

# **Construction Procedures and Standards of Cellular Mobile Base Stations and Towers**

**December 2014**

**Version (1.0)**

## CONTENTS

1.DEFINITIONS.....	3
2.LEGAL MANDATE.....	5
3.BACKGROUND .....	6
4.STANDARDS .....	8
5.VIOLATIONS .....	21
6.EFFECTIVE DATE .....	21
ANNEX A – DECLARATION OF CONFORMITY WITH ICNIRP PUBLIC EXPOSURE PROCEDURES AND STANDARDS .....	22
ANNEX B – FORMAT OF THE BI-ANNUAL LIST OF EXISTING SITES DATABASE .....	24
ANNEX C – CELLULAR MOBILE BASE STATION APPLICATION APPROVAL FORM .....	24

## 1 Definitions

1.1 The terms, words, and phrases used in these Procedures and Standards shall have the same meaning as are ascribed to them in the Telecommunications Law No. 34 for 2006 unless these Procedures and Standards expressly provides for otherwise, or the context in which those terms, words and phrases are used in these Procedures and Standards requires otherwise. For the purposes of these Procedures and Standards, the following terms and words shall have the meanings ascribed to them below:

**3GPP technologies:** Technologies based on existing/developing/future 3GPP standards.

**Cellular Mobile Base Station:** A wireless communications station installed at a fixed location and used to operate as part of a wireless telecommunications system.

**Compliance Distance:** The minimum distance from the antenna to the point of investigation where the field level is deemed to be compliant to the limits.

**Electromagnetic Field (EMF):** A physical entity carrying or storing energy in empty space and manifesting by exerting forces on electric charges.

**Equipment Space:** The area either indoors or outdoors where Telecommunications Equipment can be located.

**Exposure:** The subjection of a person to electric, magnetic, or electromagnetic fields other than those originating from physiological processes in the body and other natural phenomena.

**Frequency:** The number of times per second at which an electromagnetic wave oscillates. It determines the wave's properties and usage. Frequencies are measured in hertz (Hz).

**Procedures and Standards :** These Procedures and Standards as published by CRA.

**Host:** Licensee which is in control of a Site.

**ICNIRP:** The International Commission on Non-Ionizing Radiation Protection is an

independent scientific body which has produced an international set of Procedures and Standards for public exposure to radio frequency waves.

**Licensee:** A licensed mobile telecommunications service provider in the State of Qatar.

**Non-ionizing radiations:** Refers to any type of electromagnetic radiation that does not carry enough energy to ionize living material - that is, to completely remove an electron from an atom or molecule.

**Passive Telecommunications Equipment:** Infrastructure which is necessary or desirable for the installation of active Telecommunications Equipment at a Site including, without limitation, Towers, masts and Equipment Space.

**Power Density; Power Flux-Density (S):** Power per unit area normal to the direction of electromagnetic wave propagation, usually expressed in units of Watts per square meter (W/m<sup>2</sup>). In this Recommendation, this term is mainly used as equivalent plane wave power density, which is true in the far-field region.

NOTE – For plane waves, power flux-density, electric field strength (E) and magnetic field strength (H) are related by the intrinsic impedance of free space,  $Z_0 = 120\pi \Omega$ . In particular

$$S_{eq} = \frac{E^2}{Z_0} = Z_0 H^2 = EH$$

Where E and H are expressed in units of V/m and A/m, respectively, and S in units of W/m<sup>2</sup>. Although many survey instruments indicate power density units, the actual quantities measured are E or H.

**Public Licensed Mobile Service Provider (PLMSP):** Holder of a license to provide Public Mobile Telecommunications Networks and Services in the State of Qatar.

**Reference levels:** Reference levels are provided for the purpose of comparison with exposure quantities in air. The reference levels are expressed as electric field strength (E), magnetic

field strength (H) and power density (S) values.

**Site:** A prepared facility where Telecommunications Equipment is located. It includes the Tower, Equipment Space, and a secure boundary.

**Telecommunications Equipment:** Passive or active equipment used to provide cellular mobile services, including transmission devices, outside receivers for wireless devices, and transmitting antennas.

**Tower:** A self-supporting or guyed structure constructed from steel lattice, monopole tubular steel, reinforced concrete or other composite material, built to support one or more antennas designed to transmit or receive digital, microwave, cellular or similar forms of wireless electronic communication.

