



**ICTA**

INFORMATION & COMMUNICATION  
TECHNOLOGIES AUTHORITY

**Document Ref.: ICTA/DE/1/2020**

**Guidelines for the Registration of Base Station  
(by PLMN operators).**

**Guidelines made under Section 17(3) of Information and Communication  
Technologies Act 2001 (as amended) and the EMF Safety Standard 2021**

**13 December 2021**

## Revisions

<b>Revision No.</b>	<b>Date</b>	<b>Nature of Revision</b>
V1	May 2020	Creation of document
V2	May 2021	Issue of document
V3	November 2021	Changes brought: <ul style="list-style-type: none"><li>a) Addition of new technologies such as LTE800 and 5G</li><li>b) Inclusion of a 'De-registration' option</li><li>c) Fine tuning of the Modification feature with respect to type of installation</li></ul>

## **Preamble**

Under Section 17(3) of Information and Communication Technologies Act 2001 (as amended) the Information and Communication Technologies Authority shall have the power to make such determinations, issue such directives, standards and guidelines, and do such acts and things, as are incidental or conducive to the attainment of its objects and the discharge of its functions.

Accordingly, and in line with the Revised EMF Standard, the ICT Authority hereby issues the relevant set of guidelines (hereafter referred to as ‘Registration of Base Station Guidelines’), which shall govern the registration for the setting-up of new base station and the modification registered base stations in the Republic of Mauritius.

The ‘Registration of Base Station Guidelines’ also set out the procedure to be followed by licensed Public Land Mobile Network (PLMN) operators to apply to the ICT Authority for registration in order to set-up, modify and operate base stations.

# 1.0 Introduction

The ICT Authority is hereby issuing the present set of guidelines for the purpose of submitting registration for the setting-up of new base station and the modification of existing base stations in the Republic of Mauritius. The present set of guidelines shall be binding on all licensed PLMN operators

These Guidelines set out the procedures to be followed for registration of new base station and modification of the registered base station with the ICT Authority;

The Authority shall periodically review the present Guidelines.

## 2.0 Definition of Terms

- a) “Access Provider” has the same meaning as in the terms and conditions of PLMN licence issued by the Authority to operators;
- b) “Act” means the Information and Communication Technologies Act 2001 as amended;
- c) “Authority” means the Information and Communication Technologies Authority established under section 4 of the Act;
- d) “Base Station” means a radiocommunications transmitter and its associated infrastructure including any antennas, housings and other equipment;
- e) “Exclusion zones” are described by the compliance boundaries around an antenna in which the electromagnetic fields exceed the safety limits. General public cannot access those areas;
- f) “Host operator” refers to a licensee who has given access to its infrastructure to another licensee, the tenant operator, for the purpose of installing and operating a base station;
- g) “ICTA” means Information and Communication Technologies Authority;
- h) “ITU” means the International Telecommunication Union;
- i) Installation in relation to radiocommunications infrastructure, includes:
  - i. the construction of the infrastructure, on, over or under any land;
  - ii. the attachment of the infrastructure to any building or other structure; and
  - iii. any activity that is ancillary or incidental to the installation of the infrastructure (for this purpose, installation includes an activity covered by paragraphs (i) or (ii) above).

- j) “Licence” means PLMN licence issued by the Authority and includes the terms and conditions and any Annex thereto;
- k) “PLMN” (Public Land Mobile Network) has the same meaning as in the PLMN licence document.;
- l) “Standard” refers to Deployment of Radiocommunication Infrastructure Technical and Administrative Standard for Electromagnetic Field (EMF) Safety (EMF Safety Standard);
- m) “Tenant operator” means a licensee to whom access has been granted to the installation of the host operator for the purpose of installing and operating a base station.

### **3.0 Technical Standards**

- 3.1 Under section 18 (1) (n) of the ICT Act 2001 (as amended), the ICT Authority must “ensure the safety and quality of every information and communication services including telecommunication services, and for that purpose, determine technical standards for telecommunication network, the connection of customer equipment to telecommunication networks”;
- 3.2 Pursuant to section 18 (1) (n) of the ICT Act 2001 (as amended) and the EMF Safety Standard, the ICT Authority has determined technical standards for the setting up of new base station and the modification of registered base station. The EMF Safety Standard may be consulted [here](#). All operation of base stations in the Republic of Mauritius shall comply with these standards, as applicable.

