the Management of the Radio Spectrum

Draft V3.2

03 November 2013
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Approval by Project Team

To: Communications Media Commission

From: Ernst & Young (“EY”) Project Manager

Date: November 2013

Subject: Sign off – Work Product: Task 1 Policy

As per the terms of the Project, this memo is to request acceptance and formal sign-off of the following Work Product:

▶ Spectrum Management Policy

ON BEHALF OF CMC

SIGNED

Name

Date

ON BEHALF OF EY

SIGNED

Project Manager

Name

Date
Objectives of this document
This document sets out the policies for spectrum management that will be followed by the Communications and Media Commission of the Republic of Iraq (the CMC). It comprises two distinct parts:

- A Public Policy defining, at the highest level of abstraction, the policy as it will be perceived by spectrum stakeholders such as mobile operators and broadcasters.
- A Spectrum Management Policy defining, at an intermediate level, the policy adopted by and guiding the management of the Communications and Media Commission.

These two policy documents are included here as separate sections but may subsequently be formed as two separate documents.

This Spectrum Management policy has been prepared pursuant to articles 103 and 110 of the Constitution of Republic of Iraq and to Coalition Provisional Authority Order Number 65. Spectrum management is a federal matter, so CMC has nation-wide responsibility.

The Communications and Media Commission was formed under Coalition Provisional Authority Order Number 65 dated 20 March 2004 from which it takes its authority. This state will continue until the provisions of Order 65 with regard to the communications sector are replaced subsequently by a Telecommunications Law.

An Operations and Management plan to guide the management of the Communications Media Commission in their day-to-day work will be released by the concerned directorates after the approval of Public and Spectrum Management Policies by the Chief Executive Officer of the CMC.

Aims and Objectives
CMC recognises that in the field of spectrum management the highest priority should be to maximise the benefits of efficient spectrum use for the Iraqi society and economy.

Aims and objectives with current high priority include:

- Assuring sufficient spectrum for deployment of converged wireless broadband networks to deliver the increasingly important converged services like “Over-the-Top” (OTT) and video streaming, IPTV etc.
- Use of wireless access to achieve anytime, anywhere services at an affordable price for every citizen of the republic of Iraq. With growth in machine-to-machine (M2M) and the “Internet of Things”, introduction of the hugely increased range of addresses provided by IPv6 will soon be required.
- Efficient release of the UHF “Digital Dividend” spectrum for mobile and broadband use.
- Encourage infrastructure sharing for both passive and active wireless network elements. Regulations will be adapted for effective establishment of an infrastructure sharing regime.

1. Public Policy
This Public Policy sets out the scope of the Communications and Media Commission’s activities. It defines the Communications and Media Commission’s role, describes its vision for the future, and
describes the primary aims and the objectives that it will strive for in the period 2013 to 2023. In preparing this policy, CMC recognises that it will succeed in generating benefits for society and the economy by putting customers for radio-based services first. Thus CMC will always look first for solutions which provide good service quality and value-for-money to service users, over solutions which emphasise protection of service and network operator interests.

1.1 CMC as a National Regulatory Authority

‘National Regulatory Authority’ is a term that enjoys wide international use. It describes the body responsible for the regulation of the electronic communications industry and markets within a nation-state. The Communications and Media Commission (CMC) is the National Regulatory Authority (NRA) for the Republic of Iraq.

1.1.1 Structural position of an NRA

NRAs must be legally distinct and functionally independent of all operators using the radio spectrum and providing electronic communications services, networks and equipment. The NRA and its regulatory functions must also be structurally separate from the nation-state’s activities as a shareholder in any commercial or public service operation including its interests in public or local authorities.

1.1.2 The relationship between Ministry of Communications (MoC) and CMC

As set out in Order 65, the MoC, shall be responsible for the development of telecommunications policy for the nation-state of Republic of Iraq. The CMC as NRA shall be responsible for the translation of this policy into tangible detailed policy, strategy, aims, objectives and plans.

1.1.3 The right to license a spectrum user

Radio frequencies are the central resource of the electronic communications market. An NRA is the appointed authority responsible for the assignment of radio frequencies.

The CMC as NRA is jointly responsible for the allocation of spectrum in coordination with other stakeholders and solely responsible for the assignment of spectrum to electronic communications providers and users in the Republic of Iraq who will make best use of this resource to benefit security, the economy and society. The CMC confers the right to use radio frequencies by way of licences.

The added information security and agility required by defence forces generally means that the role of NRA is split with separate regulators for civil and military spectrum allocations. The Ministry of Defence has responsibility for the allocation of radio frequencies designated for military use to military users.

Whilst retaining overall responsibility for spectrum management in the Republic of Iraq, the CMC shall coordinate with regional administrations as necessary.

1.2 Scope

These policies have the following scope.
1.2.1 Transmission of signals using the radio spectrum

Whilst CMC has a broad role in regulating electronic communications and media, these policies will apply only to that part of its business relating to the transmission of signals using the radio spectrum.

1.2.2 Requirement to obtain a licence

Electronic communications users making use of radio frequencies are required to obtain a licence from the CMC. These policies describe CMC’s approach and attitude towards the provision of such licences.

1.3 Legal Basis, Roles and Relationships

The following legal basis, roles and relationships are used in interpreting these policies.

1.3.1 Use of Order 65

Until replaced by future legislation, Order 65 is the statutory instrument appointing the CMC as NRA and giving the CMC the right to regulate.

1.3.2 Relationship with major public spectrum users

The relationship with major public spectrum users such as the Ministry of Interior and the Ministry of Transport is complex. These policies aim to explain how CMC will regulate the spectrum used by these agencies.