## 2 Legal Mandate

Article 4 of the CRA mandate as per the Emiri Decision ( 42 ) for 2014.

Article 4 of the Decree Law No. 34 of 2006 on the promulgation of the Telecommunications Law grants CRA the power and authorities to safeguard the interests of consumers, including setting criteria for quality of service and monitoring the terms and conditions of telecommunications services provision.

Article (24)(3) of the Telecommunications By-Law No. 1 of 2009 provides that CRA shall ensure the use of radio spectrum is consistent with the national frequency assignment plan, related allocations and assignments, any applicable international, treaties, commitments, protocols and standards and Radio Spectrum License conditions, including taking related compliance and enforcement actions.

### 3 Background

- 3.1 The rapid development of the wireless services and networks in the State of Qatar leads the CRA to continuously develop regulations and Procedures and Standards regarding the rollout and implementation of cellular mobile networks. These Procedures and Standards contain details of the construction aspects of Cellular Mobile Base Stations and Towers and exposure to radio frequency electromagnetic fields.
- 3.2 CRA is mandating the sharing of passive infrastructure for mobile networks. The sharing of mobile infrastructure requires all Licensees to be aware of the technical standards which are to be applied in order to safely share Cellular Mobile Base Stations and Towers, Sites and associated infrastructure.
- 3.3 These Procedures and Standards provide details and set out the criteria to be adopted in relation to the construction of Cellular Mobile Base Stations and Towers including measures to ensure the safe emission of electromagnetic frequencies.
- 3.4 These Procedures and Standards shall:
  - a) serve to protect the general public from exposure to Radio Frequency (RF) electromagnetic fields (EMF) within the frequency range of cellular mobile services;
  - b) require Licensees in Qatar to ensure that the construction and ongoing operation of all Cellular Mobile Base Stations and Towers and related RF equipment complies with ICNIRP public exposure Procedures and Standards ;
  - c) include a substantial safety margin to assure that no adverse health effects are experienced when EMF levels are within the established limits;
  - d) require that Licensees respect the natural environment and landscape of Qatar as well as address the concerns of the public, in planning the Site locations of the Cellular Mobile Base Stations and Towers;
  - e) Establish technical regulatory practices for the construction of sharable Cellular Mobile Base Stations and Towers.

- 3.5 The following goals and objectives shall be achieved through these Procedures and Standards in relation to the general construction principles to be applied to Cellular Mobile Base Stations and Towers, Sites and associated infrastructure (which take into consideration the requirements of mandatory Site sharing):
- a) Define high level technical criteria for the construction of sharable Cellular Mobile Base Stations and Towers, Sites and associated infrastructure in the State of Qatar;
  - b) Health and safety criteria;
  - c) Environmental criteria, including beautification principles.
- 3.6 The Procedures and Standards also serve to limit human exposure to radio frequency and electromagnetic fields by:
- a) Protecting the public of Qatar from any adverse health effects;
  - b) Providing best practice processes for demonstrating compliance with recognized international exposure limits and protection of the public;
  - c) Planning, designing and operating radio communications infrastructure to minimize RF EMF exposure;
  - d) Ensuring that relevant authorities are informed and consulted before radio apparatus is deployed;
  - e) Maintaining the well-being of Qatar's community, physical or otherwise.

## 4 Standards

### 4.1 General Construction Criteria

- 4.1.1 Licensees shall abide by the construction criteria set out in this Section when building new Cellular Mobile Base Stations and Towers in the State of Qatar. These criteria take into consideration the need for Site sharing between two or more Licensees.
- 4.1.2 The design, planning, implementation and ongoing operation of the shared Cellular Mobile Base Stations and Towers will be detailed according to the Site Sharing Agreement signed between the sharing Licensees.