### **4.0 The procedures to be followed to make an application to the ICT Authority for registration of base station**

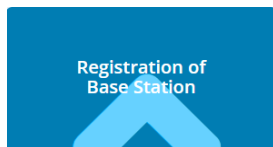
Prior to registration of base stations, operators are required to register on the [ICTA Online Portal](#). and follow the applicable instructions.

- For the purpose of registration on the ICTA Online Portal, operators should create a common credential which shall be accessible by all authorized users of the operator.
- Applications to the ICT Authority for setting up of new base station and modification of the registered base station must be made through the ICTA Online Portal .
- All registrations made on ICTA Online Portal should be done by the host operator.

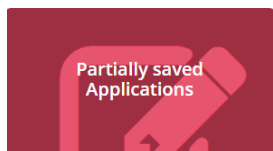
- Each site shall be registered individually on the ICTA Online Portal, under a unique site name.
- After registration of the base station on the ICTA Online Portal, all documents/attachments submitted with the application will be verified by the Authority.
- All fields on the ICTA Online Portal are mandatory, except where otherwise indicated.
- The Authority reserves the right to take such actions as it may deem appropriate, as specified in the EMF Safety Standard 2021 document, where it has come to the notice of the Authority that the operator has submitted false, incomplete and inaccurate information and request the operator to take such corrective measures as appropriate.

## 4.1 Dashboard

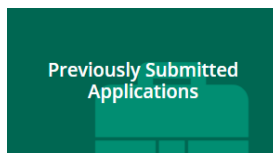
After successfully registering on ICTA Online Portal, the user will have access to a dashboard as hereunder illustrated: -



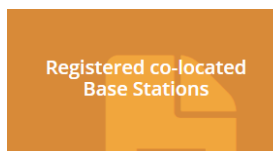
**Registration of Base Station** tab – directs the user to make the registration of base station.



**Partially saved Applications** tab – provides the user access to applications which are still in progress or may delete the application.



**Previously Submitted Application** tab – provides the user a **view** of all applications that he/she has recently submitted on the portal. The user may **update** a registered base station and **modify** a base station. The user may also **de-register** a site.



**Registered co-located Base Stations** tab – provides the user (tenant operator) a view of his/her sites, as registered by the host operator, which are classified as co-located base stations.

## 4.2 Registration of Base Station

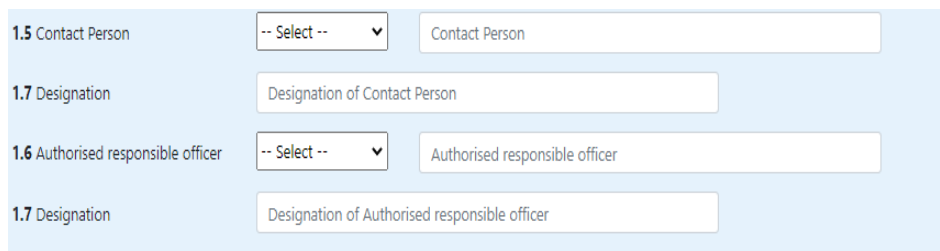
For **each** application made to register a base station, a unique station ID will be assigned to the base station. This unique station ID will be used as the main reference throughout ICTA Online Portal.

For a base station with tenant(s), it is the responsibility of the **host operator** to acquire all relevant information from the tenant(s) prior to making the application on the ICTA Online Portal.

There are six main sections throughout the application form, as explained hereunder:-

### **Section 1 OPERATOR DETAILS**

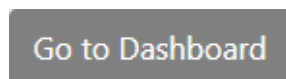
The user has to submit relevant details including Contact Person and Authorized Responsible Officer as illustrated in Figure 1 below. The Contact Person will be the technical Point of Contact between the User and the Authority.



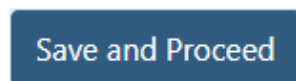
1.5 Contact Person	-- Select --	Contact Person
1.7 Designation		Designation of Contact Person
1.6 Authorised responsible officer	-- Select --	Authorised responsible officer
1.7 Designation		Designation of Authorised responsible officer

*Figure 1. Operator details*

The Authorized Responsible Officer is the person who has been mandated by the operator to authorize the registration and submission of applications on the Online Portal.