1.3.3 Relationship with others

The CMC regulates in some instances with the cooperation of others. These policies aim to explain how CMC will regulate the spectrum in conjunction with these others.

Shared bands

The CMC shall cooperate with the Ministry of Defence in order to efficiently allocate and subsequently assign the radio spectrum in shared bands.

Regions

The CMC shall cooperate with regional administrations as required to efficiently assign and manage the radio spectrum in the regions and in the rest of the Republic of Iraq.

Day to day relationships

The CMC shall cooperate day-to-day with its stakeholders in other agencies and administrations.

Joint planning responsibilities

The CMC recognises its joint planning responsibility with its stakeholders. The policies set out below outline the importance of jointly planning future use of the radio spectrum. These policies
indicate the approach that the CMC will take to this planning. The CMC shall consult and build plans accordingly.

1.3.4 The role of the regulator

The CMC recognises that the Republic of Iraq must transition from the former era of command and control to a new era where markets influence spectrum allocation, allotment and assignment.

The primary roles and responsibilities of the CMC are therefore to prevent anti-competitive behaviour, to prevent monopolistic abuse, to ensure its decisions do not distort normal business decisions, only regulate when necessary, be cost-effective, mimic the operation of a competitive market, act so as not to deter investment, encourage management efficiency and provide incentives for efficient use of the radio spectrum.

The CMC shall protect consumer confidence and encourage investment by providing predictability in decision-making with licences of adequate tenure. Wherever possible the CMC shall secure competition between service providers.

Role of government

The parliament of the Republic of Iraq is responsible for passing legislation enabling the CMC to meet its objectives, aims and visions. The CMC shall provide adequate input to Government to enable appropriate legislation can be developed.

Role of academia

The CMC recognises that Iraqi academia has an important role in furthering technologies, techniques and methods to be used in spectrum management in the Republic of Iraq. The CMC shall foster appropriate relations with academia.

Role of the markets

The CMC accepts the importance of involving the markets in its plans and it will set up appropriate structures to achieve this.

Role of industry

The CMC accepts the importance of involving the markets in its plans and decisions. It also recognises the importance of liaising with industry that supplies the markets in order to ensure that users gain the equipment that they desire. The CMC will set up appropriate structures to involve industry in its plans.

1.3.5 Duality of licensing

Whilst the CMC is competent in regulating broadcasting and content and public carrier operation, this policy applies only to its responsibilities in regulating use of the radio spectrum for radiocommunications services. Where dual licensing is required, for example to operate both as a broadcaster and as a user of the radio spectrum, the spectrum management directorate of CMC will liaise with other CMC directorates as needed.
1.3.6 Others with whom Republic of Iraq may enter treaty relations

In the course of its work, the CMC recognises the need for the Republic of Iraq to enter treaty relations with others. In particular it recognises the need to enter cross-border agreements with neighbouring countries and to enter agreements on a regional or international basis to secure harmonised use of the radio spectrum. The CMC will work with the Government to ensure that appropriate treaties are proposed, entered and determined.

1.4 Vision

1.4.1 Four Phases

The CMC recognises its role in leading the Republic of Iraq in its use of the radio spectrum and it recognises that change will take time. The CMC shall adopt four discreet phases in development:

- Audit Phase: determining spectrum use in the Republic of Iraq and improving the quality of the CMC’s records on licensees;
- Control Phase: the enforcement of licence conditions and the reduction of interference;
- Build Phase: the optimisation of spectrum regulation systems to allow speedy processing of applications for spectrum access;
- Liberalise Phase: the reduction in constraints placed upon those who wish to access the radio spectrum, permitting greater freedoms thereby generating greater value from the spectrum as a resource.

The CMC considers that this approach of taking control before subsequently increasing freedoms is essential.

1.4.2 Approach

The CMC recognises that the Republic of Iraq lacks the technical capability to set its own standards and to determine its own methods. There are many organisations in other regions already generating high-quality spectrum management materials such as the FCC in the United States and spectrum management organisations associated with the European Union.

The CMC will therefore be a regulatory and technology follower adopting a contingent approach, selecting appropriate methods from other world organisations.

This contingent approach may make use of command methods and direct spectrum awards where this would be in the best interests of Iraqi society and economy. In line with its belief in competition, the CMC will also make use of market measures wherever possible.

The CMC shall license spectrum access. Where appropriate and technically feasible, the CMC may make available spectrum that is exempt from licensing or that has reduced license conditions.
1.4.3 Culture, excellence, flexibility
The CMC recognises that in order to undertake its role it must generate a culture of proactivity in its workforce and agents, striving for technical and managerial excellence whilst remaining flexible to react to changes in Iraqi society and economy.

1.4.4 Trust, respect and the recognition of rights and obligations
The CMC recognises that in order to undertake its role it must build trust with its stakeholders and develop respect for the rights of spectrum users. The CMC recognises that in order to achieve this it must effectively communicate the obligations of each spectrum user.

1.5 Aims
The CMC shall adopt the following aims.

1.5.1 Making spectrum available
In order to meet its role of spectrum regulator, contributing to Iraqi society and economy, the CMC shall make spectrum available to applicants wherever possible. It will do this in line with other policies and practices developed from time to time.

1.5.2 Fuelling economic growth
The CMC shall continually assess its contribution to economic growth and will wherever possible adjust its policies in pursuit of this aim.

1.5.3 Assuring security
Recognising that security is an antecedent of both economic and social welfare, the CMC shall ensure that adequate spectrum is made available to the security services. The spectrum needs of the security services are likely to reduce with improved security situation.