### 4.2 Cellular Mobile Base Station and Tower Design and Construction

- 4.2.1 The design of Cellular Mobile Base Stations and Towers shall be determined by the landscape where the Cellular Mobile Base Stations or Tower is to be located. Due consideration should be taken of the Cellular Mobile Base Stations or Tower location when determining the appropriate height and appearance.
- 4.2.2 All Sites shall be constructed with sufficient space and loading capacity to enable all Licensees to install their Telecommunications Equipment at each Site. This must include space for cabinets, shelters and back-up power equipment (if used).
- 4.2.3 Licensees shall work together on producing the technical specifications and standards that need to be considered during site construction to accommodate the licensees' sharing requirements, this include ,inter alia, structure load, ground space utilization, reserved space on the structure for future utilization, structure height and material specifications.
- 4.2.4 In keeping with international recognition of common public perception concerns, the CRA encourages Licensees to avoid installing transmission devices, Cellular Mobile Base Stations and Towers and outside receivers for wireless devices in vicinity of "public-sensitive areas/buildings" where possible.
- 4.2.5 The design of Cellular Mobile Base Stations and Towers shall provide for specific conditions that might exceed any values specified in these Procedures and Standards.



#### **4.3 Cellular Mobile Base Station and Tower Loading**

- 4.3.1 The design philosophy shall take into account both the strength limit, which considers the loading of a Cellular Mobile Base Stations and Tower under extreme conditions, and the serviceability limit, which ensures that the Cellular Mobile Base Stations and Tower will provide the appropriate service considering a second Public Licensed Mobile Service Provider requirement for sharing at the Site
- 4.3.2 The loading on a Cellular Mobile Base Stations and Tower shall be analyzed under local wind, soil and seismic conditions.
- 4.3.3 In designing Cellular Mobile Base Stations and Towers, wind loading as well as equipment loading shall be taken into consideration.
- 4.3.4 The wind load rating shall be based on the height of the Cellular Mobile Base Stations and Tower, its location and any relevant local conditions.

#### **4.4 Power Criteria**

- 4.4.1 Each Site shall be provided with an appropriate electrical power supply by the Host, considering a second Public Licensed Mobile Service Provider at the Site.
- 4.4.2 This should be ideally through a mains electricity feed with back-up power provided from a source consisting of batteries, a generator, or both.
- 4.4.3 Each Site shall be equipped with sufficient power in order to meet its full operational capacity requirements.
- 4.4.4 Sufficient power should be provided for a second Public Licensed Mobile Service Provider at the Site, if requested.

#### **4.5 Lighting of Cellular Mobile Base Stations and Towers**

- 4.5.1 All Cellular Mobile Base Stations and Towers shall be equipped with appropriate warning lights in full compliance with the Civil Aviation Regulations of the State of Qatar.
- 4.5.2 All lights shall be inspected periodically as required by local regulations.
- 4.5.3 A sufficient quantity of spares shall be held at each Site to enable any defective warning lights to be replaced immediately.

#### **4.6 Beautification Criteria**

- 4.6.1 The Licensee undertaking the construction of a Cellular Mobile Base Station Site or Tower shall take into consideration the beautification principles as defined and agreed between the Ministry of Municipality and Urban Planning, the CRA and the PLMSPs. The principles shall have regard to aesthetics, network performance and sharability.
- 4.6.2 In particular with regard to Site construction the following principles should be considered:
  - a) To the extent possible, within Sites, equipment visible to the public should be consolidated, to reduce the amount of Telecommunications Equipment visible to the public.
  - b) Where required by a Law, the Licensees shall co-operate to install Telecommunications Equipment designed, installed, painted and otherwise hidden so as to be 'camouflaged' from public view, particularly if installed on a roadside or a rooftop even if to do so would be inconsistent with any site sharing agreement.
- 4.6.3 Licensees shall take into account the local pattern of streets and spaces, building traditions, skyline and ecology when planning for a Cellular Mobile Base Station and Tower Site. The scale, massing and height of a proposed Site should be considered in relation to that of adjoining buildings, the topography, the general pattern of heights in the area, views and landmarks so as to minimize the contrast between any radio apparatus and the surrounding environment.