'Go to Dashboard' button will re-direct the user to his/her dashboard. Any unsaved information will be lost.



Upon pressing 'Save and Proceed' button, the application will automatically be saved on the portal and the user may view his partially filled application on his/her dashboard under 'Partially saved Applications' tab.

### **Section 2 STATION DETAILS**

Section 2 pertains to the physical details of the base station. The user has to specify the type of application, i.e. **New** or **Existing**, as illustrated in Figure 2 below.

2.1 Specify type of application:

New

Existing

Figure 2. Type of Application

**Note: -**

- Application for a **new** site means a site which does **not** exist and which is in the process of being implemented. Selection of 'New' will require the user to **mandatorily** submit all documents requested under Section 6 of the portal.
- Application for an **existing** site refers to a site, for which the Authority had already granted an **Authorization** under the previous framework and which is in operation in the Republic in Mauritius. This existing site will thereafter need to be registered on the portal.
- The type of application selected as 'Existing' will remain on this portal for a transitional period, as specified in the EMF Standard, to allow operators to register all their **existing authorized** base stations.
- For existing site, it is mandatory that the user uploads the Authorization granted by the Authority, as requested in Section 6(e) of the portal and may not submit other requested documents under Section 6(a) – 6(d) of the portal.

Under Section 2.6 the user has to confirm the type of installation of the base station which may be any of the following: -

- Ground Based Tower
- Rooftop Tower
- Palm Tree
- Rooftop pole
- Self-Supporting Mast

Under section 2.9, the user has to confirm the type of consultation that was effected during the process of setting up the base station. More information on the type of consultation is available in the EMF Safety Standard document.

Under section 2.10, the user has to provide tentative start date of the operation for the new base station.

Under section 2.11, the user (**host**) has to specify whether the site is a co-located with other operators (**tenants**).

### **Section 3 TENANT DETAILS**

As illustrated in Figure 3 below, the user (host operator) shall select the tenant that will be co-located on its site. The user shall ensure that it has selected **all** other operators which will share the same site before proceeding to the following section.



2.9 Specify whether this is a co-located installation:  Yes  No

SECTION 3: SHARER DETAILS

Select Sharer	Sharer Name	Sharer Licence
<input type="checkbox"/>	MTML	C.03/2019/001
<input type="checkbox"/>	Cellplus Mobile Communications Ltd	C.03/2018/003
<input type="checkbox"/>	Emtel	C.03/2019/009

Figure 3. Tenant Details

### **Section 4 SECTOR DETAILS**

Section 4 requires the user to provide information relevant to the environment in which the **respective antenna (host and tenant)** will radiate in a pre-defined sector.

Under section 4.3 for all types of installation, the user will have to confirm whether it has **at least two antennae** whose radiation patterns are overlapping, as determined by their half-power beam width in the horizontal plane, irrespective of the technology available on both antennae. This is illustrated in Figure 4 below. The overlapping radiation pattern may be from the **same** operator or **two different** operators.

**Note:** For a multiple-antenna installation, whether operated by a single operator or more than one operator on the same **physical structure at a given** location point, the sources may have overlapping radiation patterns, as determined by their half-power beam width in the horizontal plane.

4.3 Specify whether this sector has any other overlapping radiation source:  Yes  No

Figure 4. Confirmation of overlapping radiation pattern

An example of the above is demonstrated in Figure 5 below.

