

## Guidelines – Installation of Telecommunication Tower/GSM Monopole

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## 1.0 INTRODUCTION:

As a result of growing demand on telecommunication services and the expansion of cellular phones and to ensure adequate coverage, the telecommunication companies works to an ongoing basis to install large numbers of telecommunication towers /GSM monopoles at various regions in Trakhees jurisdiction area (whether commercial or residential areas).This was accompanied by some of the concerns expressed by the public regarding the potential negative impacts of electromagnetic field emitted from telecommunication towers and their impact on human health and environment .Considering the same Trakhees' Facility Permit section has prepared this guide lines in regards of telecommunication facilities sites depending on global best practices and International Commission of Non-Ionizing Radiation Protection (ICNIRP).

## 2.0 DEFINITION OF TERMS:

### **Telecommunication Tower:**

Consist of a single – column used to carry one or more of antennas

### **GSM**

Is one of the common used of cellular communication systems

### **Electro Magnetic Field (EMF)**

It is a force field or field generated around the telecommunication stations or antennas and generated as a result of passage & movement of electric charges consisting of both electric and magnetic fields (electromagnetic radiations).

### **Non-ionizing radiations**

Refer to any type of electromagnetic radiation that does not have enough energy to completely remove an electron from an atom or molecule. Examples of non-ionizing radiation sources are mobile phones, AM & FM Radio, power transmission line and telecommunication antenna

### **ICNIRP**

Means the International Commission on Non-Ionizing Radiation Protection is a body of independent scientific experts addressing the important issues of possible adverse effects on human health of exposure to non-ionizing radiation.

### **MPEL**

Maximum Permissible Exposure Limit

### **TRA**

Telecommunications Regulatory Authority

### 3.0 OBJECTIVES:

- To ensure compliance with local and federal government and international regulations and health and safety standards to protect residential areas and other land uses from potential adverse impacts of telecommunication structures/Towers
- To ensure that any new telecommunication tower or structure is located in an area compatible with the neighbourhood and surrounding community to the maximum possible extent.

### 4.0 GENERAL REQUIREMENT FOR THE INSTALLATION & OPERATION OF TELECOMMUNICATION TOWERS:

- 4.1 The telecommunication towers and facilities shall be located, designed and operated in a manner that meets all the requirements set by the UAE telecommunications Regulatory Authority (TRA), General Civil Aviation Authority and in compliance with the provisions of any applicable UAE federal and local laws and regulations for safety and Environment protection.
- 4.2 The monopole antenna shall be as much as possible mounted higher than any nearest buildings, must not be directly focused to any human inhabited nearest taller building and have a radial distance of at least 200 meters from any sensitive institutions such as schools, hospitals, healthcare canters and similar buildings



- 4.3 The visual intrusion or impact of the telecommunication system antennas and its accessories to the building or its surroundings must be reduced or disguised either providing these with appropriate camouflage or Stealth physical Installation subject to approval by concerned authorities.
- 4.4 Ensure the protection, safety, health and welfare of the public and workers concerning the significant effects of radio frequency (RF) electromagnetic field (EMF) generated from all installed equipment and operation of telecommunication system base antennas.
- 4.5 The safety levels shall not exceed the maximum permissible exposure limit (MPEL) of the UAE telecommunications Regulatory Authority (TRA) on Non-Ionizing Radiation Limits for Telecommunication networks as adopted from the guidelines of International Commission of Non-Ionizing Radiation Protection (ICNIRP)
- 4.6 The MPEL for the general public must be strictly complied within a radial distance of 200 meters from any inhabited elevation measured from the ground level up to any elevation of buildings.
- 4.7 Measurement of RF/EMF must be undertaken before installation and during normal operation at radial distances of 50 meter increment up to 300 meters at each site of GSM base stations at ground level and/or to elevated buildings to determine baseline and actual



RF/EMF emission. Implement additional control measures, in compliance with the limits as per TRA regulation.