1.5.4 Benefits to society
Whilst economic growth benefits society, the CMC also recognises that social cohesion is important nationally, regionally, in towns and cities and in families. The CMC shall assess its contribution to Iraqi society and shall endeavour to bring cohesion to all segments of society irrespective of their cast, ethnicity, origin and religious belief

1.5.5 Promote effective competition downstream
The CMC shall, wherever possible, make decisions, use methods and make spectrum awards that promote effective competition in downstream markets for electronic communication services.
1.5.6 Efficient and effective use of spectrum

Benefits to Iraqi security, society and economy can best be achieved by efficient and effective use of the radio spectrum. The CMC shall make use of methods that result in efficient and effective use of the radio spectrum.

1.5.7 Promote investment through predictability of regulation

In order to predict return on investment, investors need to understand the risks associated with spectrum regulation. CMC shall use methods and make spectrum awards in a predictable fashion with open and transparent rules such that investment risks may be estimated.

1.5.8 Clarity in decision, evidence based

In order to aid investment and other decisions by spectrum users, the CMC shall ensure that its decisions are made based on evidence and that these decisions are clearly communicated to all stakeholders.

1.5.9 Timely decisions

Delay in regulatory decisions reduces willingness to invest and reduces efficiency in bringing new services to market. The CMC shall ensure that all its decisions are made in a timely fashion.

1.5.10 Awarding licences in return for a fair fee

Economics teaches that those likely to return maximum benefit to Iraqi security, society and economy are likely to be prepared to pay a fair price for access to scarce resources. The CMC shall ensure that it awards spectrum licences to providers and users in return for a fair licence fee.

1.5.11 Staff in their dealings with stakeholders

The CMC recognises that an effective and efficient spectrum management capability comes from contribution in equal measure from both staff and systems. The CMC shall ensure that its staff are competent in their role and professional in their dealings with stakeholders.

1.5.12 Promoting innovation

The CMC recognises that innovation in tools, processes and policies is essential for improvement of efficiency and effectiveness in spectrum allocation. The CMC shall foster innovation in all that it does.

1.5.13 Efficient in regulation with managed transaction costs

The CMC recognises that it is easy for a regulator, funded by a licence fees for which it has monopoly, to become inefficient. The CMC shall strive for efficiency in regulation, managing its transaction costs such that operating costs are kept as low as practicable.
1.5.14 Where relevant, align with the ITU

The CMC recognises the contribution the International Telecommunications Union (ITU) makes to spectrum management. It also recognises that Republic of Iraq is a sovereign state, making its own decisions concerning allocation of the radio spectrum. The CMC shall where relevant align its methods and decisions with the ITU, respecting treaties into which Republic of Iraq has entered with others.

1.6 Objectives

1.6.1 Make spectrum available

In pursuit of its aims, the CMC shall make spectrum available when it’s needed by the markets, at a price that sustains growth.

Where appropriate the CMC shall employ auctions (generating auction returns), charge licence fees (emulating a market or at least recovering costs) or make spectrum available on a licence exempt basis (at no cost to users).

1.6.2 Be clear about how an applicant can gain access

The CMC shall determine an efficient application process for all spectrum products for which there may be demand. It will publish this application process and ensure that it is widely understood.

The CMC shall determine an efficient equipment type approvals process which vendors must follow to gain permission to operate equipment on licensed networks. It will publish this type approvals process and ensure that it is widely understood.

The CMC shall work generally to minimise regulatory barriers to access the radio spectrum.

1.6.3 Be clear about rights and obligations of licensees

Recognising the importance of achieving a controlled situation where all licensees and spectrum users have mutual respect, the CMC shall communicate the rights and obligations of all spectrum users to all.

1.6.4 Pro-actively planning spectrum use

In pursuit of clarity and predictability, the CMC shall proactively plan change to licensing policies and to the Frequency Allocation Table and shall communicate such changes with adequate time given between announcement of the change and its coming into effect.

1.6.5 Use of monitoring in determining use

Recognising that planning based on assumed knowledge is likely to be ineffective, the CMC shall make use of monitoring of the radio spectrum to determine its use. The CMC shall make decisions based jointly on database records and spectrum monitoring, recognising the strengths and weaknesses of each approach.
1.6.6 Know the spectrum needed for new services
Since the CMC aims to maximise contribution to security, society, and the economy and since
timely introduction of new services benefit all three, it shall conduct such research necessary to
determine the spectrum needed for new services. The CMC’s planning will be based on market
research of the electronic communications markets.

1.6.7 Make spectrum available for new mobile services
It is well publicised internationally that mobile networks contribute hugely to societies and
economies. The CMC shall make the necessary spectrum available for new mobile services.

1.6.8 Re-farm spectrum
The Frequency Allocation Table describing which services make use of which parts of the radio
spectrum is a human construct. It can be reconstructed from time to time to better meet the needs
of the spectrum stakeholders. This reconstruction, termed re-farming, involves allocating and
reallocating spectrum to providers and users. The CMC shall re-farm the radio spectrum in Republic
of Iraq to optimally meet the needs of spectrum stakeholders.

1.6.9 Simplify licence applications processes
In line with its aim to encourage use of the radio spectrum, CMC shall ensure that its licence
application processes are simple as possible and accessible to all.

1.6.10 Implement appropriate tools for spectrum management
Management of the radio spectrum is internationally recognised as technically complex, embracing
the disciplines of engineering, law and economics. CMC shall ensure that it implements appropriate
tools to enable this complexity to be embraced. Such tools shall employ appropriate automation in
order to simplify application.