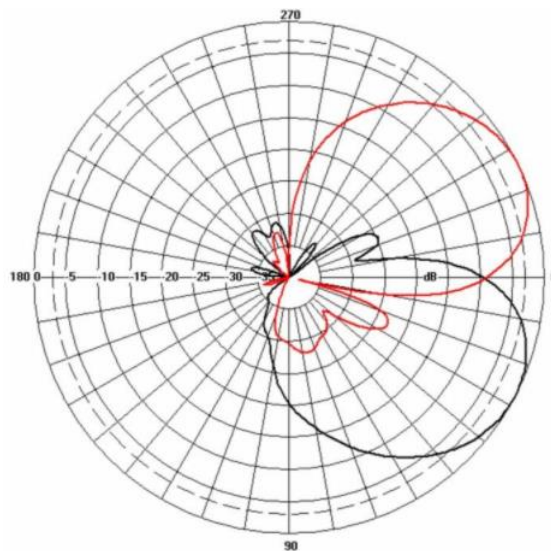


Figure 5 Illustration of overlapping radiation pattern

Under section 4.4 in case there is an overlapping radiation pattern, as explained above, the user will have to provide the name of the operator for which overlapping radiation pattern exists. Additionally, under section 4.5 the user will have to specify the azimuth of the overlapping source. This is illustrated in Figure 6 below.

Enter details of the overlapping source:

4.4 Operator/Tenant Name	-- Select --	4.5 Azimuth	Azimuth
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Figure 6 Details of overlapping source

Under section 4.6 the user has to provide the sector number of each antenna whose radiation patterns are overlapping, using a specific nomenclature.

The Sector No. should be a value **less than 9** in case of **non-overlapping sectors** and value should be **greater than 9** in case of **overlapping sectors**.

For example, if two antennae have overlapping radiation pattern and one sector is defined as '0' and the second one as '1', the sector number of the overlapped sector should then be defined as '10'. Likewise, if two antennae have overlapping radiation pattern and if both have the same sector number such as '1', then the sector number should be defined as '11' or if one sector is defined as '2' and the second one as '3', the sector number is then defined as '23'.

4.6 Sector No	11
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Figure 7 Definition of overlapping sectors

Under section 4.7 **for all types of installation**, the user has to confirm the total height (m) of the installation from ground to centre of radiation. An illustration of the required information is shown in Figure 8 below.

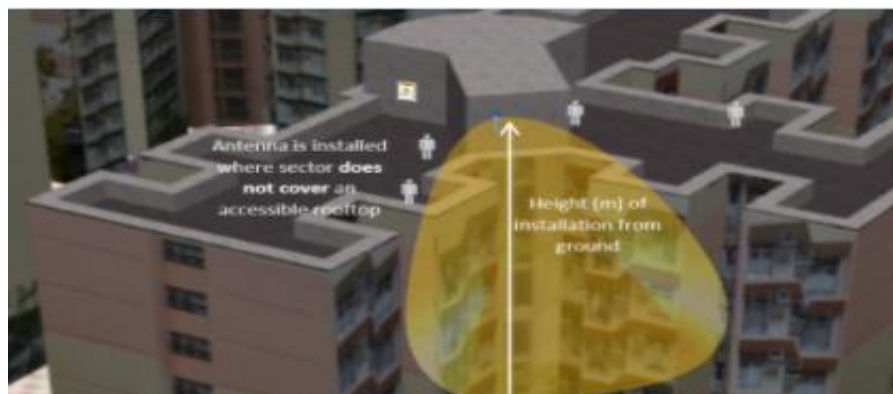


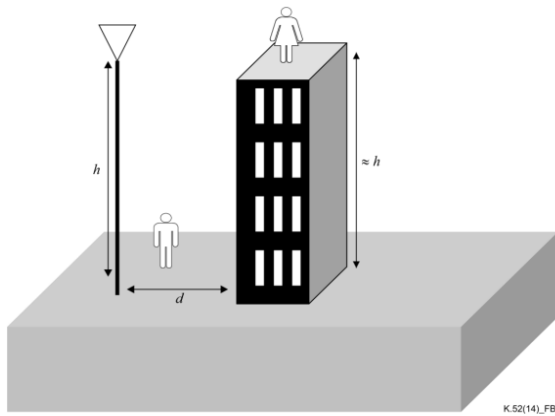
Figure 8. Installation of antenna from ground to centre of radiation

**Note:** Should the technology **LTE800(B20)** be envisaged for use, the **minimum height** of the installation from ground to centre of radiation should be at least **15m**.

