GN-14/2024

Guidelines for Installation of Radio Base Stations Operating in the 3.4 – 3.6 GHz Band within the Restriction Zone Delineated by the Communications Authority (Issue 2)

These guidelines are issued pursuant to section 6D of the Telecommunications Ordinance (Cap. 106) for the control of interference in relation to installation and use of radio base stations of public mobile services operating in the 3.4 – 3.6 GHz ("3.5 GHz") band within the restriction zone (at **Appendix**) delineated by the Communications Authority ("CA").

Background

2. As stipulated in the joint statement of the CA and the Secretary for Commerce and Economic Development issued on 13 December 2018, the CA decided to impose a set of special conditions in the relevant Unified Carrier Licences ("UCLs") for protection of the existing earth stations for telemetry, tracking and control ("TT&C") of the licensed satellites in orbit operating in the 3.4 – 4.2 GHz band. As per the relevant special condition of the UCLs extracted below, the CA will issue guidelines relating to the use of the 3.5 GHz spectrum within the restriction zones designated by the CA.

> "*The spectrum that falls within the 3.4 – 3.6 GHz band shall not be used by the licensee to provide service through any base station located within the restriction zones designated by the Authority where licensed earth stations for telemetry, tracking and control of satellites in orbit are located, unless the licensee complies with the relevant guidelines and directions issued by the Authority*."

3. A Working Group was set up under the Radio Spectrum and Technical Standards Advisory Committee of the Office of the Communications Authority ("OFCA") at mid 2018 with a view to exploring technical measures for possible deployment of radio base stations operating in the 3.5 GHz band (hereinafter referred to as "3.5 GHz RBS") within the restriction zones in Tai Po and Stanley, while the existing TT&C stations should continue to be protected. The Working Group concluded its work and gave its recommendations to the CA at mid 2019.

Taking into account the Working Group's recommendations, the CA issued in July 2019 the guidelines for providing practical guidance to the concerned mobile network operators ("MNOs") in relation to the installation and use of 3.5 GHz RBS within the two restriction zones in Tai Po and Stanley.

4. With a view to lifting the restriction zone in Tai Po to enable installation and use of 3.5 GHz RBS there, OFCA has subsequently offered facilitation to the concerned satellite operators for relocating their TT&C stations from Tai Po to the Chung Hom Kok Teleport. A satellite operator took up the relocation offer and committed to cease its relevant TT&C operations in Tai Po before 30 October 2024 while the other satellite operator has opted to insert necessary filters in its relevant TT&C stations in Tai Po. Following the above developments, the CA updates these guidelines by removing the restriction zone in Tai Po with effect from 30 October 2024. In other words, the additional telecommunications requirements as well as interference monitoring and resolution as specified in paragraphs 6 – 9 below will only be applicable within the remaining restriction zone in Stanley starting from 30 October 2024.

General Requirements

5. Applications for installation and use of radio base stations installed at buildings are processed by OFCA in accordance with the One-stop Application Procedure for Installation of Radio Base Stations by Mobile Services Operators ("OSAP")[1]. On top of fulfilling all requirements stipulated in OSAP, each application for 3.5 GHz RBS (both indoors and outdoors) within the restriction zone should also comply with the additional telecommunications requirements outlined in paragraphs 6 and 7 below. OFCA will consider the application on a case-by-case basis and in co-ordination with the concerned MNOs and TT&C station operators as necessary.

[1] See https://www.coms-auth.hk/filemanager/statement/en/upload/138/gn_201024.pdf

Additional Telecommunications Requirements for 3.5 GHz RBS within Restriction Zone

6. With reference to the Working Group's recommendations and the ITU-R Recommendation ITU-R S.1432-1[2], OFCA would apply the following additional telecommunications requirements when processing with a view to approving applications for 3.5 GHz RBS within the restriction zone:

(a) Unless with the consent of the TT&C station operators, the signal level of 3.5 GHz RBS as receivable at the input of the low noise amplifier of the satellite receiving system of the TT&C stations should not exceed the Protection Criteria as outlined below:

- for the 3400 – 3405 MHz band, the maximum permissible aggregated interference level is -130.8 dBm/MHz;

- for the 3405 – 3600 MHz band, the maximum permissible aggregated interference level is -118 dBm/MHz.

(b) As required under the licence condition of the relevant UCLs, the licensee shall ensure that the operation of customer equipment connected to the licensee's network or having access to services provided under the licence does not cause harmful interference to any licensed TT&C stations within the restriction zone.

7. For each 3.5 GHz RBS application within the restriction zone, MNOs should submit an analysis report demonstrating compliance with the above-mentioned additional telecommunication requirements. In general, all applications for 3.5 GHz RBS, in particular those proposed to be installed within 2 km from the TT&C stations where the TT&C antennae characteristics could not be well defined for the analysis, have to be proved to the satisfaction to OFCA that no harmful interference will be caused to the TT&C stations. Prior to approving the installation and use of a 3.5 GHz RBS, OFCA may conduct an on-site measurement jointly with the MNO concerned and the TT&C station operators in order to verify the assessment given in the analysis report submitted by the MNO.