1.6.11 Effective enforcement
In support of its aim to effect control and ensure compliance with licence conditions, CMC shall
implement and run an effective enforcement regime. This regime shall encompass licensing and
the setting of licence conditions, inspection of equipment, monitoring of transmissions,
measurement of parameters and where compliance is breached, apply penalties as appropriate
including confiscation of equipment and station close down.

1.6.12 Monitor spectrum use
In support of its aims to effect control and ensure compliance with licence conditions, the CMC shall
monitor users of the radio spectrum and measure station transmission parameters.
1.6.13 International representation
In order to learn from other regulators, to secure suitable regulatory agreements with others for the Republic of Iraq and to subsequently develop its own future policies, the CMC shall take active part in appropriate international spectrum management forums.
These may include the International Telecommunications Union and its World Radiocommunications Conferences and Regional Radiocommunications Conferences and the World Telecommunications Standards Assembly.

1.6.14 Implementing coverage and service quality measurement
In pursuit of its aims to maximise the contribution that the radio spectrum makes to security, society and the economy and to ensure that the radio spectrum is used efficiently, the CMC shall monitor and regulate the quality of service provided by those offering services to others. This will extend to imposing coverage and service quality obligations upon licensees and measurement of these parameters once networks go live. Where such obligations are not met the CMC shall take enforcement action as with any breach of licence conditions.

1.6.15 Know the impact of all decisions made
To enhance transparency of process and to improve decision quality, the CMC shall embrace methods and techniques of impact analysis in order to predict outcomes of regulatory decisions upon others.

1.6.16 Assimilate appropriate good practice from others
Since the CMC chooses to be a technology and regulatory follower, adopting appropriate good practices from other regulators and standards bodies, the CMC shall implement a process of scanning and of selection and assimilation of such good practice.
The CMC shall ensure that any practice adopted is fit for purpose in the context of the Republic of Iraq.

1.6.17 Provide spectrum for disaster relief
The CMC recognises its role in ensuring electronic communications for disaster relief. The CMC shall ensure such communications by making available appropriate radio spectrum when it is needed.

1.7 Public policy
The following outline practices which the CMC shall embrace in its operations.

1.7.1 Consult widely before ex ante/ex post regulation
In order to ensure transparency of process and to build as wide a coalition as possible for its decisions, the CMC will consult widely before it implements both ex ante and ex post regulation.
1.7.2 Use of consultations

Recognising its policy to consult, the CMC will where appropriate use consultations as a means of soliciting the opinion and building coalition for its decisions. The scope and the participants of such consultations shall be determined according to the nature of the decision to be made and the information sought and shall set out publicly the terms and conditions of participation in any such consultations.

1.7.3 Returning surpluses to the treasury

The CMC will receive income from licence fees and auction returns. Its expenditure shall be expressed in an expenditure budget to fund its operations. The CMC shall return operating surpluses to the Iraqi Treasury. Revenue from fines for breach of licence conditions and illegal spectrum use shall be passed directly to the Treasury.

1.7.4 Treatment of breaches of licence constraints and obligations

In order to ensure fairness and transparency in all its operations and in order to achieve its role in interference and service quality management, the CMC shall treat all breaches of licence constraints and obligations seriously, using its powers of enforcement and seeking injunction and corrective action through the courts where relevant.

1.7.5 Right of appeal against decisions

To ensure quality in all its decisions, the CMC shall grant all licensees within the CMC's jurisdiction the first right of appeal against its decisions.

1.7.6 Lawful intercept: subject to conditions

The CMC acknowledges that intercept of signals is a useful tool in achieving security and fighting crime. The CMC shall, subject to appropriate safeguards, permit and enable lawful intercept through licence conditions.

1.8 Acknowledgement of the time taken to implement change

The CMC acknowledges that it takes significant time to analyse options for change in pursuit of policy, to consult industry and the markets about change, to change regulation and laws and to implement change. Often change such as re-farming requires the scrapping of one network and the purchase and roll out of new. Changes affecting Iraqi users alone may be possible within 3-5 years whilst changes requiring international treaty brokered by the ITU may take 10-30 years.

The CMC shall take such action as possible to minimise the time taken to change and shall communicate progress to its stakeholders on all changes and at all stages of change by way of an annual report.
Glossary of Terms

Allocation, allotment, assignment

Allocation: the act of determining that a service should be permitted to operate in a frequency band such that subsequent allotment and assignment may be done. This is often done on a region-wide or worldwide basis and is agreed between regulators. Economists use the term 'allocation' for all instances where a resource is given to a user. In this case, ‘allocation’ is a general term. In spectrum management, the term has specific meaning involving services and frequency bands.

Allotment: the act of permitting a broad spectrum resource (for example, comprising several radio frequencies) to be used by an application or licensee along with defined rights and obligations. Operators bidding at auction would typically be bidding for an allotment of spectrum upon which they will roll out a network.

Assignment: the act of permitting a finite spectrum resource (for example comprising a single radio frequency) to be used by a station at a location and for a time.

Frequency band

A plurality of consecutive radio frequencies (generally marked by upper and lower band edge frequencies) in which a number of stations and/or operators may run radiocommunications services.

Command and control

In spectrum management, the idea that the regulator knows the markets and industry and as a result of this a priori knowledge, makes perfect decisions about what services, applications and technologies should be allocated to what bands. This approach is largely discredited (because it is impossible for the regulator to have such knowledge), being replaced by a more contingent approach where markets and industry lead decision making.

Liberalise, liberalisation

Liberalisation is generally defined as the opening of markets to competition. The aim behind liberalisation is that consumers would be afforded freedom of choice. In spectrum management, and specifically in spectrum markets, liberalisation describes introduction of competition and freedom of choice but it also describes the relaxing of traditional technical constraints, now generally accepted as unnecessary.