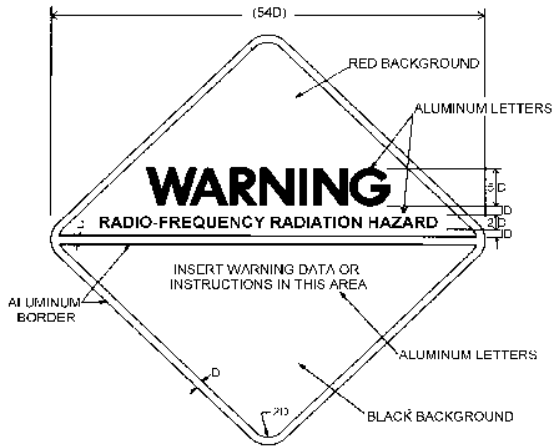
- 4.8 The telecommunication tower shall not be constructed in close proximity to high voltage (11 KV and above) electrical power transmission lines. The nearest distance of a tower to a high voltage electrical power transmission line shall be equivalent of 120% of the height of the tower.
- 4.9 The proposed telecommunication towers which higher than 30 meters and located within a 3km radius of airports aerodromes shall obtain prior approval from General Civil Aviation Authority to make sure that no obstruction of the track navigational.

## 5.0 DIESEL GENERATOR (FOR THE POWER REQUIREMENT OF THE GSM TOWER)

- 5.1 If any Diesel Generator is proposed for the power supply, installation of the same shall follow requirements set (Refer Trakhees' Design Regulation in PS-35.0, Diesel Generator). Proper exhaust vents should be provided to prevent accumulation of smoke/gases/CO Noise levels and personal protection shall be in compliance with Health & Safety Rules & Regulations

## 6.0 FENCING & WARNING SIGN

- 6.1 Appropriate fencing with gate shall be provided around telecommunication tower/system. A “warning” sign with a legibly written words “**RADIO-FREQUENCY RADIATION HAZARD**” which is exactly or similar to Figure 1 must be displayed on a very noticeable space on the fence.



**Figure 1: RF-EMF Warning**



## 7.0 LIMITS OF EXPOSURE TO NON IONIZING RADIATION

7.1 The safety levels with respect to general population and occupational exposure to Non ionizing Radiation shall not exceed the maximum permissible exposure limit established by the international commission on non-ionizing radiation protection (ICNIRP) and adopted by UAE Telecommunication Regulatory Authority as indicated in Table.1

Table 1: Limits for occupational and general population Exposure (Average Timing: 6 minutes)

	Frequency (MHZ)	Power Density (W/m <sup>2</sup> )	Electric field Strength (V/m)	Magnetic field Strength(A/m)
<b>General Public Exposure</b>	900	4.5	41	0.11
	1800	9	58	0.15
	1900	9.5	60	0.16
	2100	10	61	0.16
<b>Occupational Exposure</b>	900	22.5	90	0.24
	1800	45	127	0.34
	1900	47.5	131	0.35
	2100	50	137	0.36

**Requirement for Trakhees Approval:**

The client /contractor shall submit an application for NOC-BP as per procedure available in Trakhees' website.

Following information shall be furnished in the submission /Application

a. Telecommunication Facility Details

Site Code/Identification (DXB)

Site Location

Type of Antenna Base Tower Installation

Height of Antenna Tower (In meters)

b. Telecommunication Antenna Information:

Type of Antenna Base Station (2G-GSM, 3G-UMTS etc.)

Frequency Range

Antenna/Transmitter power outputs

Antenna Type (Directional, Omni Directional)

c. Environment, Health & safety requirements

Describe the Environment, safety and health concern found at the site which require additional steps to be taken prior to initiating construction activities and during normal operation. Environmental requirements are taken prior to initiating construction activities and during normal operation. Environment requirements are compliance/non-compliance of effects of radiation, generation and disposal of all types of wastes. The health and safety requirements are methods to limit access to the site by unauthorized persons such as workers and the public including warning signs posted in accordance with the international telecommunication rules and regulations.

## 8.0 REFERENCES

- DM Environment Dept. Technical Guide Lines for installation of Telecommunication Towers
- UAE-TRA regulation for Non-Ionizing Limits for Telecommunication network
- Trakhees' Design Regulation in PS-35.0, Diesel Generator