#### 4.7 International Safety Standards for the Emission of Electromagnetic Radiation

- 4.7.1 There remains a great deal of interest in monitoring the electromagnetic radiations (EMR) emitted from the different sources of these services and networks. One of the most common sources for the EMR is the 3GPP based technologies in Cellular Mobile Base Stations and Towers. The radiation is emitted continuously and can be powerful close to the antenna. However, the intensity of the radiation decreases significantly with distance from the Cellular Mobile Base Station or Tower, according to a power attenuation formula.
- 4.7.2 Though some countries have developed their own NIR Exposure Standards, most countries in the world however have adopted the ICNIRP Exposure Standard in assessing radiation levels in their countries. The ICNIRP standard has also been recommended by the World Health Organization (WHO) as an acceptable exposure guideline.
- 4.7.3 Due to the rapid expansion of the radio communications network and other wireless networks, human exposure to radiation has been increased. Therefore, Non-Ionizing Radiation (NIR) Exposure Standards and Regulations have been developed by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the Institute of Electrical and Electronic Engineers (IEEE).
- 4.7.4 The public concerns about the environmental and health effects of EMR has increased in Qatar after the installation of the new Cellular Mobile Base Stations and Towers, cells on wheels and other transmission stations.
- 4.7.5 CRA has chosen to adopt the International Standards recommended by the World Health Organization (WHO) and International Telecommunications Union (ITU) which are in line with ICNIRP Procedures and Standards and are designed to provide protection against all established health hazards. These standards have been widely adopted in Africa, Asia, Europe and the Middle East.
- 4.7.6 Compliance with ICNIRP public exposure Procedures and Standards is normally determined by mathematical calculation and implemented by careful location of antennas, access restrictions and/or barriers and signage as necessary.

4.7.7 Licensees in the State of Qatar shall adhere to the health protection standards specified in the “Procedures and Standards for Limiting Exposure to Time-varying Electric, Magnetic and Electromagnetic Fields” published by the ICNIRP in 1988 and reconfirmed in 2009. By way of example only, the following table (which is extracted from the ITU-T K.52 Recommendation) illustrates the levels of exposure for the general public to Non-Ionizing radiations acceptable as per the ICNRP Procedures and Standards.

**ICNIRP Reference Levels**

Type of Exposure	Frequency Range	Electric field Strength(V/m)	Magnetic field Strength(A/m)	Equivalent Wave density (W/m <sup>2</sup> )	plane power $S_{eq}$
General Public	Up to 1Hz	-	$3.2 \times 10^4$	-	
	1-8 Hz	10 000	$3.2 \times 10^4 / f^2$	-	
	8-25 Hz	10 000	$4\,000 / f$	-	
	0.025-0.8kHz	$250 / f$	$4 / f$	-	
	0.8-3kHz	$250 / f$	5	-	
	3-150kHz	87	5	-	
	0.15-1MHz	87	$0.73 / f$	-	
	1-10MHz	$87 / f^{1/2}$	$0.73 / f$	-	
	10-400MHz	28	0.073	2	
	400-2000MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$f / 200$	
	2-300GHz	61	0.16	10	

NOTE 1-  $f$  is as indicated in the frequency range column

NOTE 2- For frequencies between 100kHz and 10GHz, the averaging time is 6minutes

NOTE 3- For frequencies up to 100kHz, the peak values can be obtained by multiplying the rms value by  $\sqrt{2}$  ( $\approx 1.414$ ). For pulses of duration  $t_p$ , the equivalent frequency to apply should be calculated as  $f = 1/(2t_p)$ .

NOTE 4- Between 100 kHz and 10 MHz, peak values for the field strengths are obtained by interpolation from the 1.5-fold peak at 100 KHz to the 32-fold peak at 10MHz. For frequencies exceeding 10 MHz, it is suggested that the peak equivalent plane-wave power density, as averaged over the pulse width, does not exceed 1000 times the  $S_{eq}$  limit, or that the field strength does not exceed the field strength exposure levels given in the table.

NOTE 5- For frequencies exceeding 10GHz, the averaging time is  $68/f^{1.05}$  minutes ( $f$  in GHz).

- 4.7.8 Licensees shall ensure that the general public is not exposed to non-ionizing radiation in excess of the limits set by ICNIRP as a result of their construction and operation of any Cellular Mobile Base Station and Tower.
- 4.7.9 Licensees shall ensure that the general public cannot access Cellular Mobile Base Station and Tower. Each Licensee shall use its best endeavors to minimize the radio frequency radiation intensity in these areas in accordance with the formulas set out in the ITU-T Recommendation (ITU-T K.70 Annex C of ITU Radio Regulations as amended by the International Telecommunications Union from time to time). The following table is extracted from this ITU-T Recommendation and shows the expressions for the calculation of minimum distances to antennas for compliance with exposure limits for the population in general. The table is provided as a reference only:

Radio frequency range	General public exposure	
1 to 10 MHz	$r = 0.10\sqrt{eirp \times f}$	$r = 0.129\sqrt{erp \times f}$
10 to 400 MHz	$r = 0.319\sqrt{eirp}$	$r = 0.409\sqrt{erp}$
400 to 2000 MHz	$r = 6.38\sqrt{eirp/f}$	$r = 8.16\sqrt{erp/f}$
2000 to 300000 MHz	$r = 0.143\sqrt{eirp}$	$r = 0.184\sqrt{erp}$

$r$	is the minimum antenna distance, in meters
$f$	is the frequency, in MHz
$erp$	is the effective radiated power in the direction of the largest antenna gain, in Watts
$eirp$	is the equivalent isotropically radiated power in the direction of the largest antenna gain, in Watts

- 4.7.10 Licensees shall assess all existing Sites to ensure their compliance with the ICNIRP Procedures and Standards for general public exposure and take immediate actions to rectify any non-compliant Sites.
- 4.7.11 Licensees shall ensure that CRA is always in possession of an up to date list at the end of each Quarter of all existing Cellular Mobile Base Station and Tower Sites, including the Site name, identification code, type of site (green field, rooftop, camouflage, Cell on Wheel, macro, micro, indoor, outdoor) site activation date, and Site address with GPS & Qatar coordinates along with a Declaration of Conformity with the ICNIRP Procedures and Standards for general public exposure. In this regard, the ICNIRP Declaration of Conformity form to be completed, is attached as Annex A, the format of the Bi-Annual list of sites requirement is attached as Annex B.
- 4.7.12 Licensees shall enclose any electric generators at Cellular Mobile Base Station and Tower Sites, using their best efforts to ensure that enclosures are in harmony with other radio apparatus so as not to detract unnecessarily from the landscape of the surrounding area.
- 4.7.13 In the event that a new version of the ICNIRP Procedures and Standards is released, Licensees shall adhere to the new standards unless they contain less onerous standards than the previous version, in which case the more onerous standards shall apply, unless specified otherwise by CRA.
- 4.7.14 Licensees shall declare compliance to CRA within 90 days of the publication of any new version of the ICNIRP Procedures and Standards, if Technically and Operationally feasible. CRA will update these Procedures and Standards accordingly.

#### 4.8 Warning Signs

- 4.8.1 Appropriate warning signs shall be clearly displayed in order to alert both workers and members of the public about relevant dangers at all Site locations.
- 4.8.2 These shall include warnings about radiation hazards.
- 4.8.3 Such signage, as illustrated below, shall identify their company as the owner of the Cellular Mobile Base Station and Tower and provide site name and the identification code as well as a telephone number for any emergency calls.

← 30 cm →	
Site Name:	← 15 cm →
Identification Code:	
Licensee Name:	
Telephone for Emergency Call:	

#### **4.9 Site Location and Planning Condition for designing Cellular Mobile Base Stations and Towers**

##### **4.9.1 Site Locations**

4.9.1.1 All applications for new Site locations submitted by the Licensees shall be based on the actual needs in terms of location and space to ensure that existing Sites have been efficiently used.

4.9.1.2 A Licensee which intends to construct a new Cellular Mobile Base Station or Tower shall conduct all reasonable investigations and site surveys regarding the location to investigate Cellular Mobile Base Station or Tower sharing before applying to construct a new Cellular Mobile Base Station or Tower within **600m** of existing Cellular Mobile Base Station or Towers. Survey information and investigations findings shall be explored and attached to the application form for the construction of the Cellular Mobile Base Station or Tower.

4.9.1.3 Licensees shall not request allocation of Sites on major road intersections (as specified by MMUP) unless such Sites are essential for network planning and all other options have been explored and determined to be unworkable. Licensees shall in this regard be required to demonstrate that the use of existing infrastructure and other locations is technically not feasible by producing a report to support the application.

##### **4.9.2 Planning Condition for designing the Cellular Mobile Base Stations and Towers**

4.9.2.1 Licensees shall consider the possibility of using existing structures such as Mosque towers, beacons, street light poles, etc. instead of building new Sites. Licensees shall also take into account aesthetics, such as the design and the color, in coordination with the concerned authorities in the Ministry of Municipality and Urban Planning.



#### **4.10 Cellular Mobile Base Station and Site Sharing**

4.10.1 Mobile site sharing is used as a means to reduce the overall number of Sites and their visual impact on the landscape of Qatar, where technically and operationally feasible.