Market measures

The adoption of pricing regimes for spectrum management that emulate or follow a typical market behaviour with demand, supply and preparedness to pay. The simplest market measure is the allotment of spectrum using an auction. In many bands, such market measures are not appropriate and regulators must make use of opportunity-cost based pricing where the price is set by comparing costs for service setup with those of non-radio equivalent resources.

Equipment type approvals

Regulators need to manage (and minimise) the interference between users. Part of managing interference is the control of the specifications of equipment using the spectrum. These specifications are required by the regulator to meet type specifications and to be approved by the regulator by type.
Coverage

The delivery of a defined service by a radiocommunications network at a defined point in space and for a defined time. Typically coverage is specified statistically, for example: users shall benefit from the ability to place a voice call from a standard mobile handset in 90% of locations for 50% of time along the road from A to B.

Ex ante regulation

Regulations put in place by a regulator (including license conditions and license fees) before the act of licensing. Generally ex ante regulation requires the prediction of licensee behaviour and the development of regulation given that behaviour.

Ex post regulation

Regulation put in place after the action of licensing, generally to correct an unacceptable market or licensee activity (for example, acting to recover spectrum from a licensee in the event that the licensee enjoys significant market power following merger or acquisition).

Consultations

The formal act of consulting a chosen group of stakeholders about proposed action by the regulator. Examples of topics likely to be subject to consultation include the determination of the number of mobile operators in a market, the revision of license fees or the opening of a new frequency band to a proposed license type. Consultations are used whenever the regulator fees that it needs to develop a coalition in support of its policies.
2. Spectrum Management Policy

This Spectrum Management Policy sets out the Communications and Media Commission’s approach to spectrum management in pursuit of the aims outlined in the Public Policy. It sets out lower-level aims and objectives and illustrates work areas.

2.1 Licences, Objectives and Organisation

The following definitions shall apply.

2.1.1 Permissions granted by a licence

The spectrum licence defines the rights and obligations associated with the type of service, requirement for efficient use, controlling interference, right of transfer of the spectrum licence, requirements to change frequency if asked, payment of fees, use and obligations under international agreements.

The CMC shall, where relevant, extend these rights and obligations to include coverage obligations, non-interference with others, obligation to verify, compliance with licence conditions, obligation to obey regulatory direction and obligation to facilitate re-farming.

2.1.2 Enforcement of obligations and protecting rights

The rights conveyed within a licence and the corresponding obligations shall be enforced by CMC through the activities of inspection and transmission monitoring and the CMC shall take action to cause licensees breaching obligations to effect corrective action. The CMC has the power to confiscate equipment and close stations down. Whilst the CMC will always endeavour to cause transgressors to put in place corrective action, ultimate penalties of close down and imposition of fines will also be used.
2.1.3 Types of licences offered

The CMC shall offer licence types that maximise efficient use of the spectrum and maximise contribution to security, society and the economy. These licence types will include the following.

Class licence

A licence awarded to users of a class of equipment in conjunction with an air interface specification and licence conditions that permits operation without application for a spectrum licence. Generally this is for operation on common frequencies and is sometimes referred to as licence exempt operation.

Spectrum licence

A licence awarded to a company or other legal entity for operation on a frequency or frequencies using specified equipment at a geographic location or on a specified vessel. An air interface specification and licence conditions will be included with this licence.

Allotment licence

A licence awarded to a company or other legal entity for operation on a block of frequencies using equipment to cover a geographic area. The licensee shall be permitted to use specified equipment but may configure its network as it sees fit within the constraints of an air interface specification and licence conditions. The licensee is awarded an allotment. An allotment is a block of frequencies awarded for a specific use.

2.2 Policy drivers

The CMC acknowledges the following drivers influencing this policy.

2.2.1 Required market function

The CMC shall operate by granting licences to spectrum users in return for payment of a licence fee. The CMC shall take an interest in the quality of service provided by licensees. Since its remit is only to manage the radio spectrum, it shall not take interest in pricing in consumer markets. The CMC acknowledges however that operators can use their spectrum holdings to effect unfair competitive conditions. The CMC shall therefore act to ensure effective, full and fair competition whenever operators’ spectrum holdings may distort markets.

2.2.2 Demand

The CMC shall conduct markets surveys and studies to make itself aware of the demand for spectrum products and consumer services. The CMC shall give priority to and orient its activities towards those spectrum products and downstream services that are of greatest demand and which give greatest benefit to security, society and the economy.
2.2.3 Technology
The CMC shall operate such tools and systems to make itself aware of world technology developments and their impacts on the policies and policy outcomes in the Republic of Iraq.

2.2.4 Benefits to society
The CMC shall operate such tools and systems necessary to make it aware of the benefits that the radio spectrum and downstream services using the radio spectrum bring to Iraqi society. It shall act to optimise this benefit.

2.2.5 Benefits to the economy
The CMC shall operate such tools and systems necessary to make it aware of the benefits that the radio spectrum and downstream services using the radio spectrum bring to the Iraqi economy. It shall act to optimise this benefit.

2.2.6 Benefits to security
The CMC acknowledges that benefits to the economy and benefits to society can only come from a satisfactory security situation. The CMC shall operate such tools and systems necessary to make itself aware of the contribution of the radio spectrum and downstream services using the radio spectrum bring to the security of the people of the Republic of Iraq. It shall act to optimise this contribution.

2.2.7 International development
The CMC acknowledges that the Republic of Iraq exists within a global context. The CMC shall operate primarily as a technology and regulatory follower adopting good practice from other world regulators. The CMC shall operate such tools and systems necessary to learn about such practices and were relevant assimilate them within CMC operations and policies.