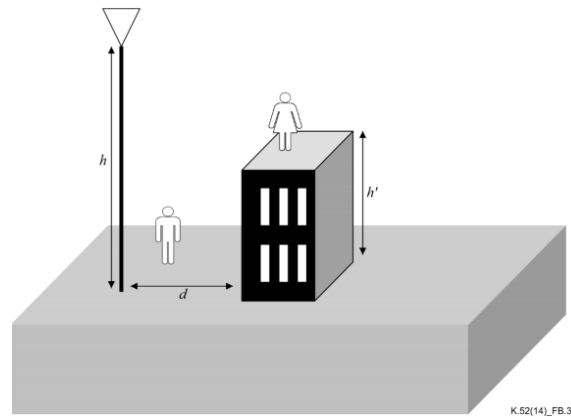
### **Adjacent Building**

Sections 4.8 & 4.9 require the user to confirm the existence of adjacent building in the surrounding of the antenna radiating in a particular sector. The adjacent building may be higher or lower than the antenna within the said sector, as illustrated in Figure 9(i) and 9(ii) below.

The user shall provide the distance between the antenna and the adjacent building, denoted as  $d(m)$  and the height of the building,  $h(m)$  or  $h'(m)$ .



*Figure 9(i) building height is higher than antenna height*



*Figure 9(ii) building is lower than antenna height*

*(Source: ITU-T Rec K.52(06/21)*

### **Exclusion Zone**

Under section 4.11 & 4.12, the user is required to indicate the **exclusion zone** pertaining to that sector. Figures 10(i) and 10(ii) below, illustrates the two types of exclusions zones, i.e. circular and rectangular. Where the user implements:-

- a) A circular exclusion zone, he shall submit the radius ( $a$ ) metres surrounding the antenna.
- b) A rectangular exclusion zone, he shall submit the dimension of the rectangle [ $a \times b$ ] metres.

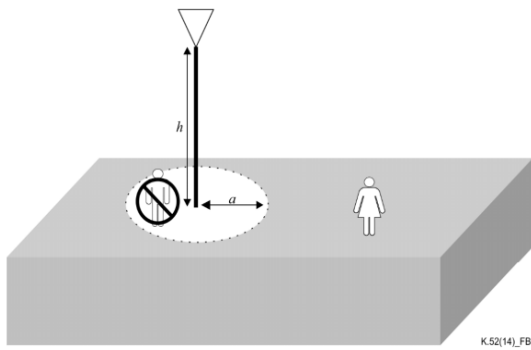


Figure 10(i) Circular Exclusion Zone

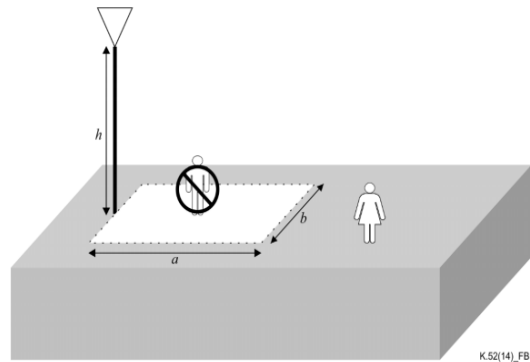


Figure 10 (ii) Rectangular Exclusion Zone

(Source: ITU-T Rec K.52(06/21))

Add sector

Having provided all relevant information for one sector, the user must press the ‘**Add sector**’ button, which will save the information and will allow the user to add other sector information

### Summary Table

Operator Name	SECTOR	Azimuth	Total Height	Exclusion Zone	Adjacent Building	Action
Emtel	1	45	12	yes	yes	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Figure 11 Summary Table of Sector Details

On pressing the ‘Add sector’ button, a summary table listing the sector’s main information, is generated, as shown in Figure 11 above. The user may ‘**Edit**’ or ‘**Delete**’ the details pertaining to that particular sector.

update

cancel

If any field is edited, the user shall thereafter press ‘**update**’ or ‘**cancel**’ button

The above steps will repeat for all remaining sectors for **both host operator and tenant(s), where applicable.**

To proceed to the following page, the user shall tick the checkbox as shown in Figure 12 below. It is mandatory that **each operator** needs to have **at least one sector** defined before proceeding.

Details pertaining to **ALL sectors per operator** have been submitted above.  
 You need to check this box in order to be able to click on the "Next" button

Figure 12 Checkbox confirming ALL sector details

### Case: Rooftop Tower & Rooftop Pole

For these two specific cases, the user shall select the scenario which is applicable to the particular sector, as illustrated in Figure 8 above and Figure 13 below respectively. Figure 8 illustrates the scenario where Antenna propagation does **not** cover an accessible rooftop.