4.10.2 Licensees shall apply all the requirements of the Mobile Site Sharing Instruction as issued by the CRA.

#### **4.11 Equipment Space Sharing**

4.11.1 Licensees shall work together and plan carefully to share any Equipment Space at Sites according the requirements of the Mobile Site Sharing Instruction issued by the CRA.

#### **4.12 On Site Health and Safety Criteria**

4.12.1 The following criteria shall be implemented in addition to any statutory health and safety legislation which is applied to such construction as part of the National Laws of the State of Qatar.

##### **4.12.2 Safety**

4.12.2.1 The Licensee undertaking the Cellular Mobile Base Station and Tower construction shall ensure that appropriate and adequate safety equipment is easily available at a Site at all times including fire-fighting and first aid equipment.

4.12.2.2 The Licensee shall provide all necessary safety equipment for all appropriate personnel in accordance with best industry practice.

##### **4.12.3 Working at Heights**

4.12.3.1 All working at heights must, at all times, be conducted in accordance with best industry practice and may only be undertaken by suitably qualified and trained personnel.

4.12.3.2 Each Licensee shall be responsible for ensuring that personnel required to work at heights are qualified and trained.

4.12.3.3 At least two personnel must be present at a Site at all times when any structure is being climbed.

4.12.3.4 No work may be carried out on any structure at a Site during periods of adverse weather conditions or if wind is gusting at over 50 kph at ground level.

#### 4.12.4 Electrical and Mechanical Equipment

4.12.4.1 All electrical equipment (including without limitation power tools) and mechanical equipment (including without limitation cranes and other lifting equipment) used at a Site shall be in good working order and comply with all applicable legislation (including without limitation in relation to testing and inspection) and must, at all times, be operated in accordance with best industry practice and any applicable legislation.

4.12.4.2 All electrical tools used at a Site shall be either battery operated or be powered by an isolating transformer or a generator.

#### 4.12.5 Fire Hazards

4.12.5.1 All welding or cutting equipment used at a Site shall be in good working order and comply with all applicable legislation and must, at all times, be operated in accordance with best industry practice (including without limitation ensuring that suitable emergency and fire-fighting equipment is readily available).

4.12.5.2 Where welding or cutting equipment, or any process giving off sparks or heat is used, a strict “hot work” policy must be in place in accordance with best industry practice and adhered to at all times.

#### 4.12.6 Accidents and Emergencies

4.12.6.1 Before any work commences at a Site, provision must be made to ensure that personnel at the Site are able to contact the emergency services and the Site owner in the event of an accident or emergency.

4.12.6.2 A first aid box must be available at all times whilst any work is taking place at a Site. All personnel must be aware of the location of first aid box and the appropriate method of contacting emergency services.

#### **4.13 Public Awareness**

4.13.1.1 Licensees shall make available to the public, at no charge:

- a. Information regarding how they address RF EMF health and safety issues in relation to their networks; and
- b. Information or links to information where research reports on the health and safety impacts of radio frequency apparatus may be obtained.

4.13.1.2 Licensees shall inform the CRA of the steps which they will take to make this information available to the public.

#### **4.14 Complaint Handling**

4.14.1 Licensees shall put in place processes to respond to complaints and enquires from the public about Cellular Mobile Base Stations and Tower Sites, addressing any complaints and resolving such complaints within 30 Working Days.

4.14.2 As part of their response, Licensees must be prepared to provide the following information to members of the public:

- a. A description of their radio equipment at the Site;
- b. The operating frequency of the radio transmitters;
- c. A declaration that radio equipment at a given Site has been designed to be in compliance with ICNIRP exposure Procedures and Standards for the general public.