2.2.8 Competition for spectrum
The CMC acknowledges that, generally, competition benefits the end user and hence benefits security, society and the economy. Wherever possible, the CMC shall facilitate competition between would-be operators for access to the radio spectrum. Where competition would be inappropriate, the CMC shall invoke methods of spectrum award which emulate a spectrum market.

2.3 Aims
The CMC shall adopt the following aims to guide its operations.

2.3.1 Manage interference
The CMC acknowledges its role in managing interference between users of the radio spectrum. In so doing the CMC shall define the following.
Defining interference

‘Interference’ is a complex engineering parameter which is generally poorly understood even by engineers themselves. The CMC shall define the term interference and specifically CMC shall define the term ‘harmful interference’ and the outcome of harmful interference, service denial. The CMC shall act to minimise instances of service denial and shall define acceptable levels of service denial given the Iraqi context.

Defining protection due product by product

Whether interference is found to exist or not depends upon the margin between wanted and unwanted signals. If the margin is large enough then the service can be said to be protected. Protection is a function of the protection ratio available to the provider or user. The CMC shall define the protection ratio to be used within CMC tools and systems for each spectrum product.

Congestion versus interference

Often services are claimed to be congested such that services suffer harmful interference and service is denied to the user. Some regulators set the threshold of congestion at a low threshold with one spectrum user occupying each radio frequency. Other regulators set the threshold of congestion high and ask spectrum users to share, using engineering techniques to avoid service denial. CMC shall define congestion and set targets for frequency sharing such that spectrum users can still derive benefit from their spectrum resource.

2.3.2 Balancing market power

The holding of significant market power by any one operator has the potential to distort market behaviour, generally in favour of the holder of that power. The CMC shall monitor and measure the market power enjoyed by all operators and shall take ex ante and ex post regulatory action to balance market power, particularly where this market power is derived from an operator’s spectrum holding.

2.3.3 Transparent, evidence-based decisions

In seeking to carry broad coalitions with its regulatory decisions, the CMC shall wherever possible be transparent in its decision-making processes. The CMC shall make maximum use of evidence to support its decisions.

Evidence from study

The CMC shall wherever appropriate develop evidence from academic and empirical study.

Evidence from monitoring

The CMC shall wherever appropriate develop evidence from the monitoring of occupancy of the radio spectrum and from knowledge of the signals and transmission using the radio spectrum in the Republic of Iraq.
2.3.4 Developing the FAT and assignment/allotment database

In managing the radio spectrum the CMC shall, in coordination with other stakeholders, establish and develop the Frequency Allocation Table as a mapping between frequency bands and services permitted to use these frequency bands in the Republic of Iraq. The Iraqi Frequency Allocation Table shall be based on the ITU Region 1 Frequency Allocation Table but with local differences charted and annotated in footnotes.

The CMC shall implement, maintain and develop a database of all spectrum users in the Republic of Iraq. In ensuring the quality of this data, the CMC shall describe all frequency assignments and where a block licences are granted, the CMC shall require the licensee to advise the CMC of the locations of its communications sites and the frequencies and equipment in operation at these sites.

2.3.5 Establishing methods of redress

The CMC shall require licensees to comply with their licence conditions. CMC shall use its power under Order 65 or subsequent legislation to implement methods of investigation into breaches of licence conditions and shall ensure that it establishes and uses methods of redress where licence conditions are breached. This may include the levying of fines and the confiscation of equipment.

2.3.6 Continually review the spectrum management regime

The CMC acknowledges that much will change in the Republic of Iraq in the coming years and hence policy and practice must be continually reviewed. The CMC acknowledges that it must review to determine a) if the regime is still appropriate for spectrum management in the Republic of Iraq and b) if the regime is working effectively. Accordingly, the CMC shall implement annual reviews of its spectrum management regime, communicating the results of these reviews to its stakeholders. The CMC shall propose, discuss and implement appropriate changes in line with changes in the electronic communications environment in the Republic of Iraq.

2.4 Objectives

In meeting the above aims the CMC shall adopt the following objectives.

2.4.1 Effective cooperation with other Government bodies

The CMC understands that in order to regulate the radio spectrum for which it is responsible effectively and efficiently it must coordinate its efforts with other Government bodies. The Ministry of Defence manages the bands which it has been allocated. The CMC shall establish and maintain an appropriate cooperative approach and shall establish and maintain appropriate cooperative working practices such that transaction costs are minimised and efficiency in spectrum use is maximised. The CMC shall where appropriate cooperate with other responsible administrations.

2.4.2 Achieve effective enforcement

The CMC identifies that it needs to implement effective enforcement operations. The CMC shall establish and maintain an appropriate, effective, enforcement regime including the reception, processing and resolution of interference complaints and the inspection of stations.
2.4.3 Tradable spectrum in due course

The CMC identifies that it is wasteful and inefficient to have spectrum underused. In the event that licensees have more spectrum than they need for their present operations, the CMC identifies that it is useful if the licensee can permit others to make use of the underused resource. The CMC shall implement the necessary legislation to permit spectrum holdings to be traded or otherwise transferred between licensees.

The CMC identifies that this is a complex area of regulation that will take some time to implement and as such trade-ability of spectrum will be placed on the CMC’s long term work plan.

2.4.4 Use of a set of KPIs to guide management

Key performance indicators (KPIs) are essential to the effective operation of all organisations. The CMC shall identify the primary KPIs that will assist CMC management in meeting its various aims and objectives and shall implement a process of regular measurement of these KPIs and their publication to stakeholders.