For the second scenario (illustrated in Figure 13), the height  $h_1$ (m) **from the accessible rooftop of the building to centre of radiation of the antenna** will have to be specified. The minimum height  $h_1$ (m) should be greater than 3.0 m (*Ref: ITU-T Rec K.52(06/21)*)



Figure 13 Antenna propagation covers an accessible rooftop

### Section 5 TECHNOLOGY DETAILS

Section 5 requires the user to submit the details of all mobile technologies which will be used in **each respective** sector (host and tenant). The different mobile technologies include:

-

- GSM 900
- GSM 1800
- UMTS 2100 (B1)
- UMTS 900 (B8)
- LTE 2100 (B1)
- LTE 1800 (B3)
- LTE 900 (B8)
- LTE 2600 (B38)
- LTE 800 (B20)
- 5G – 2.6 GHz (N41)
- 5G – 3.5 GHz (N78)

For **each** sector, the **respective** mobile technology with the associated technical parameters for example electrical tilt, antenna gain or EIRP, should be submitted. The exact make and model of the antenna being used in **each** sector needs to be specified.

Add technology

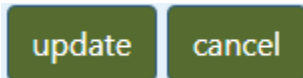
Having provided all technology information of one sector, the user must press the '**Add technology**' button, which will save the information and provide a new page for the second sector.

## Summary Table

Operator Name	Sector	Technology	Mid-band frequency	EIRP	Antenna Make & Model	Action
Emtel	1	GSM900	942.5	56	Huawei	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

*Figure 14 Summary Table of Technology Details*

On pressing the ‘Add Technology’ button, a summary table listing the sector’s main technology information, is generated, as shown in Figure 14 above. The user may **‘Edit’** or **‘Delete’** the technology details pertaining to that particular sector.



If any field is edited, the user shall thereafter press **‘update’** or **‘cancel’** button.

To proceed to the following page, the user shall tick the checkbox as shown in Figure 15 below. It is mandatory that **each operator** need to have **at least one technology defined in one sector** defined before proceeding.

Details pertaining to **ALL technologies for each applicable sector per operator** have been submitted above.

You need to check this box in order to be able to click on the "Next" button

*Figure 15 Checkbox confirming ALL technology details*

**For the purpose of compliance determination, the same mid-band frequency of each mobile technology (except for 5G), as shown in Table A hereunder, will be used for all operators.**

Technology	Mid-band frequency
GSM900	942.5
UMTS900 (B8)	942.5
LTE900 (B8)	942.5
GSM1800	1842.5
LTE1800 (B3)	1842.5
UMTS2100 (B1)	2140
LTE2100 (B1)	2140
LTE2600 (B38)	2595
LTE 800 (B20)	806
5G – 2.6 GHz (N41)	2550 (Emtel)
5G – 3.5 GHz (N78)	3450 (MTML)
	3550 (Cellplus)

*Table A Mid-band Frequencies*

## **COMPLIANCE CALCULATION**

Based on the submitted information, the user will be informed if the base station is compliant to ITU-T recommendation K.52, as applicable. The possible outcomes are:-

- a) **The site is compliant.** In this case, the user shall therefore proceed to the next section of the application.
- b) **The site is non-compliant.** In case of a **new** site, the user will be informed which particular sector is not compliant and will be requested to review its technical parameters and to proceed accordingly. In case of an **existing** site, the user may either review its technical parameter **or** may submit its measurement report (in accordance with ICTA's in-situ measurement protocol available on <https://www.icta.mu/radiocom.html#rad4>).

## **Section 6 ATTACHMENT UPLOADING SECTION**

Section 6 requires the user to attach all relevant documents to support the application. The following documents must be submitted:-

- a) A clearly marked and readable CONTEXT PLAN (min scale 1:2500) indicating Grid North and showing:
  - Location of the site within the area, including its boundaries;
  - The position of all buildings within 100m of the site;
  - At least one public road for reference, where feasible
  - Existing mobile infrastructure within 200m radius.