#### **4.15 Cellular Mobile Base Stations Site Application Approval Process**

- 4.15.1 Licensees shall demonstrate compliance with these Procedures and Standards prior to the construction of any Cellular Mobile Base Station and Tower in Qatar according to the process described in the paragraphs below. Licensees shall submit the Cellular Mobile Base Station and Tower Site Application Approval Form attached as Annex C along with the ICNIRP Declaration of Conformity to CRA's Technical Affairs Department for review. Licensees should submit these forms in hardcopy format and electronically as well.
- 4.15.2 CRA shall review the Cellular Mobile Base Station and Tower Site Application Approval Form within 10 Working Days.
- 4.15.3 Where there is compliance with these regulations, the application will be forwarded to the Ministry of the Municipality and Urban Planning for Site location approval.
- 4.15.4 Where there is non-compliance with these regulations, the CRA shall send the application form back to the Licensee with relevant comments for modification.
- 4.15.5 It is the Licensee's responsibility to follow the applications with the Ministry of the Municipality and Urban Planning and any other relevant authorities and fulfill the necessary requirements.
- 4.15.6 Licensees shall update the CRA on a monthly basis with the status of the Cellular Mobile Base Station and Tower Site Application with the government authorities.
- 4.15.7 Licensees can resubmit the applications to the CRA (with clear justifications of the resubmission) if it has been rejected by the Ministry of the Municipality and Urban Planning and/or the other relevant authorities.

#### **4.16 Cellular Mobile Base Station and Towers Reporting**

- 4.16.1 Licensees shall provide CRA with a database of the Cellular Mobile Base Stations and Towers bi-annually in GIS & Excel sheet format , or whenever required by the CRA.

## **5 Violations**

- 5.1 Licensees shall comply with the provisions outlined in these Procedures and Standards. Any violation of these Procedures and Standards will result in penalties imposed in accordance with the Telecommunications Law and its By Laws, the applicable Regulatory Framework and other relevant laws of Qatar.
- 5.2 CRA may conduct audits from time to time to ensure that the limits for public exposure to EMF set by the ICNIRP Procedures and Standards are not exceeded.
- 5.3 In the event that there is any violation of the limits imposed, arising from the operation of a Cellular Mobile Base Station or Tower, the relevant Cellular Mobile Base Station or Tower will be subject to an immediate deactivation on notice from the CRA. The relevant Cellular Mobile Base Station or Tower shall not be reactivated until such time as the Licensee can supply certification to the CRA that it is compliant with the imposed limits and is no longer in breach of the ICNIRP standards or these Procedures and Standards .

## **6 Effective Date**

- 6.1 These Procedures and Standards shall be effective upon the date of issue.

**Annex A:**

**Declaration of Conformity with ICNIRP  
Public Exposure Procedures and Standards  
(ICNIRP Declaration)**

## Declaration of Conformity with ICNIRP Public Exposure Procedures and Standards (ICNIRP Declaration)

(Operator logo)

(Operator name)

(Operator address)

Declares that the proposed equipment and installation as detailed in the attached site approval application at:

(Address) \_\_\_\_\_

\_\_\_\_\_

is designed to be in full compliance, when operational, with the requirements of the radio frequency (RF) public exposure Procedures and Standards of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), as expressed in EU Council Recommendation of 12 July 1999 \* "on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)". When determining compliance the emissions from all mobile phone network operators on the site are taken into account.

(Ref: CRA's Procedures and Standards for Limiting Public Exposure to Radio Frequency Fields from Radio Base Stations and related Site Planning)

Date: \_\_\_\_\_

Signed: \_\_\_\_\_

Name: \_\_\_\_\_

Position: \_\_\_\_\_

## **Annex B:**

### **Format of the Bi-Annual list of Existing Site Database**



• **Mobile sites on rooftops:**

S.N	Site Name	Longitude	Latitude	Municipality	Building (Residential, Commercial)	Operational Networks (2G,3G, 4G)	Camouflage structure	Type of Camouflage

• **Mobile sites with camouflage structure (non-Rooftop):**

S.N	Site Name	Longitude	Latitude	Municipality	Type of Camouflage	Operational Networks (2G,3G, 4G)

• **Cell On Wheel (COW) sites:**

S.N	Site Name	Longitude	Latitude	Municipality	Operational Networks (2G,3G, 4G)

• **2G-GSM-Cell Parameter (900 and 1800 MHz)**

Sl. No	Site Name	Longitude	Latitude	Cell Type Macro / IBS	Cell Name	MCC	MNC	TCH Frequencies (or)	BTS Power Output (in dBm)	No. of TRX	LAC	Cell Identity (CID)	BSC	NCC	BCC	BSIC	BCCH

Routing Area Code (RAC)	Antenna Horizontal Beam Width	Antenna Azimuth	Antenna Height	Extended Range (Yes/No)	Maximum Timing Advance	ERP/EIRP	Antenna TILT