The CMC shall publish its approach to KPIs and to reporting KPIs. The CMC shall consider reporting licence processing times, interference resolution times, time taken to release spectrum and the time taken to coordinate in pursuit of license processing.

2.4.5 Type approvals regime

In order to establish standards in operating equipment the CMC shall implement an appropriate type approvals regime and shall communicate the requirements of type approvals to vendors. As a minimum this communication shall set out the requirements for type testing and mutual recognition of approvals reports and shall set out the way in which type approvals shall be used in licence processing and licence enforcement.

2.4.6 Organisational development

No organisation can afford to stand still today. The global environment in which Republic of Iraq exists is changing. The environment for electronic communications within Republic of Iraq is changing. Capability within CMC must develop to keep up with these changes. The CMC shall implement an effective process of organisational development such that staff competency and operational systems at all times meet the requirements implied by these environments.

As a minimum CMC shall implement organisational development systems covering staff recruitment and development and knowledge management.

2.4.7 Exchange data with others but maintain confidentiality

The CMC acknowledges its needs to exchange data with others. The CMC also acknowledges the damage that can be caused if confidential information is passed to those who may have the motivation and means to exploit this information for their own ends. The CMC shall implement an appropriate and effective method of information security.
2.4.8 To make decisions in a non-discriminatory fashion

The CMC understands that in order to build trust and an industry coalition for its work it must communicate how it makes decisions and illustrate that these decisions are made in a non-discriminatory fashion. The CMC shall wherever possible communicate its thinking, analysis and evidence behind decisions such that stakeholders can understand its reasons.

2.5 Operational objectives

The following objectives shall be adopted by the CMC.

2.5.1 Coordinate to protect

The Republic of Iraq has six near neighbours - Iran, Turkey, Syria, Jordan, Saudi Arabia and Kuwait. Each of these nation states also operates electronic communications on the same radio spectrum as The Republic of Iraq. Coordination of usage between nation-states is essential including the harmonisation of the Frequency Allocation Table, services, sub services and applications. The CMC shall implement an effective and efficient process by which it will coordinate its spectrum use with its peer spectrum regulators in each of these nation states.

2.5.2 Resolve cross border and inter-country disputes

Iran, Turkey, Syria, Jordan, Saudi Arabia, Kuwait and countries further afield all operate electronic communications on the same radio spectrum as The Republic of Iraq. The potential for interference between users in The Republic of Iraq and elsewhere is high. CMC shall implement an effective process for resolving cross-border and inter-country disputes to the satisfaction of relevant stakeholders.

2.5.3 Use of the markets to structure spectrum products and awards

The CMC has identified that for efficient and effective use of the radio spectrum, the electronic communications markets must be part of the CMC’s decision-making and future planning activities. The CMC shall implement an effective process by which electronic communications markets are considered when structuring spectrum products for offer to these markets and when making spectrum awards.

2.5.4 Broad principles of fee structure

Fees charged for access to and use of the radio spectrum are complex to calculate. The CMC may make use of the following principles in making awards and setting fees for different spectrum products and different frequency bands.

- incentive pricing whereby applicants will be motivated to appraise alternatives;
- providing incentives for use of less congested high frequencies;
- pricing emulating a competitive market where demand exceeds supply;
- using direct award mechanisms where there is public interest;
2.5.5 Spectrum licences versus class licences
The CMC identifies that the different types of licence have different benefits and applications. The CMC shall decide band by band the appropriate licence type and shall communicate this information to its stakeholders. These licence types include spectrum licences (licensing frequency and blocks of frequencies) and class licences.

2.5.6 Licence periods
The CMC identifies that on the one hand providing security of tenure for a long period encourages investment whilst on the other hand granting licences for too long a period potentially stifles innovation and competition. The CMC shall therefore decide appropriate licence periods for each spectrum product and band and will communicate this with its stakeholders.

2.5.7 Development of a spectrum management database
Adequate records on the licences, licensees and users of the radio spectrum are essential for effective and efficient spectrum management. The CMC shall develop and maintain a database of licences, licensees and users. This database shall as a minimum characterise each station by its station class, application, technology, subservice and service. These categories are defined by the International Telecommunications Union.

2.5.8 Development of knowledge about spectrum users
In addition to information made available by licensees and users, the CMC shall also gather information through monitoring of frequencies and inspection of stations and other lawful information-gathering methods that the CMC deems appropriate.

2.6 By spectrum product
The following objectives shall be adopted by the CMC.

2.6.1 Major work areas
The following objectives shall be adopted by the CMC against each of several major work areas.
Terrestrial TV broadcasting

In many countries in the world terrestrial television broadcasting forms a key delivery mechanism to inform, entertain and educate the population. However in countries where delivery has been planned using cable or fibre and where countries have exploited delivery of content from satellites, terrestrial television broadcasting is less important.

In countries where terrestrial television broadcasting is deemed important it competes for spectrum with public mobile networks and fixed links. The CMC shall determine its approach towards terrestrial television broadcasting and shall draw up a plan to resolve the competing demand for spectrum between television broadcasting and other services and allocate appropriate spectrum to each.

Public mobile networks

Public mobile networks for the delivery of speech and data services are hugely significant and provide huge benefits to society and the economy. The CMC shall determine its approach towards public mobile networks, calculating the future spectrum needed by networks in The Republic of Iraq. The CMC shall develop a plan to re-farm the spectrum in order to make spectrum available in a timely fashion for these future networks.