This attachment must be labelled as *Sitename\_plan*

- b) A clearly marked side and front ELEVATION DIAGRAMS (min scale 1:100) to show the height of installation from centre of radiation of all antennas to ground and any adjoining or adjacent buildings.

**Note:-** For antennas installed on buildings, the elevation of different floor levels must be also specified.

Cross section diagrams should be provided where installation is partially hidden in the elevations by other existing equipment or roof structures.

This attachment must be labelled as *Sitename\_elevation*.

- c) A clearly marked TOP VIEW DIAGRAM (min scale 1:100) to identify
  - the different sectors,
  - any adjoining or adjacent buildings (specifying their distance and height),
  - any proposed safety/security measure in the direction of propagation of each sector.

This attachment must be labelled as *Sitename\_sectors*.

- d) A snapshot of the installation at the site location. For building based installation, the installation and building must be visible.

This attachment must be labelled as *Sitename\_photos*.

- e) A copy of the Authorisation document issued by the Authority for the site.

This attachment must be labelled as *Sitename\_authorization*.

### **Measurement Report**

In-line with Section 5 *COMPLIANCE CALCULATION*, where an existing site has been found to be non-compliant, the user may submit its measurement report (in accordance with ICTA's in-situ measurement protocol available on <https://www.icta.mu/radiocom.html#rad4>) or review its technical parameters on the portal.

This attachment must be labelled as *Sitename\_report*.

#### **Note:-**

- Only files with extensions .jpg, .jpeg, .png, .gif, .pdf, .txt, and .zip can be uploaded. Files must be less than 15MB.
- If the files are more than 15MB or if the user has more than one file to upload in a particular section, the files must be zipped and then uploaded. The maximum size of a zip file is 15MB.
- If the zip file is larger than 15MB, the user will have to make use of an online file sharing service (e.g. [www.dropbox.com](http://www.dropbox.com)) and to follow the steps below:-
  - i Save the URL provided to access the file in dropbox in a text file (filename.txt); and
  - ii Upload this text file in the relevant section of this application form.

**The user is strongly advised to obtain all required documents prior to making an application for registration of base station.**

### **4.3 Partially Saved Applications**

This option provides the user a view of all of his/her applications which are currently **not completed**, previously saved and which have not yet been submitted for processing by the Authority.

The user may select to 'Continue' with his/her application or may 'Delete' the application, as appropriate.



## 4.4 Previously Submitted Applications

This section provides the user three different options as explained below: -

### a) View

This option provides the user a view (including technical parameters) of all of his/her applications which have been submitted for processing by the Authority. This option is **only a view** of the applications and the user may **not** modify the application.

### b) Update

This option requires the user to provide the **start date of operation** of his/her base station for which successful registration was done on the portal.

The user will also be required to submit snapshot of installation of the base station. This attachment must be labelled as *Sitename\_photos*. For building based installation, the installation and building must be visible.

### c) Modify

This option enables the user (host operator) to modify the technical parameters of a registered/existing base station on the portal.

The user will be presented with the same set of pages as described in section 4.2 above in which the necessary amendments may be carried out. However, certain fields may not be modified at any point in time and these include Section 2 (2.1-2.6 and 2.8-2.10).

Once the base station has been modified and successfully registered on the portal, the new registration of the said base station will overwrite the existing one, with **same Site ID** but **different registration no.**

It is important to note that the option 'Modify' is only applicable to those sites for which the user has updated his/her base station, as stipulated in Section 4.4(b) above. Those sites which have not been updated as per section 4.4(b), will **not** appear in the table under the option 'Modify'.

Furthermore, if the user wishes to modify a site in not more than one session, the user may then continue to modify the said site under the tab 'Partially Saved Applications'.

### d) De-Register

This option enables the user (host operator) to de-register any of his registered sites. The user will be required to confirm either one of the following reasons for which cancellation/de-registration is being applied for: -

- Installation not implemented
- Installation no more in operation

For the second option, the user should provide the date that the said site will stop to be in operation.

## 4.5 Registered co-located Base Station

This option provides the **tenant operator (sharer)** access to the technical parameters of his/her site, which have been co-located on the host operator's base station.

The tenant operator will **not** be able to view the technical parameters of the base station for the host operator.