• **3G-UMTS-Cell Parameter (900 and 2100 MHz)**

Sl. No	Site Name	Longitude	Latitude	Cell Type Macro / IBS	Cell Name	MCC	MNC	LAC	Cell Identity (CID)	Scrambling Code (SC)	U-ARFCN	Routing Area (RA)	Antenna Horizontal Beam Width	Antenna Azimuth	Antenna Height	UTRAN Routing Area (URA)

• **4G-LTE-Cell Parameter (800 and 2600MHz)**

Sl. No	Site Name	Longitude	Latitude	Cell Type Macro/IBS	Cell Name	MCC	MNC	Cell Identity (CID)	LTE Band (E-ARFCN)	Cell PCI	Antenna Horizontal Beam Width	Antenna Azimuth	Antenna Height	ERP/EIRP	Antenna TILT

## **Annex C:**

### **Cellular Mobile Base Station Site Application Approval Form**

### Contact Details

Name \_\_\_\_\_ Telephone \_\_\_\_\_

Operator \_\_\_\_\_ Email Address \_\_\_\_\_

Address \_\_\_\_\_

### Site Details

Site Name : \_\_\_\_ (English) \_\_\_\_\_ (Arabic) \_\_\_\_\_

Area Name: \_\_\_\_ (English) \_\_\_\_\_ (Arabic) \_\_\_\_\_

Municipality: \_\_\_\_ (English) \_\_\_\_\_ (Arabic) \_\_\_\_\_

Site Identification Code: \_\_\_\_\_

Site Address/ GPS Coordinated \_\_\_\_\_

Site Address/ Qatar National Grid Coordinated :- \_\_\_\_\_

Pin Number \_\_\_\_\_

1. A map showing the site location with GPS coordinates, nearby sites for the applicant licensee (within 600m), nearby sites for the other Licensees (within 600m) from the proposed site. Attached ☐
2. A site layout plan showing the boundaries of the site, the position of existing and proposed radio equipment for the other licensees, to accommodate for the other licensees sharing requirements, as well as the ownership by individual service provider if applicable. The site layout plan should also include any means of enclosure, the position of any adjoining buildings, landscaping proposals and the means of access. Attached ☐
3. Description of planned radio apparatus;
  - Type of Structure (e.g. tower, mast etc)
  - Antenna type, make and model
  - Height of antenna above ground level
  - Azimuth direction
  - Electrical and mechanical tilt
 Attached ☐

<ul style="list-style-type: none"> <li>• Operating frequency bands</li> <li>• Transmitter radio frequency power (EIRP in dBW per carrier)</li> <li>• Safe distance from the Antenna to the Public Access Area</li> </ul>	
4. Landowner or property approval (Including, Owner ID + Signed Lease Agreement + Property Document)	Attached <input type="checkbox"/>
5. Additional Information for Mobile Site Sharing (proposed site name , nearby sites names, coordination's & distance from the proposed location within 600m, reason for not sharing site if it is less than 600m, site area, notification reference to the other operator(s))	Attached <input type="checkbox"/>
<b>International Safety Standards</b>	
Declaration of Conformity with ICNIRP Procedures and Standards. Signed by all Licensees who will own and operate radio equipment at the proposed site.	Declaration attached <input type="checkbox"/>
Signage in place to warn public as needed	Details attached <input type="checkbox"/>
Electric generators at radio base station sites are enclosed and in harmony with other radio apparatus	Details attached if applicable <input type="checkbox"/> Not applicable <input type="checkbox"/>

CRA Review	
Name/ Title of Signatory	
Checked: Senior Engineer, Interconnection, Access and Infrastructure	
Signature \.....	Yes <input type="checkbox"/> if in compliance
Reviewed: Interconnection, Access and Infrastructure Section Head	No <input type="checkbox"/> if not in compliance
Signature \.....	Request for further modifications <input type="checkbox"/>
Approved: Technical Affairs Department Manager	
Signature \.....	

Location Approval by Ministry of Municipality and Urban Planning	
Name/ Title of Signatory	Yes <input type="checkbox"/> if in compliance
.....	No <input type="checkbox"/> if not in compliance <input type="checkbox"/> if in compliance
.....	Request for further modifications <input type="checkbox"/>
Signature \.....	

Note:

Each application should be submitted in a soft copy and hard copy format. A clear scanned copy of the all attachments needs to be included in the softcopy format.