Fixed links in support of public mobile networks

Fixed links provide essential backhaul connecting remote radio sites to network infrastructure such as switches and routers. In order to support the growth of public mobile networks spectrum will need to be provided for fixed links. The CMC shall determine the frequency bands and planning criteria needed to support public mobile networks and shall make spectrum available accordingly. The CMC acknowledges that fibre provides an alternative backhaul method. The CMC shall understand the market requirement and make spectrum available considering this dependency.

Future public safety systems

Electronic communications is essential in achieving security and fighting crime. Electronic communications is also essential for public safety. The CMC shall consult and investigate the needs of the public security and public safety providers in The Republic of Iraq, determine the spectrum requirements considering their projection of improved public security and provide spectrum accordingly.

2.7 Required regulations

Whilst there will be regulation required from the CMC’s work activities, the following regulations are likely needed from the outset.

2.7.1 The means of regulation-building and change

This policy document has identified that it will be essential that the CMC evolves its policies and operations in line with the changing environment in The Republic of Iraq. Change means new or changed regulation. The means of regulation building and regulation change will need to be included in statute.
2.7.2 Definition of spectrum property rights and ability to transfer and trade rights

Before spectrum can be traded and indeed in order to interpret licence conditions, a clear definition of spectrum property rights is essential. Once defined, the ability to transfer and trade rights can be incorporated. Spectrum property rights must be defined in statute.

2.7.3 The means of investigating competition and ability to take ex-post action

This policy document has noted the importance of fostering competition both in the spectrum market and in downstream markets. The CMC will generally have an interest in understanding competition in markets. The CMC shall investigate competition and take ex-post action against any operator whose actions in the market do not constitute effective, full and fair competition in connection with its spectrum holdings.

2.8 Acknowledgement of the time taken to implement change

The CMC acknowledges that it takes significant time to analyse options for change in pursuit of policy, to consult industry and the markets about change, to change regulation and laws and to implement change. Often change such as re-farming requires the scrapping of one network and the purchase and roll out of new. Changes affecting Iraqi users alone may be possible within 3-5 years whilst changes requiring international treaty brokered by the ITU may take 10-30 years.

The CMC shall take such action as possible to minimise the time taken to change and shall communicate progress to its stakeholders on all changes and at all stages of change by way of an annual report.

Glossary of Terms

Equipment type approvals

Regulators need to manage (and minimise) the interference between users. Part of managing interference is the control of the specifications of equipment using the spectrum. These specifications are designed to minimise interference. These equipments are required by the regulator to meet type specifications and to be approved by the regulator by type.

Air interface specification

Regulators act to manage (and minimise) interference between services. The interference potential (and the converse, its susceptibility) is determined by attributes such as the modulation scheme of the technology. Many such parameters are covered within the equipment type approval specification but often regulators will want to be more general, defining a spectral mask and a receiver response permissible. Such general specifications allow many equipment types to be compliant.

Quality of service

The definition of the performance of a radiocommunications service in terms that affect the user. Quality of service includes such parameters as the incidence of call failure and the incidence of bit error at a point in time and space. Quality of service is also used to define a basket of parameters such as jitter and error in digital communications.

Significant market power
In economics this is the ability of a firm to alter the market price of a good or service over the marginal cost. In a perfectly competitive markets, where there is no one supplier with significant market power, the market price is fixed for all and normal profits are made. In the event that one supplier develops some advantage over its competitors, it may be able to act independently and elevate the price because consumers view that there is a benefit in paying the higher price. In this case more profit can be made. In wireless networks, where there is an inverse relationship between cost and spectrum used, significant market power and reduced costs can come from having more spectrum that competitors.

**Ex ante regulation**

Regulations put in place by a regulator (including license conditions and license fees) before the act of licensing. Generally ex ante regulation requires the prediction of licensee behaviour and the development of regulation given that behaviour.

**Ex post regulation**

Regulation put in place after the action of licensing, generally to correct an unacceptable market or licensee activity (for example, acting to recover spectrum from a licensee in the event that the licensee enjoys significant market power following merger or acquisition).

**Allocation, allotment and assignment**

Allocation: the act of determining that a service should be permitted to operate in a frequency band such that subsequent allotment and assignment may be done. This is often done on a region-wide or worldwide basis and is agreed between regulators. Economists use the term ‘allocation’ for all instances where a resource is given to a user. In this case, ‘allocation’ is a general term. In spectrum management, the term has specific meaning involving services and frequency bands.

Allotment: the act of permitting a broad spectrum resource (for example, comprising several radio frequencies) to be used by an application or licensee along with defined rights and obligations. Operators bidding at auction would typically be bidding for an allotment of spectrum upon which they will roll out a network.

Assignment: the act of permitting a finite spectrum resource (for example comprising a single radio frequency) to be used by a station at a location and for a time.

**Direct award**

Direct award covers the instance where the regulator, upon completing due analysis, elects to make an award of an amount of spectrum directly to an operator without invoking market measures and competition between operators. Generally this occurs because there is some overwhelming argument that the award is in the public interest. Examples include the award of spectrum to the police, fire and emergency medical services or the award to an operator that will roll out a backbone network for others to use as a mobile network backhaul.

**Spectrum re-farming**

Since the radio spectrum is a human construct, it can be reconstructed from time to time to better meet the needs of the spectrum stakeholders. This reconstruction, termed re-farming, involves allocating and reallocating spectrum to providers and users in search of effectiveness and efficiency of use.
Spectrum property rights

Property rights are the exclusive rights (of the holder of an asset) to determine how the resource is used, exploited and disposed of. Property rights must be defined and protected through laws for any mixed economic system to succeed. Property rights can be privately owned, publically owned or abolished and are important in stopping asset holders from taking the law into their own hands when they perceived that assumed rights are challenged. Spectrum property rights must be defined for an enforcement regime to work effectively.