[2] Entitled "Apportionment of the allowable error performance degradations to fixed-satellite service hypothetical reference digital paths arising from time invariant interference for systems operating below 30 GHz"

Interference Monitoring and Resolution

8. TT&C station operators should closely monitor the interference level caused by 3.5 GHz RBS. If any interference level reaches the limit of the Protection Criteria as measured in per MHz basis in a particular sub-band, or if there is any indication that the interference level is about to exceed the limit of the Protection Criteria in that particular sub-band, the TT&C station operator concerned should report its observation to OFCA. Even though such interference level may not cause any immediate harmful interference to TT&C stations, the TT&C station operator may coordinate with the MNO concerned for taking any necessary precautionary measure.

9. In the event of harmful interference, the concerned TT&C station operator should promptly report the incident to OFCA for interference investigation.

Enquiry

10. For enquiries, please contact OFCA by phone on 2961 6785 or by e-mail to spenq@ofca.gov.hk.

Office of the Communications Authority
30 October 2024

Appendix

Restriction Zone

A restriction zone is defined by polygon vertices (see Figure 1 below) using the Hong Kong 1980 Grid Coordinates, as follows –

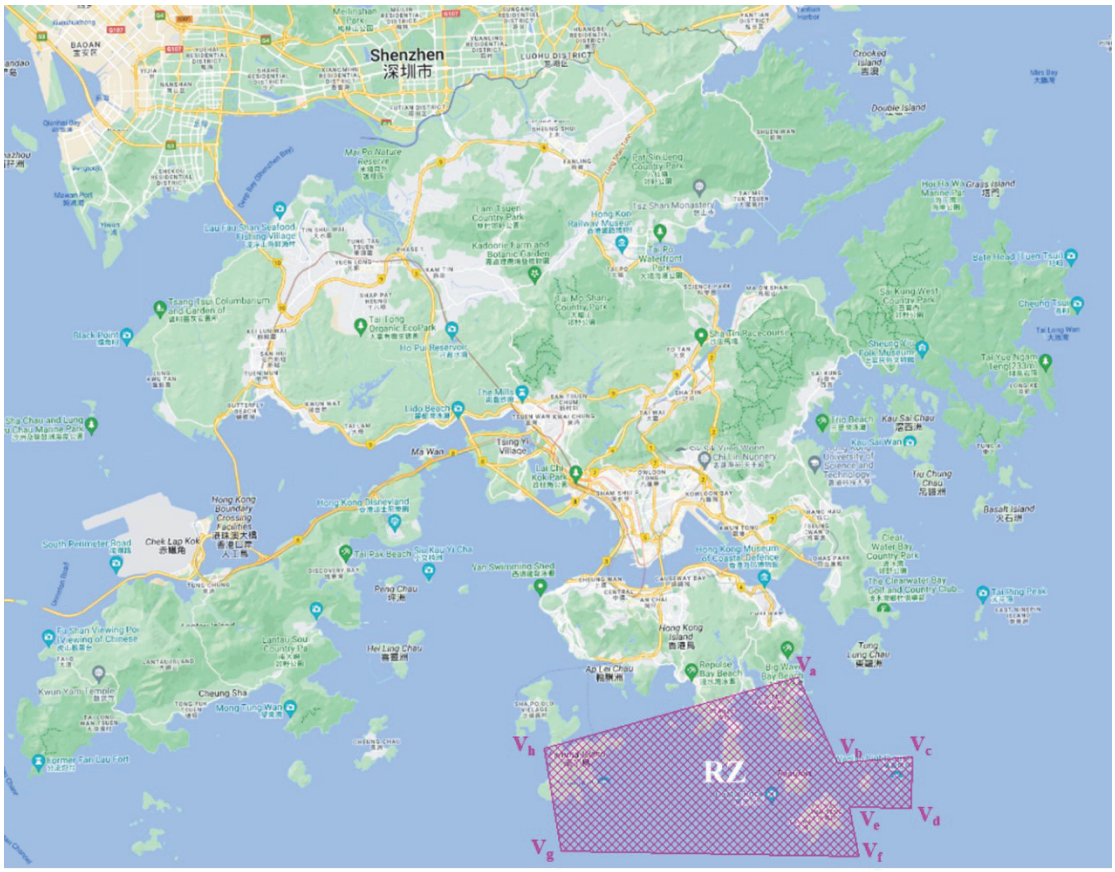

Figure 1: Restriction Zone

Restriction Zone ("RZ")
[Easting (m), Northing (m)]

- V_a [843999, 811035]
- V_b [846079, 806315]
- V_c [850159, 806555]
- V_d [849999, 803755]
- V_e [846639, 803915]
- V_f [847119, 801195]
- V_g [830959, 801835]
- V_h [830159, 807435]

Locations of the TT&C stations given in the Hong Kong 1980 Grid Coordinates, [Easting (m), Northing (m)], for planning purpose only —

within RZ – [840658, 806515] and [838996, 808311]